

ASSEMBLY INSTRUCTIONS
FOR
AFCO RACING SPINDLE/STRUT AND
SANTHUFF'S SPINDLE/STRUT*

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

DYNALITE SINGLE FLOATER FRONT DRAG RACE BRAKE
KIT WITH 10.00" DIAMETER DRILLED STEEL ROTOR

BASE PART NUMBERS

140-16558 & 140-16559

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
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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:

- This brake kit does not include flex lines. 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 production differences and other variations from strut to strut, 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.

Exploded Assembly Diagram

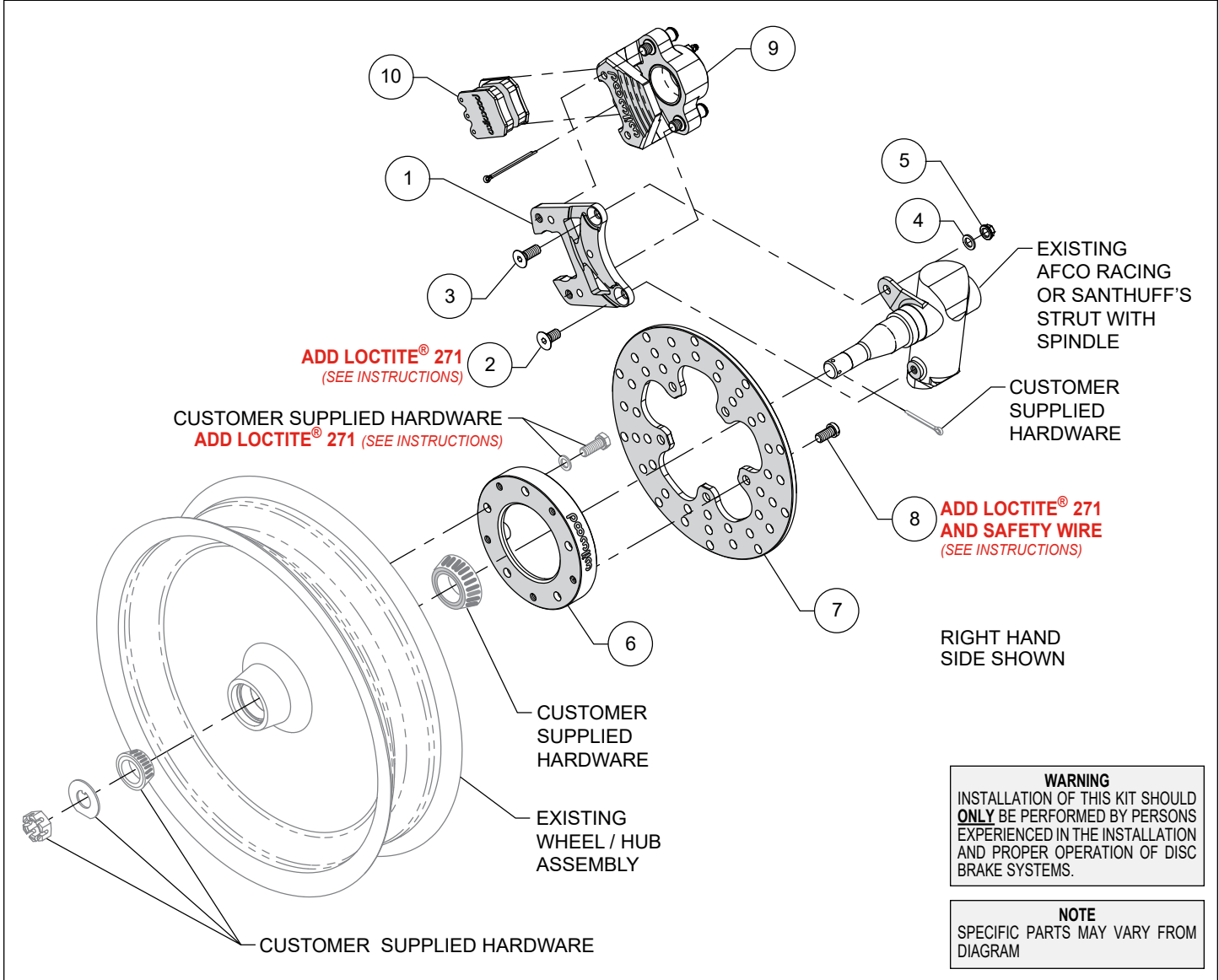


Figure 1. Typical Installation Configuration

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.

Parts List

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	249-16560/61	Bracket, Caliper Mounting	2
2	230-16564	Bolt, 3/8-24 x .75" Long, Flat-Head, Hex Drive	2
3	230-3206	Bolt, 3/8-24 x 1.00" Long, Flat-Head, Hex Drive	2
4	240-10190	Washer, .391" I.D. x .625" O.D. x .063" Thick	2
5	230-16550	Nut, 3/8-24, Self-Locking, Hex Head	2
6	170-16562	Hat, 5 x 4.75" Bolt Pattern, .750" Offset (included in kit P/N 140-16558)	2
6	170-16563	Hat, 5 x 4.75" Bolt Pattern, .900" Offset (included in kit P/N 140-16559)	2
7	160-1602	Rotor, 0.25" Thick x 10.00" Diameter, 5 x 5.00" Bolt Circle, Drilled	2
8	230-16619	Bolt, 3/8-16, .75" Long, Socket Head	10
9	120-2498	Caliper, Dynalite Single Floater, Anodized	2
10	150-20-6812K	Pad, BP-20 Compound	1

NOTES:

Part Number 230-16618 Hat/Rotor Bolt Kit, includes P/N 230-16619

Part Number 230-16617 Bracket Bolt Kit, includes P/N's 230-3206, 230-16550, 230-16564, and 240-10190

General Information

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

Make sure this is the correct kit to fit your spindle. This kit is designed for direct bolt-on installation to front Afco Racing strut/spindles and Santhuff's strut/spindles.

Verify your wheel bolt pattern matches the Wilwood hat bolt pattern.

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

Verify your wheel clearance using Figure 2.

Disassembly Instructions

•Raise the front wheels off the ground and support the front suspension per vehicle manufacturer's guidelines.

•Disassemble the existing front brakes (if applicable).

•Remove any nicks or burrs on the wheel/hub assembly and spindle that may interfere with the installation of the new brake components.

•Clean and de-grease the spindle and wheel/hub assembly.

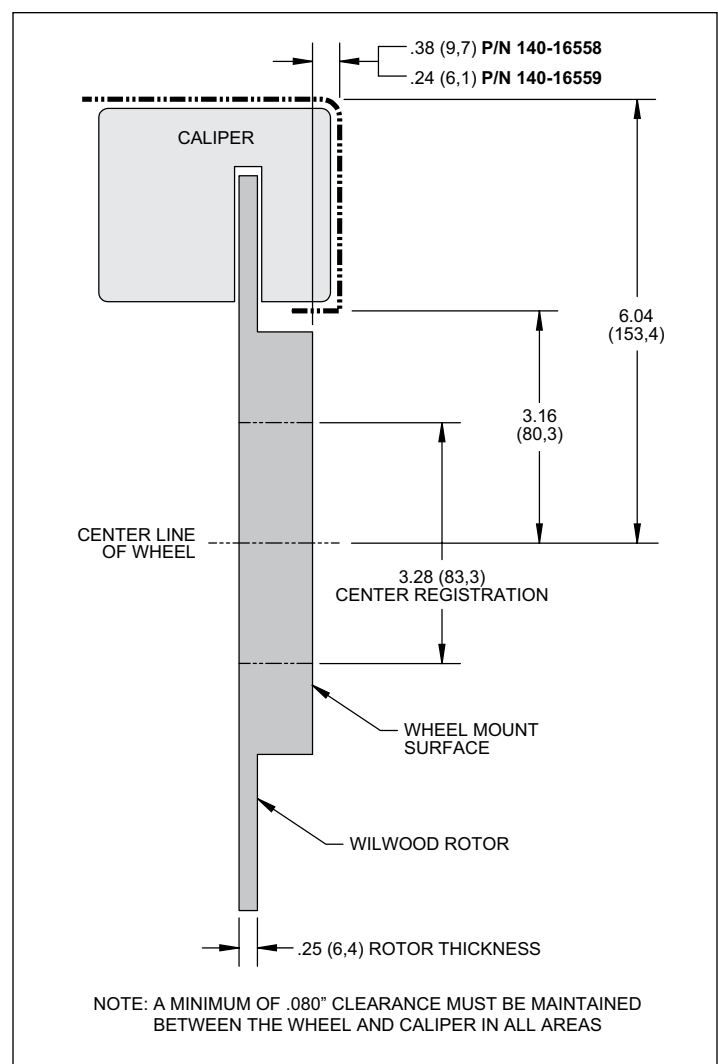


Figure 2. Wheel Clearance Diagram

Assembly Instructions (Continued)



Photo 1 - Afco strut



Photo 2 - Santhuff's strut

NOTE: Numbers in parenthesis refer to the parts list and Figure 1 on the preceding pages.
CAUTION: All mounting bolts must fully engage threaded holes. Some hardware to be supplied by customer.

- Orient the caliper mounting bracket (1) as shown in Figure 1 and Photos 1 and 2. **NOTE:** There are distinct right and left side brackets. The bracket must fit squarely against the mount bosses on the spindle/strut. Inspect for interference from machining ridges, burrs, etc. Install bracket to upper tab on spindle/strut using the longer bolt (3), washer (4), and self locking nut (5), Photo 3. Torque nut to 30 ft lbs. Apply red *Loctite*® 271 to threads of shorter bolt (2) and install on lower mounting hole. Torque bolt to 30 ft. lbs.



Photo 3



Photo 4

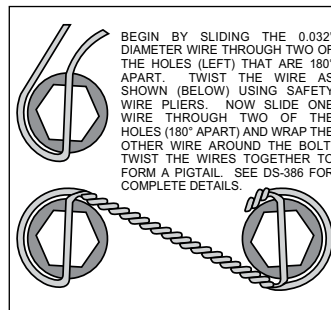


Figure 3.
Safety Wire Diagram

- Orient the wheel/hub and hat (6) as shown in Figure 1. Mount the hat (6) to wheel using customer supplied bolts and washers, Photo 4. Torque bolts to wheel manufacturer's specifications.

- Attach rotor (7) to hat (6) using bolts (8), Photo 5. Using an alternating sequence, apply red *Loctite*® 271 to the threads, and torque to 260 in-lbs.



Photo 5

Safety wire bolts using standard 0.032 inch diameter stainless steel safety wire as shown in Figure 3. Refer to Wilwood's data sheet DS-386 (available at www.wilwood.com/Pdf/DataSheets/ds386.pdf) for complete safety wire installation instructions.

- Pack the large inner bearing cone (not included with kit) with high temperature disc brake bearing grease (available from your local auto parts store) and install into the backside of the wheel/hub.
- If applicable, install a new grease seal (not included with kit) by pressing into the backside of the hub.
- Pack the small outer bearing cone (not included with kit) with high temperature disc brake bearing grease and install into the wheel.
- Slide the wheel/rotor assembly onto the spindle. Secure using spindle washer and spindle nut (both not included with kit).

Assembly Instructions (Continued)

- Adjust bearings per wheel/hub manufacturer's specifications. Install a new cotter pin and install dust cap (both not included with kit).

- Mount the caliper (9) onto the bracket (1), Photo 6. Apply red *Loctite*® 271 to the slide pin threads contained within the caliper (9) and torque pins to 42 ft-lb.

- Remove the cotter pin from the caliper. Insert the brake pads (10) into the caliper (9), with the friction material facing the rotor as shown in Figure 1, Photo 7. Secure the brake pads in place by reinstalling the cotter pin, Photo 8. The bracket (1) acts as the pad retainer for the inboard side pad.

- NOTE:** *Rubber brake hoses are not recommended for competition use and generally cannot be adapted to Wilwood calipers. The caliper inlet fitting is a 1/8-27 NPT.* The preferred method is to use steel 1/8-27 NPT AN (37 degree flare) fittings at the caliper (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 suspension, brake or wheel components. It is the installer's responsibility to properly route and ensure adequate clearance and retention for brake hose components.

- It is also 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.



Photo 6



Photo 7

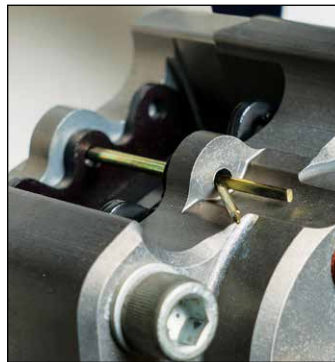


Photo 8

- Bleed the brakes system, referring to the additional information and recommendations on page 6 for proper bleeding instructions. Check system for leaks after bleeding.

- Bed-in the brake pads per the procedure on page 6.



Photo 9 - Afco strut



Photo 10 - Santhuff's strut

Additional Information and Recommendations

- 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. If the caliper is fitted with bleed screws on four corners, make sure the bottom bleed screws are tight. Only bleed from the top bleed screws. **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 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, either air may be trapped in the system, or a master cylinder with increased capacity (larger bore diameter) may be required. Wilwood offers various lightweight master cylinders with large fluid displacement capacities (custom fabricated mounting may be required).

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.

Pad and Rotor Bedding (Continued)

- 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.

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
260-8420	Wilwood Proportioning Valve, Lever Style
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
260-8555	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