ASSEMBLY INSTRUCTIONS

FOR

1998 - 2002 CAMARO / FIREBIRD*

***For additional vehicle compatibility, visit www.wilwood.com**

SUPERLITE 4R FRONT ROAD RACE BRAKE KIT WITH 12.19” DIAMETER VENTED ROTOR

BASE PART NUMBER

140-10691

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

READ ALL WARNINGS

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 WILWOOD AT (805) 388-1188, OR VISIT OUR WEB SITE AT WWW.WILWOOD.COM. USE OF WILWOOD 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.

Need Additional Information? Use Your SmartPhone and Jump to Our Technical Tips Section on Our Web Site.

WARNING

DO NOT OPERATE ANY VEHICLE ON UNTESTED BRAKES!

SEE MINIMUM TEST PROCEDURE WITHIN

ALWAYS UTILIZE SAFETY RESTRAINT SYSTEMS AND ALL OTHER AVAILABLE SAFETY EQUIPMENT WHILE OPERATING THE VEHICLE

IMPORTANT • READ THE DISCLAIMER OF WARRANTY INCLUDED IN THE KIT

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.

Important Notice - Read This First

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

- **Review the wheel clearance diagram (figure 2, page 3) 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.**

Photographic Tip

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 Wilwood to assist you if you have a problem.

Exploded Assembly Diagram

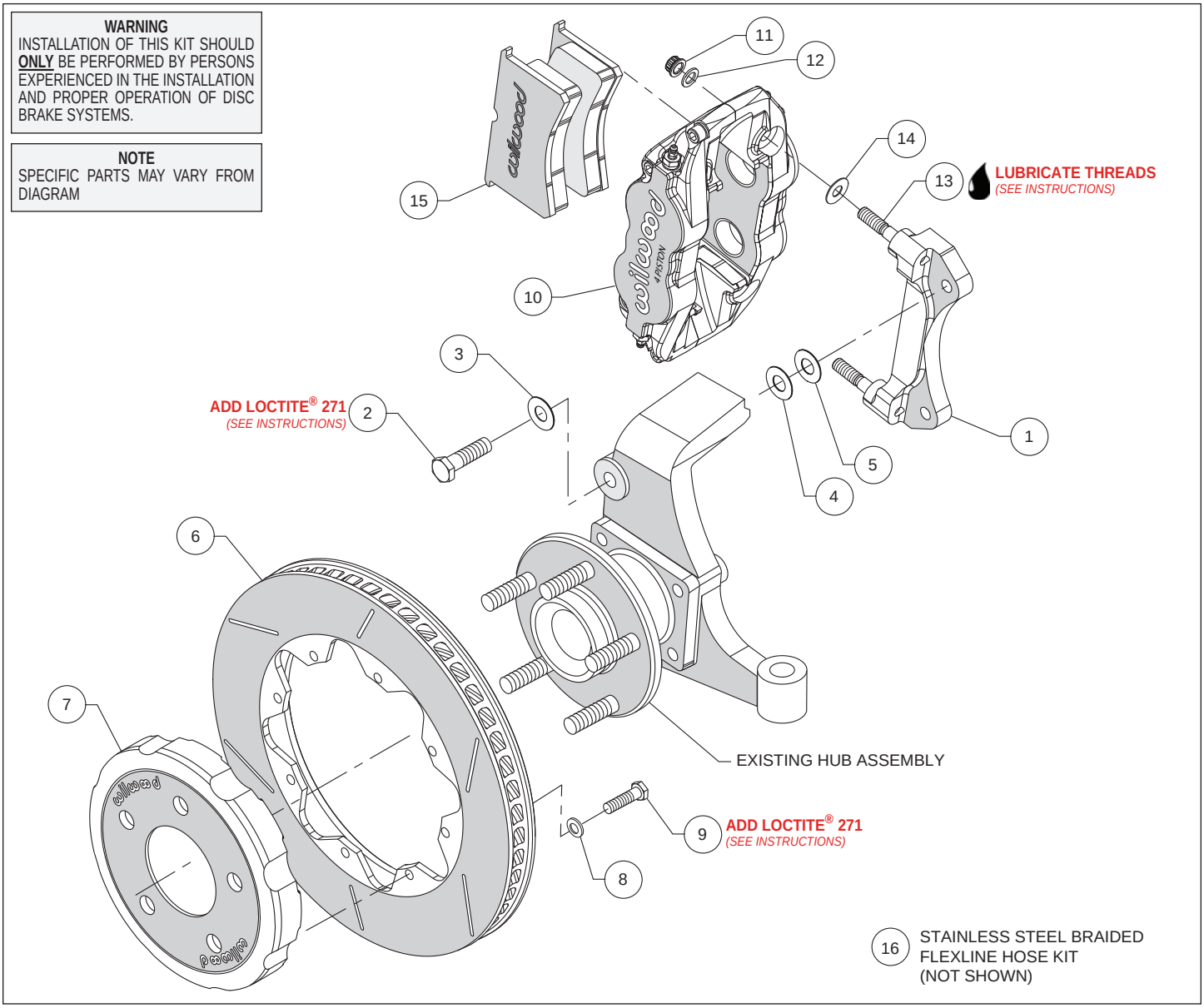


Figure 1. Typical Installation Configuration

Parts List

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	250-10689	Bracket, Caliper Mounting	2
2	230-10646	Bolt, M12-1.75 x 40mm Long, HXHD	4
3	240-0476	Washer, .477 I.D. x .922 O.D. x .063 Thick	4
4	240-6320	Washer, .483 I.D. x 1.031 O.D. x .033 Thick	12
5	240-5878	Washer, .503 I.D. x 1.051 O.D. x .015 Thick	4
6	160-11839/40	Rotor, 1.25” Thick x 12.19” Dia, 8 x 7.00” Bolt Circle	2
7	170-8493	Hat, 5 x 4.75, .875 Offset, 8 x 7.00” Bolt Circle	2
8	240-10191	Washer, ,328 I.D. x .562 O.D. x .063 Thick	16
9	230-0318	Bolt, 5/16 x18 x 1.00 Long, HXHD	16
10	120-13265/66	Caliper, Forged Superlite 4R	2
11	230-9183	Nut, 3/8-24 Self-Locking, 12 Point	4
12	240-10190	Washer, .391 I.D. x .625 O.D. x .063 Thick	4
13	230-9078	Stud, 3/8-16 x 3/8-24 x 2.50 long (pre installed in bracket)	4
14	240-1159	Shim, .035 Thick	16
15	150-14773K	Pad, BP-30 Compound, Axle Set	1
16	220-6746	Braided Stainless Steel Hose Kit (not shown)	1

NOTES: Part Number 230-8390 Rotor Bolt Kit, includes part numbers 230-0318 and 240-10191
Part Number 230-10647 Caliper Bracket Mounting Bolt Kit, includes P/N 230-10646, 240-0476, 240-5878 and 240-6320
Part Number 250-10699 Spindle / Bracket Bolt Kit, includes part numbers 230-9078, 230-9183, 240-1159, 240-10190 & 250-10689

General Information and Disassembly Instructions

•*Installation of this kit should **ONLY** be performed by individuals experienced in the installation and proper operation of disc brake systems.* Prior to any attempt to install this kit, please check the following to ensure a trouble free installation.

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

•Verify the year and model of your spindle. This kit is designed for direct bolt-on installation to 1998 through 2002 model year production spindles that were originally equipped with twin piston calipers. This kit will not fit 1993 through 1997 production year spindles originally equipped with single piston floating mount calipers. The correct spindles are identified by casting numbers 18023021 and 18023022. 1993 through 1997 model year vehicles may be updated with the later model spindle to accommodate installation of this kit.

•Verify your wheel clearance using figure 2.

•Verify that the factory hub and stud pattern matches the stud hole pattern in the hats supplied with this kit. Hubs that have been modified with different size studs or lug patterns may require modifications to the hat that must be performed by a qualified machinist.

•***WARNING:** Brake pads included in this kit are intended for high temperature race use only.* Extended use at low temperature can cause accelerated rotor and pad wear. Please see the associated components list on the last page of this data sheet for alternative brake pad compounds for other uses.

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

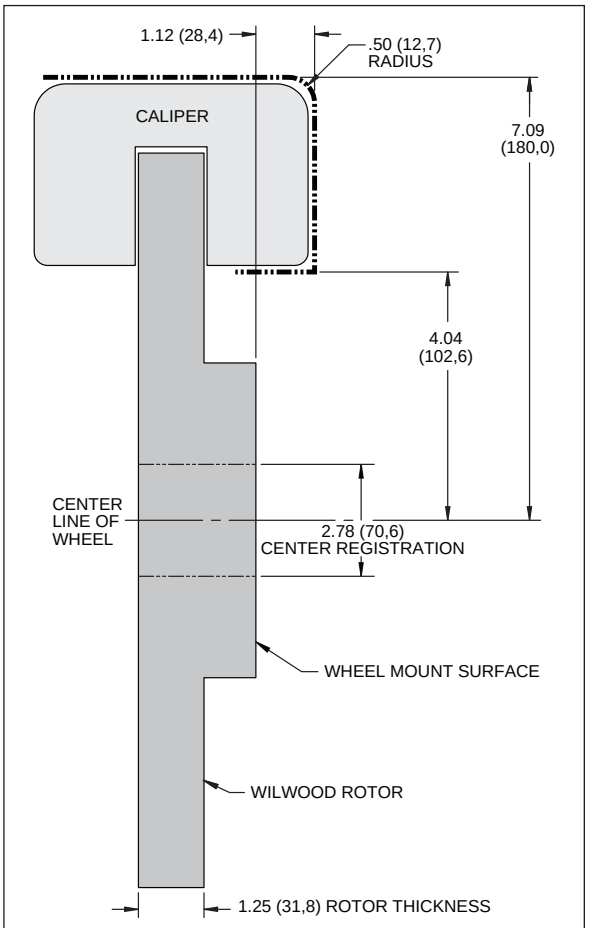


Figure 2. Wheel Clearance Diagram

Disassembly Instructions (Continued) and Assembly Instructions

•Remove the wheel. Remove the two bolts from the backside of the spindle that hold the stock caliper mounting bracket and lift off the bracket and stock caliper as one unit. If space is a problem, you may have to unbolt the stock caliper from the caliper bracket before removal. Remove dust face plate.

•Clean and de-grease the spindles. Remove all nicks or burrs on the spindle snout and threads.

Assembly Instructions (numbers in parenthesis refer to the part list/diagram on the preceding page): ***CAUTION:*** *All mounting bolts must fully engage insert nuts. Be sure to check that all bolts are either flush or protruding through flanged side of insert nut after shimming.*

•The caliper mount bracket assembly (1) should be installed first with clean, dry threads on the mounting bolts. Install the bracket on the inboard side of the spindle by sliding bolt (2) through flat washer (3), and spindle ear from the outboard side of the spindle. Place two shim washers (4) between the bracket (1) and the spindle (see figure 1). The bracket must tighten squarely against the inboard side of the caliper mount bosses on the spindle body. Inspect for interference from casting irregularities, machining ridges, burrs, etc. Later, after the caliper, pad, and rotor alignment has been checked, and any necessary shims have been put in place, the mount bolts should be coated with red *Loctite*® 271 and torqued to 65 ft-lbs.

•With the larger I.D. side of the rotor (6) facing away from the hat (7), attach the rotor (6) to the hat (7) using washers (8) and bolts (9) as shown in Figure 1. Using an alternating sequence, apply red *Loctite*® 271 to the threads and torque bolts to 25 ft-lb. 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.

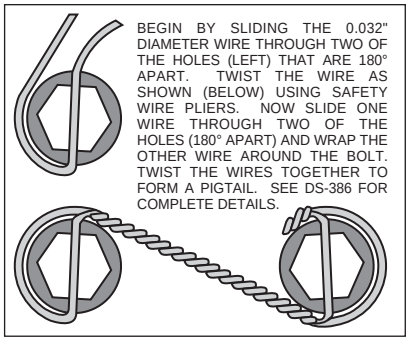


Figure 3. Safety Wire Diagram

•Install the hat and rotor assembly onto the axle hub. Check to be sure the hat seats squarely against the hub. The hub must be free from any rust, debris, casting burrs, machining irregularities, etc. Use three lug nuts to hold the rotor and hat firmly against the hub during the next phases of the installation and clearance checking procedures.

•Lubricate caliper mounting studs (13) and nuts (11) with lightweight oil. Install two shims (14) over each stud (13) on the radial mount bracket. Slide the caliper (10) in place over the studs and rotor and install the washer (12) and lock nut (11) to hold the caliper in place. The caliper bleed screws should be pointing up. Snug the lock nuts (11) and check that the rotor (6) is centered in the caliper (10). Add or subtract shims (4 and/or 5) as necessary between the mount bracket and the spindle to center the caliper.

•Remove the caliper center bridge pad retainer bolt, nut, and tube from the caliper. Slide the brake pads (15) into place. They should install easily without interference. Check that the outside radius of the brake pad is flush with the outside diameter of the rotor face. Add or subtract shims (14) between the caliper and mount bracket to gain the proper alignment. Reinstall the center bridge pad retainer tube, bolt, and lock nut. The locknut should be snug without play in the bolt or tube. Be cautious not to over tighten.

•Remove the lug nuts that were holding the hat in place. Install the wheel and torque the lug nuts to specification. Check to see that the wheel rotates freely without interference.

•Once all clearances have been checked, remove the wheel, caliper, hat, and rotor from the spindle and hub. Secure the caliper mounting bracket (1) to the spindle using red *Loctite*® 271. Torque the bolts to 65 ft-lbs. Reinstall the hat and rotor assembly and again use several lug nuts to hold it in place. Reinstall the caliper, torque the caliper nuts (11) to 30 ft-lbs.

•Install braided flexline kit part number 220-6746. The 10mm x 1 to -3 (P/N 220-6890) male fitting installs to the stock bulkhead. Then install the straight 1/8-27 to -3 NPT (P/N 220-6956) fitting into the caliper (10). Finally, install the flex line (P/N 220-6746) to the two previously installed fitting. **Carefully route lines to prevent contact with moving suspension, brake or wheel components.** Wilwood 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.

•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.

Assembly Instructions (Continued)

•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.

•Repeat the procedure for the other wheel.

•Bleed the brake system. Reference the general information and recommendations below for proper bleeding instructions.

Additional Information and Recommendations

•Please read the following concerning balancing the brake bias on 4 wheel disc vehicles.

This Camaro kit can be operated using the stock OEM master cylinder. However, as with most suspension and tire modifications (from OEM specifications), changing the brakes may alter the front to rear brake bias. Rear brakes should not lock up before the front. Brake system evaluation and tests should be performed by persons experienced in the installation and proper operation of brake systems. Evaluation and tests should be performed under controlled conditions. Start by making several stops from low speeds then gradually work up to higher speeds. Always utilize safety restraint systems while operating vehicle.

•For optimum performance, fill and bleed the new system with Wilwood Hi-Temp° 570 grade fluid or EXP 600 Plus. For severe braking or sustained high heat operation, use Wilwood EXP 600 Plus 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 the brake pedal goes to the floor and continued bleeding of the system does not correct the problem, a master cylinder with increased capacity (larger bore diameter) may be required. Wilwood offers various lightweight master cylinders with large fluid displacement capacities.

•***NOTE:*** *With the installation of after market disc brakes, the wheel track may change depending on the application.* Check your wheel offset before final assembly.

•If after following the instructions, you still have difficulty in assembling or bleeding your Wilwood disc brakes, consult your local chassis builder, or retailer where the kit was purchased for further assistance.

Brake Testing

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

- 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.
- 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.

Pad and Rotor Bedding

BEDDING STEPS FOR NEW PADS AND ROTORS – ALL COMPOUNDS

Once the brake system has been tested and determined safe to operate the vehicle, follow these steps for the bedding of all new pad materials and rotors. These procedures should only be performed on a race track, or other safe location where you can safely and legally obtains speeds up to 65 MPH, while also being able to rapidly decelerate.

- Begin with a series of light decelerations to gradually build some heat in the brakes. Use an on-and-off the pedal technique by applying the brakes for 3-5 seconds, and then allow them to fully release for a period roughly twice as long as the deceleration cycle. If you use a 5 count during the deceleration interval, use a 10 count during the release to allow the heat to sink into the pads and rotors.
- After several cycles of light stops to begin warming the brakes, proceed with a series of medium to firm deceleration stops to continue raising the temperature level in the brakes.
- Finish the bedding cycle with a series of 8-10 hard decelerations from 55-65 MPH down to 25 MPH while allowing a proportionate release and heat-sinking interval between each stop. The pads should now be providing positive and consistent response.
- 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.

Pad and Rotor Bedding (Continued)

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.

DYNO BEDDED COMPETITION PADS AND ROTORS

- Getting track time for a proper pad and rotor bedding session can be difficult. Wilwood offers factory dyno-bedded pads and rotors on many of our popular competition pads and ***Spec 37*** GT series rotors. Dyno-bedded parts are ready to race on their first warm up cycle. This can save valuable time and effort when on-track time is either too valuable or not available at all, Dyno-bedding assures that your pads and rotors have been properly run-in and are ready to go. Contact your dealer or the factory for more information on Wilwood Dyno-Bedding services.

NOTE:

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.

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Associated Components

PART NO.	DESCRIPTION
260-13706	Wilwood Residual Pressure Valve (2 lb for disc brakes)
260-13707	Wilwood Residual Pressure Valve (10 lb for drum brakes)
260-8419	Wilwood Proportioning Valve, Knob Style
260-8420	Wilwood Proportioning Valve, Lever Style
260-11179	Wilwood Combination Proportioning Valve with Brake Light Switch
290-0632	Wilwood Racing Brake Fluid (Hi-Temp° 570) (12 oz)
290-6209	Wilwood Racing Brake Fluid (EXP 600 Plus) (16.9 oz)
340-13831	Wilwood Floor Mount Brake Pedal (with balance bar)
340-13832	Wilwood Swing Mount Brake Pedal (with balance bar)
260-6764	Wilwood 3/4 inch High Volume Aluminum Master Cylinder
260-6765	Wilwood 7/8 inch High Volume Aluminum Master Cylinder
260-6766	Wilwood 1 inch High Volume Aluminum Master Cylinder
260-4893	1-1/16 inch Tandem Master Cylinder (aluminum housing)
250-2406	Mounting Bracket Kit (tandem master cylinder)
260-8555	Wilwood 1 inch Aluminum Tandem Chamber Master Cylinder
260-8556	Wilwood 1-1/8 inch Aluminum Tandem Chamber Master Cylinder
220-7056	Stainless Steel Braided Flexline Kit, Universal, 14 Inch, Domestic, 3/8-24 IF
220-7699	Stainless Steel Braided Flexline Kit, Universal, 16 Inch, Domestic, 3/8-24 IF
220-8307	Stainless Steel Braided Flexline Kit, Universal, 18 Inch, Domestic, 3/8-24 IF
150-8854K	Pad 7420, SL6, BP-10 Compound (low to medium temperature)
150-9416K	Pad 7420, SL6, BP-20 Compound (medium temperature)