

ASSEMBLY INSTRUCTIONS
FOR
SUPERLITE 6 BIG BRAKE FRONT HAT KIT
ROAD RACE APPLICATION, 12.90" DIAMETER VENTED ROTOR

1998 - 2002 CAMARO / FIREBIRD

PART NUMBER GROUP

140-7190

**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?
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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.
- 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

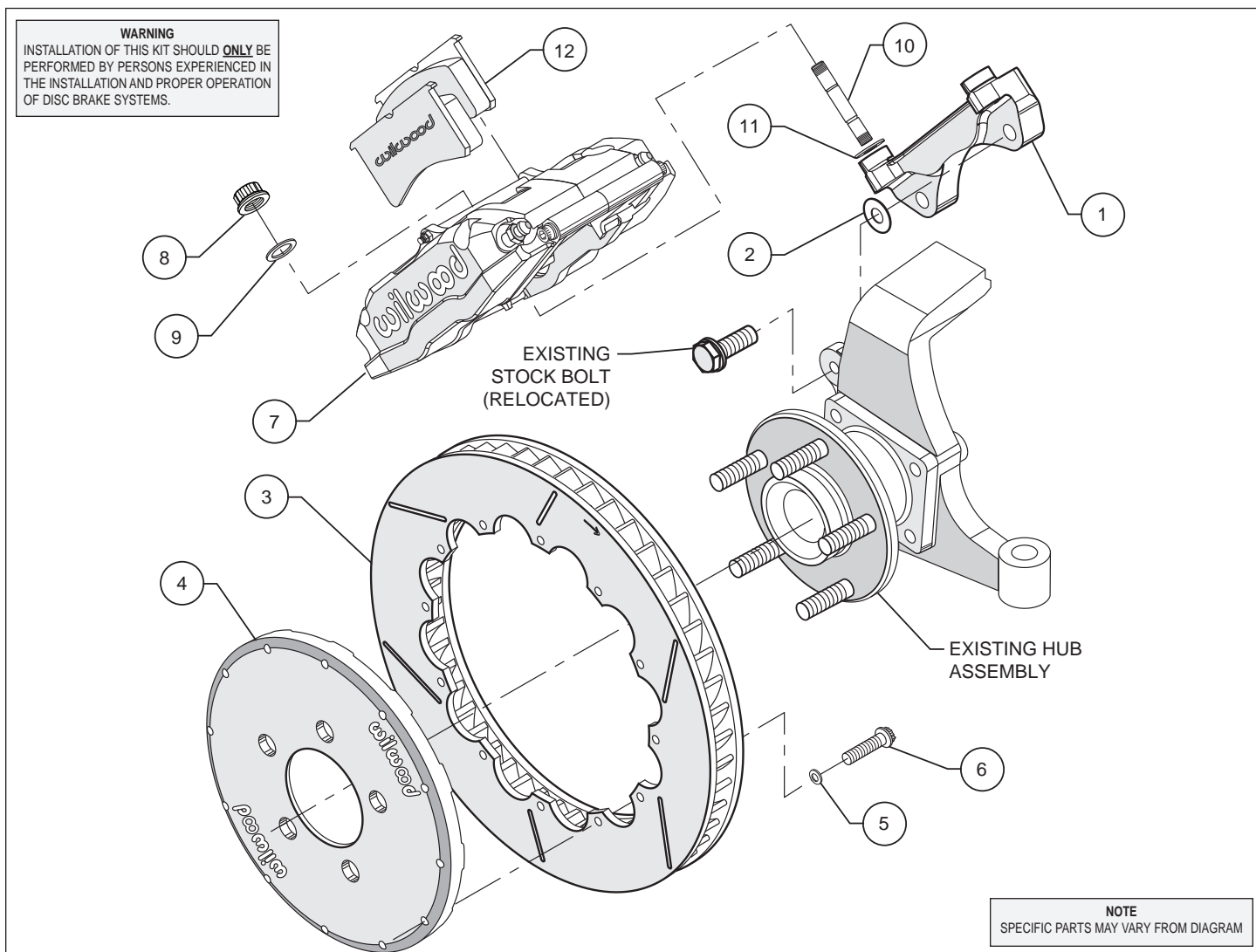


Figure 1. Typical Installation Configuration

Price List

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	250-7690	Bracket, Caliper Mounting	2
2	240-6320	Shim, 0.033 Thick	8
3	160-4564/65	Rotor, 1.25" Thk x 12.90" Dia, 12 x 8.75" Bolt Circle	2
4	170-6837	Hat	2
5	240-11240	Washer, .265 I.D. x .500 O.D. x .063 Thick	24
6	230-6737	Bolt, 1/4-20 x 1.00 Long, 12 Point Stainless	24
7	120-6385/86-RS	Caliper, Billet Superlite 6R/ST	2
8	230-9183	Nut, 3/8-24, Self-Locking 12 Point	4
9	240-10190	Washer, .391 I.D. x .625 O.D. x .063 Thick	4
10	230-9078	Stud, 3/8-16 x 3/8-24 x 2.5 long (pre installed in bracket)	4
11	240-1159	Shim, 0.035 Thick	16
12	15H-8114K	Pad, Polymatrix "H" Compound, Axle Set	1
13	220-6746	Braided Stainless Steel Hose Kit (not shown)	1

NOTES:

Part Number 230-4572 Rotor Bolt Kit, includes part numbers 230-6737 and 240-11240

Part Number 250-7691 Caliper Bracket Mounting Bolt Kit, includes P/NC 230-9183, 230-9078, 240-1159, 240-10190, 240-6320 & 250-7690

General Information and Dssembly 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 and support the front suspension according to the vehicle manufacturer's 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. Save the stock caliper mounting bracket bolts, they will be utilized during reassembly, then slide off the stock hat and rotor assembly. Optional: Removal of the dust face plate to facilitate easy removal of additional parts and/or for aesthetic purposes if you will be running spoked wheels and would like to see the slotted rotor.

•Clean and de-grease the spindles as well as the stock caliper bracket bolts. Remove all nicks or burrs on the spindle snout and threads.

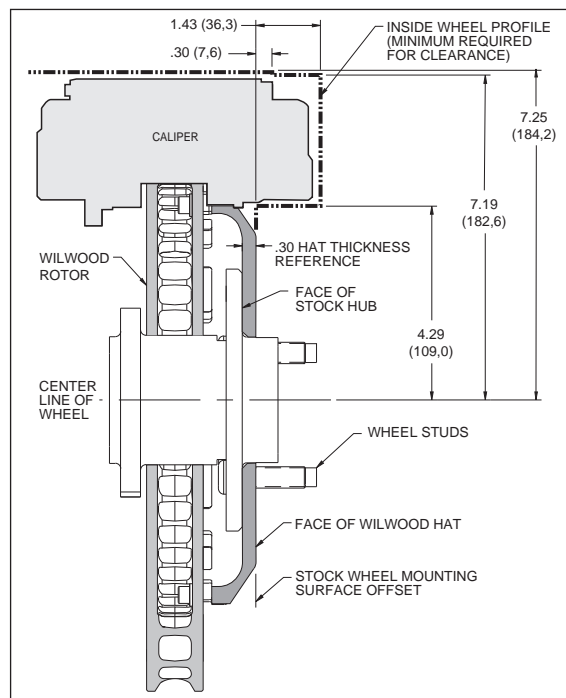


Figure 2. Wheel Clearance Diagram

Assembly Instructions

Assembly Instructions (numbers in parenthesis refer to the part list/diagram on the preceding pages):

- The caliper mount bracket assembly (1) should be installed first with clean, dry threads on the mounting bolts. Install the bracket using the original caliper mount bolts. The bolts will now pass through the spindle from the opposite direction that they were removed (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. Use one thin shim (2) between the bracket and spindle during initial trial fitting. 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.

- Assemble the rotor (3) to the hat (4) with the bolts (6) and washers (5) provided in the configuration pictured in Figure 1. Be sure all bolts thread in smoothly and are snug. Using an alternating sequence, apply red *Loctite*® 271 to the threads and torque bolts to 155 **in-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.

- Install the hat and rotor assembly onto the 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 several lug nuts to hold the rotor and hat firmly against the hub during the next phases of the installation and clearance checking procedures.

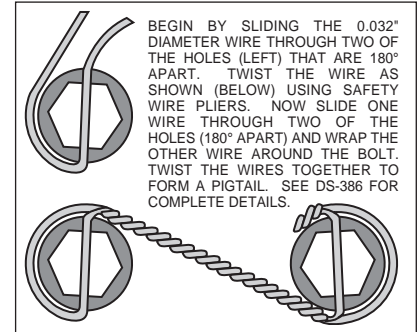


Figure 3. Safety Wire Diagram

- Install one shim (11) over each stud (10) on the radial mount bracket. Slide the caliper (7) in place over the studs and rotors and install the washer (9) and lock nut (8) to hold the caliper in place. The caliper bleed screws should be pointing up. Snug the lock nuts (8) and check that the rotor (3) is centered in the caliper (7). Add or subtract .033" shims (2) 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 (12) into place. They should install easily without interference. Check that the outside radius of the brake pad is aligned with the outside diameter radius of the rotor face. Add or subtract shims (11) 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 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. Lubricate caliper mounting studs and nuts with lightweight oil, reinstall the caliper, torque the caliper nuts (8) to 30 ft-lbs.

- Install braided flex line 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 (7). Finally, install the flex line (P/N 220-6411) to the two previously installed fitting. **NOTE: Carefully route lines to prevent contact with moving suspension, brake, or wheel components.** Periodically check hose and components for any wear. Wilwood brake and 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.

- 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 general information and recommendations below for proper bleeding instructions.

- Repeat the procedure for the other wheel.

Additional Information and Recommendations

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

•OE Style or Single Mount Race Pedal with Tandem Outlet Master Cylinder:

Front to rear caliper piston sizes, rotor diameters, and pad compounds must be initially configured to provide the correct range of vehicle bias when using a single bore / tandem outlet master cylinder. If excessive rear brake bias is experienced, an inline adjustable proportioning valve can be used to decrease the rear line pressure to help bring the vehicle into balance. If excessive front brake bias is experienced, first consideration should be given to increasing the rear brake bias to bring the vehicle into overall balance.

•Race Pedal with Dual Master Cylinders and Balance Bar:

Master cylinders must be sized to match the calipers and allow the pedal balance bar to operate near the center of its travel. If it is not possible to fine tune the bias within the adjustable range of the balance bar, then consideration must be given to changing a master cylinder bore size or some other aspect of the brake system to bring the car into balance. Larger bore master cylinders will generate less pressure while decreasing pedal travel. Smaller bores master cylinders will generate higher line pressures with an increase in pedal travel.

NOTES:

1. New master cylinders should be bench bled prior to installation.
2. If the master cylinder fluid reservoirs are mounted lower than the calipers, an in-line 2 lb. residual pressure valve may be necessary to prevent fluid flowback and the subsequent long initial pedal stroke required to actuate the system.

For all types of pedals and master cylinders:

- Test the brake pedal. It should be firm and consistent. If not, first try re-bleeding the system. The pedal should stop at least 1" or more from the floor under heavy load. Pedal height must be comfortable to the driver.
- If the pedal is initially firm, but then travels to the floor, check the entire system for leaks. This may also be a sign of a faulty master cylinder.
- If the pedal is constantly spongy, and repeated bleeding does not correct the problem, the master cylinder selection and pedal geometry may need re-evaluated.
- If you are still experiencing difficulty after all instructions have been followed, consult your chassis shop, the retailer where the kit was purchased, or the Wilwood Tech Line.

Test Driving the Vehicle:

- Make a series of light stops at low speed to assure proper system operation. Then proceed to the rotor and pad bedding procedure.

New Rotor Bedding:

- Make a series of light, then medium, then gradually harder stops to bring the rotors up to near operating temperature. Then use a few cool down laps to allow the rotors to cool. Avoid using the brakes during the cool down. This will act as the final stress relief on the rotors. If possible, allow the rotors to cool completely before competition and subsequent pad bedding. Be cautious to avoid heat shocking the rotors by heating or cooling them too quickly when they are new. It is also a good practice to warm the brakes prior to any competition to avoid thermal shock and potential stress fractures.

New Pad Bedding:

- This procedure is similar to the rotor bedding process. Make a series of light, then medium, then gradually harder stops to bring the pads to full operating temperature. Then use a few cool down laps to allow the pads to cool. Avoid using the brakes during the cool down. If possible, allow the brakes to cool completely before participating in competition. This process will properly mate the pads with the rotor surface and act as the final curing step for the friction compound. Following this procedure will assure the best performance and service life from your brakes.

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>
260-1874	Wilwood Residual Pressure Valve (2 lb for disc brakes)
260-8419	Wilwood Proportioning Valve, Knob Style
260-8420	Wilwood Proportioning Valve, Lever Style
290-6209	Wilwood Racing Brake Fluid (EXP 600 Plus) (16.9 oz)
340-1285	Wilwood Floor Mount Brake Pedal (with balance bar)
340-1287	Wilwood Swing Mount Brake Pedal (with balance bar)
260-3376	Wilwood 7/8 inch Bore Combination Master Cylinder
260-5920	Wilwood 13/16 inch Bore Combination Master Cylinder
260-8555	Wilwood 1 inch Aluminum Tandem Chamber Master Cylinder
260-8556	Wilwood 1-1/8 inch Aluminum Tandem Chamber Master Cylinder
15A-5938K	PolyMatrix 7420 "A" Compound Brake Pads (high temp race only)
15B-5939K	PolyMatrix 7420 "B" Compound Brake Pads (high temp race only)
15E-6084K	PolyMatrix 7420 "E" Compound Brake Pads (medium temperature)
150-8854K	BP-10 7420 Compound Brake Pads (low to medium temperature)
130-5972	Caliper O-Ring Seal Kit
220-6746	Flexline Stainless Steel Hose Kit

(Consult the Wilwood Tech Catalog for a complete parts list)