

ASSEMBLY INSTRUCTIONS

FOR

1993-1997 CAMARO / FIREBIRD*

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

SUPERLITE 6 BIG BRAKE FRONT BRAKE KIT WITH 12.88" DIAMETER VENTED ROTOR

BASE PART NUMBER

140-6743

**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.

DISC BRAKES
wilwood

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:

- Some modifications are required to the stock steering arm/spindle (Figure 2, page 3). This entails cutting the mounting ears and on some model years cutting away portions of the spindle support to facilitate the mounting of the Wilwood spindle bracket. It is recommended that these modifications be performed by a qualified machine shop.
- Review the wheel clearance diagram (Figure 3, page 4) to verify that there is adequate clearance with the wheels you will be using with the installation.
- Front brake kits do not include flex lines. OEM brake lines will not adapt to Wilwood calipers. Check the assembly instructions, or associated components section for brake line recommendations before assembly. In addition, Wilwood offers an extensive listing of brake lines and fittings on our web site: www.wilwood.com.
- 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

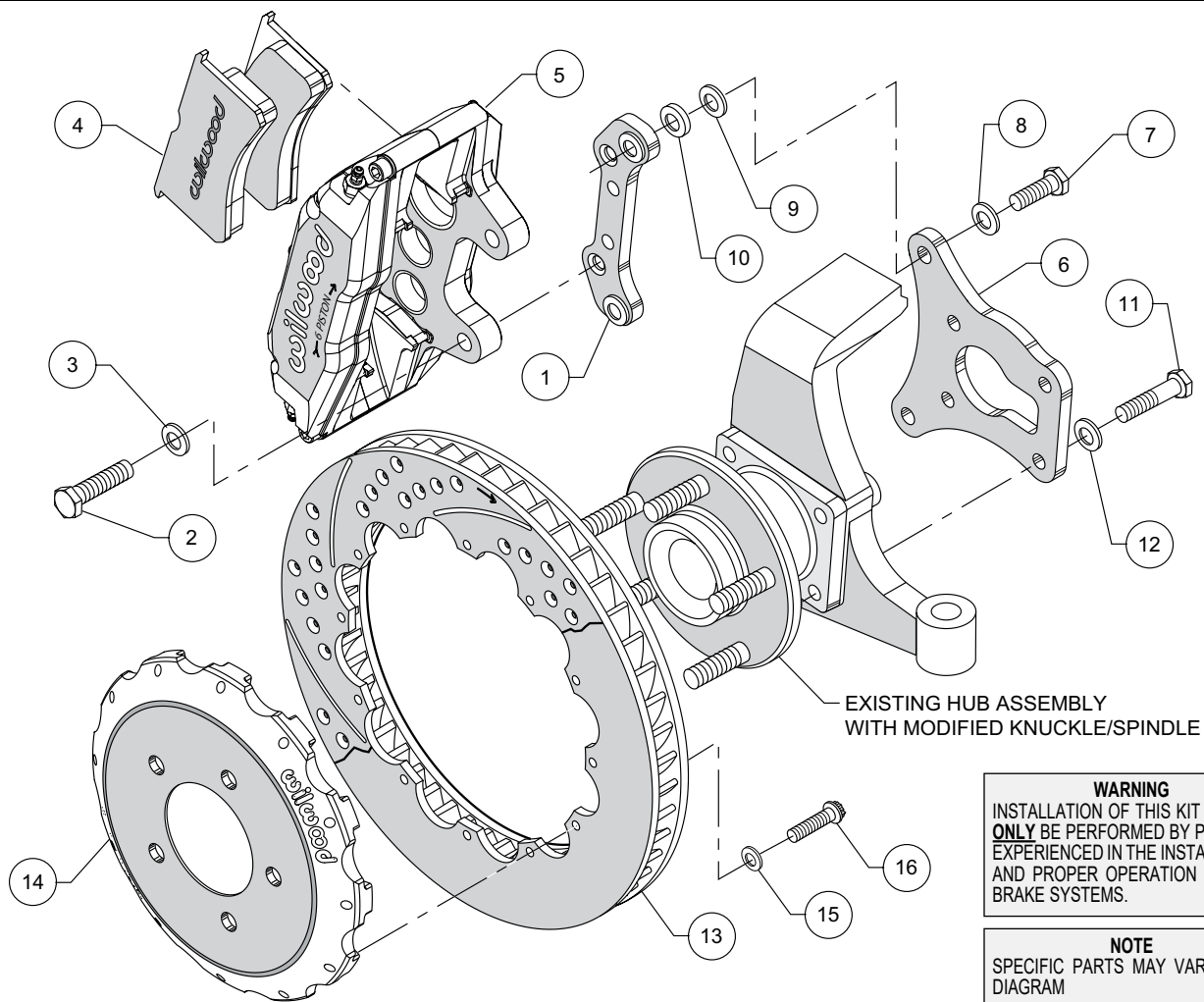


Figure 1. Typical Installation Configuration

Parts List

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	250-6839	Bracket, Caliper Mounting	2
2	230-10023	Bolt, 7/16-20 x 1.75" Long, Hex Head	4
3	240-11101	Washer, .453" I.D. x .750" O.D. x .063" Thick	4
4	150-8855K	Pad, BP-10 Compound, Axle Set	1
5	120-13382/83-BK	Caliper, Billet Superlite 6, Black one each, right and left hand	2
6	250-6838	Bracket, Spindle Mounting	2
7	230-9897	Bolt, 7/16-20 x 1.25" Long, Hex Head	4
8	240-11101	Washer, .453" I.D. x .750" O.D. x .063" Thick	4
9	240-1848	Washer, Flat, .441" x 1.003" O.D x .030" Thick	16
10	300-3686	Spacer, Caliper Bracket, .160 Long	4
11	230-6891	Bolt, M10-1.5 x 60mm, Hex Head	8
12	240-17663	Washer, 10mm I.D. x 18mm O.D. x 1.6mm Thick	8
13	160-12961/62-GTB	Rotor, GT, 1.10" Thk x 12.88" Dia, 12 x 8.75" Bolt Circle, one each R/L	2
13A	160-13543/44-BK	Rotor, SRP Drilled and Slotted, one each, right and left hand	2
14	170-6837	Hat	2
15	240-11240	Washer, .265" x .500" O.D. x .063" Inch Thick	24
16	230-6737	Bolt, 1/4-20 x 1.00 Long, 12 Point	24
Optional	220-6746	Braided Stainless Steel Hose Kit (Not Included)	1

NOTES: Part Number 230-4572 Rotor Bolt Kit, includes part numbers 230-6737 and 240-11240
 Part Number 230-6840 Caliper Bracket Mounting Bolt Kit, includes P/N's 230-9897, 240-11101 and 240-1848
 Part Number 230-6841 Spindle Bracket Mounting Bolt Kit, includes P/N's 230-6891, and 240-17663
 Part Number 230-6884 Caliper Mounting Bolt Kit, includes P/N's 230-10023, and 240-11101
 Item 13A is an optional item and is included in the (D) kits. Add "-D" to end of part number when ordering

General Information

Installation of this kit should **ONLY** be performed by persons experienced in the installation and proper operation of disc brake systems. Before installation begins, please read the complete procedure thoroughly to familiarize yourself with the process and double check the following items to ensure a trouble-free installation.

- Make sure this is the correct kit to match the exact make and model year of the vehicle's spindle (i.e., brackets for a 1990 Camaro spindle will not fit a 1997 Camaro spindle). On some models of disc brake spindles there are "ears" where the OEM calipers were mounted and these "ears" interfere with the assembly of the Wilwood disc brake kit. See Figure 2 for spindle modification instructions.
- Verify the hat stud pattern in this kit matches the stud pattern of the vehicle's wheels.
- Inspect the package contents against the parts list to ensure that all components and hardware are included.

Disassembly & Spindle Modifications

- 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. Unbolt the existing OEM caliper and rotor but do not totally unhook the caliper at this time. Using wire, hang the caliper out of the way.
 - Disconnect sway bar from lower a-arm. Disconnect ABS sensor from rear of spindle. Place a hydraulic jack under a-arm and apply minimal tension for support. Remove cotter pin and

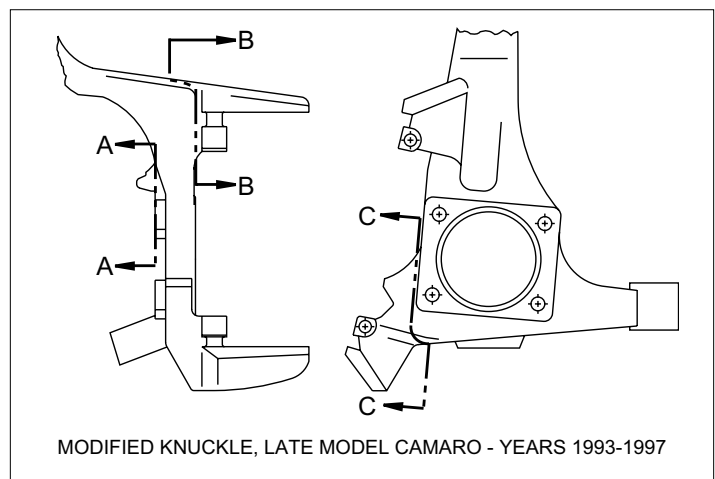


Figure 2. Knuckle Modifications

loosen nuts on upper and lower knuckle ball joints. Using a ball joint separator (pickle fork), insert between ball joint and knuckle to pull apart ball joint from knuckle. Loosen hydraulic jack support under a-arm to remove knuckle from between upper and lower a-arm. Remove four bolts holding the hub to knuckle and remove hub from knuckle. Thoroughly clean the knuckles before machine work.

- The following knuckle modifications should be performed by a qualified machinist. Refer to Figure 2. Only one view of the steering arm/knuckle is shown, but the modifications need to be performed on both sides.

With the knuckle positioned in its correct upright position you must remove the protrusion indicated by arrow "A". Also, cut off the OEM mounting ears indicated by arrow "B" and remove the bottom OEM caliper mounting ear shown with arrow "C". Remove all sharp corners and burrs with a file or grinder.

Pre-install Verification

•Before installation of modified knuckles on vehicle, preinstall the caliper spindle mounting brackets (6) to backside of knuckles to be sure bracket lays flat on mounting surface and clears machined away areas for clearance verifications. If bracket (6) do not fit properly, more machining maybe necessary. Then install knuckle back on vehicle in reverse order of disassembly.

Assembly Instructions

NOTE: Numbers in parenthesis refer to the parts list and Figure 1 on the preceding pages.

CAUTION: All mounting bolts must fully engage clinch nuts. Be sure to check that all bolts are either flush or protruding through flanged side of clinch nut after shimming.

- Mount bracket (6) to the backside of the spindle/hub assembly using bolts (11) and flat washer (12).
- With the larger I.D. side of the rotor (13) facing away from the hat (14), bolt rotor to hat using washers (15) and bolts (16). Apply red *Loctite*® 271 to the bolt threads and torque to 155 **in-lb** using a criss-cross pattern. 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 4. Please refer to Wilwood's data sheet DS-386 (available at www.wilwood.com/Pdf/DataSheets/ds386.pdf) for complete safety wire installation instructions. Slip the rotor and hat combination onto the wheel studs and hold in place with three lugs nuts.
- Apply red *Loctite*® 271 to bolt threads (2) before mounting caliper to the caliper mounting bracket (1). **NOTE:** Be sure the heads of the 7/16-20 bracket (1) insert nuts are facing outward toward the wheel.

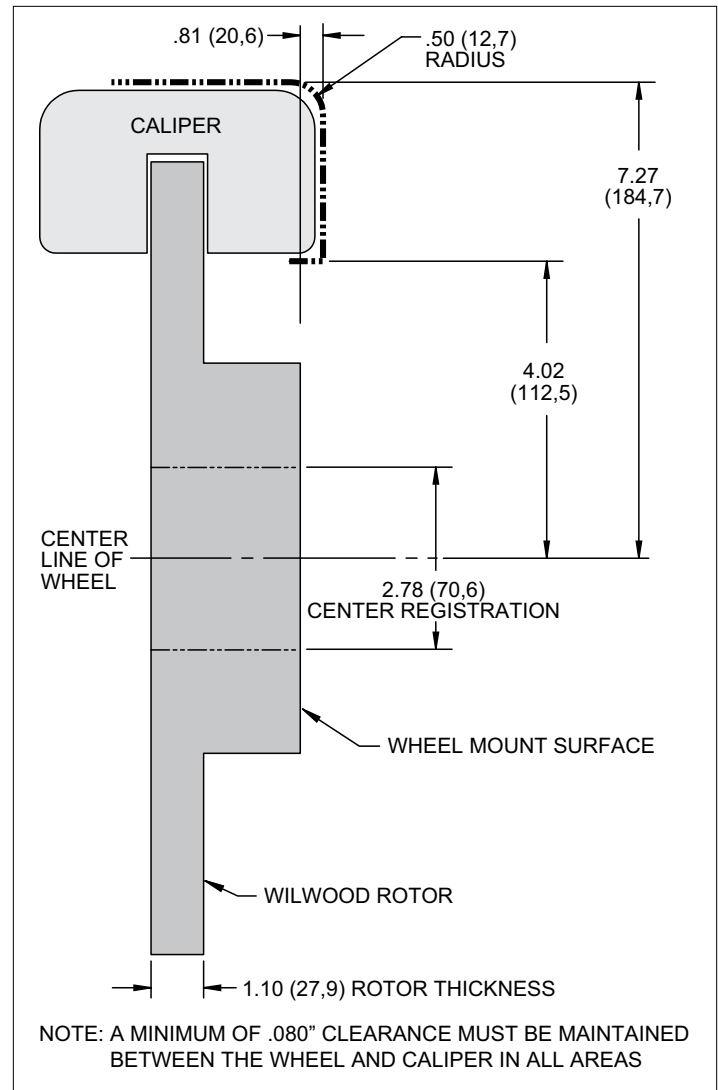


Figure 3. Wheel Clearance Diagram

•**NOTE:** Please reference the caution statement at the beginning of the assembly instructions. This kit contains distinct right and left hand calipers that must be mounted in a specific direction, as described below. Mount the caliper (5) onto the caliper mounting bracket (1) using bolts (2) and washers (3), as shown in Figure 1. Torque bolts (2) to 60 ft-lb. Mount the caliper/bracket combination to the spindle bracket (6) using bolts (7) and washers (8). Initially place one .030" thick shim (9), and spacer (10) on each bolt between the two brackets (1 and 6) as shown in 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 mounting bolts and view the rotor (13) through the top opening of the caliper. The rotor should be centered in the caliper. If not, adjust by adding or subtracting shims (9) between the caliper mounting brackets (1) and the spindle brackets (6). Always use the same amount of shims on each of the two mounting bolts. **NOTE:** The end of each bolt must be flush with or slightly protruding from the head of the clinch

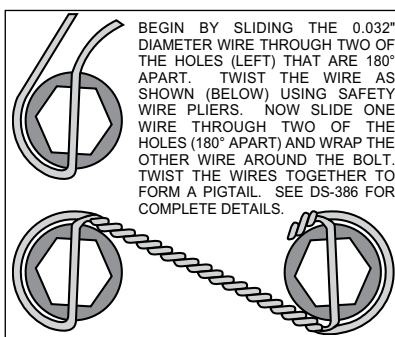


Figure 4. Safety Wire Diagram

nut. If necessary place spare shims between spacer (10) and caliper mounting bracket to achieve the proper clinch nut engagement. Once the caliper alignment and clinch nut engagement are correct, remove the bolts one at a time, apply red *Loctite*® 271 to bolt threads, and torque to 60 ft-lb.

•Remove the bridge bolt from the caliper (5) and install the disc brake pads (4). Reinstall the caliper bridge bolt.

•Disconnect the OEM brake hoses from the brake line at the body & finish removing the OEM caliper.

•**NOTE:** OEM rubber brake hoses generally cannot be adapted to Wilwood calipers. The caliper inlet fitting is a 1/8-27 NPT. The preferred method is to use steel adapter fittings at the caliper, either straight, 45 or 90 degree (use PTFE tape on pipe threads for proper sealing to caliper) and enough steel braided line to allow for full suspension travel and turning radius, lock to lock. **Carefully route lines to prevent contact with moving**

Assembly Instructions (Continued)

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. Wilwood offers a hose kit, P/N 220-6746, which includes hoses, fittings, etc., all in one package for this application.

- 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.

- Bleed the brake system. Reference the '**Additional Information and Recommendations**' on page 5 for proper bleeding instructions.
- Install the wheel and torque the lug nuts to manufacturer's specifications.
- Bed-in the brake pads per the procedure on page 8.

Additional Information and Recommendations

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

This brake 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.

Use a Wilwood adjustable proportioning valve if necessary to achieve proper brake balance, or

Use a Wilwood brake pedal/balancebar assembly with dual master cylinders (requires custom mounting as used in fabricated chassis race cars). A balance bar brake system permits incremental front to rear brake pressure adjustments.

- For optimum performance, fill and bleed the new system with Wilwood Hi-Temp^o 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.**
- If the master cylinder is mounted lower than the disc brake calipers, some fluid flowback to the master cylinder reservoir may occur, creating a vacuum effect that retracts the caliper pistons into the housing. This will cause the pedal to go to the floor on the first stroke until it has "pumped up" and moved all the pistons out against the pad again. A Wilwood in-line 2 lb Residual Pressure Valve, installed near the master cylinder will stop the fluid flowback and keep the pedal firm and responsive.
- 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) will 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 obtain 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

<u>PART NO.</u>	<u>DESCRIPTION</u>
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
290-0632	Wilwood Racing Brake Fluid (Hi-Temp ^o 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)
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
220-6746	Stainless Steel Braided Flexline Kit, 1993-2002 Camaro, Front