

INSTALLATION INSTRUCTIONS
FOR
SHORT REMOTE MASTER CYLINDER KIT, BANJO

PART NUMBER(S)

260-13618, 260-13619, 260-13620
260-13621, 260-13622, 260-13623

**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.



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wilwood
DISC BRAKES

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.

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.

Minimum Mounting Requirements, Variations

Four Different Master Cylinder Combinations Available in One Kit

Wilwood's new short remote master cylinder combination kit can be mounted with the reservoir on the master cylinder body "direct mount" (Figure 1), or the reservoir positioned at a convenient remote location "remote mount" (Figure 2), and then connected via a flexible hose.

Both versions can utilize either a large or small mount reservoir (included in the kit), as your application warrants. Refer to Figure 3 for the minimum mounting requirements before installation begins.

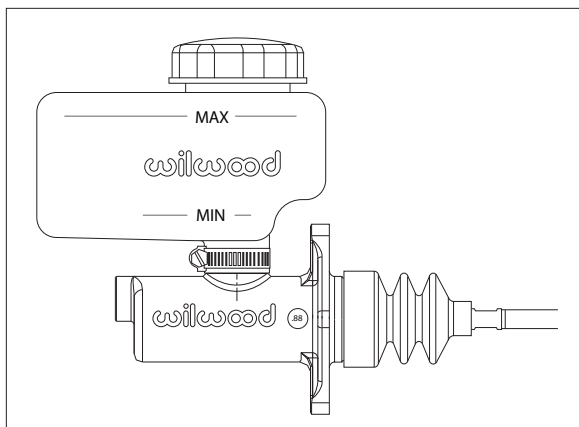


Figure 1. Direct Mounted Master Cylinder

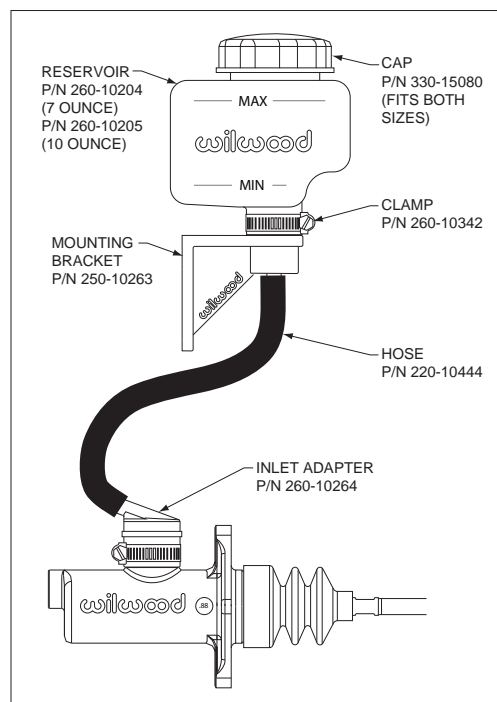


Figure 2. Remote Mounted Master Cylinder

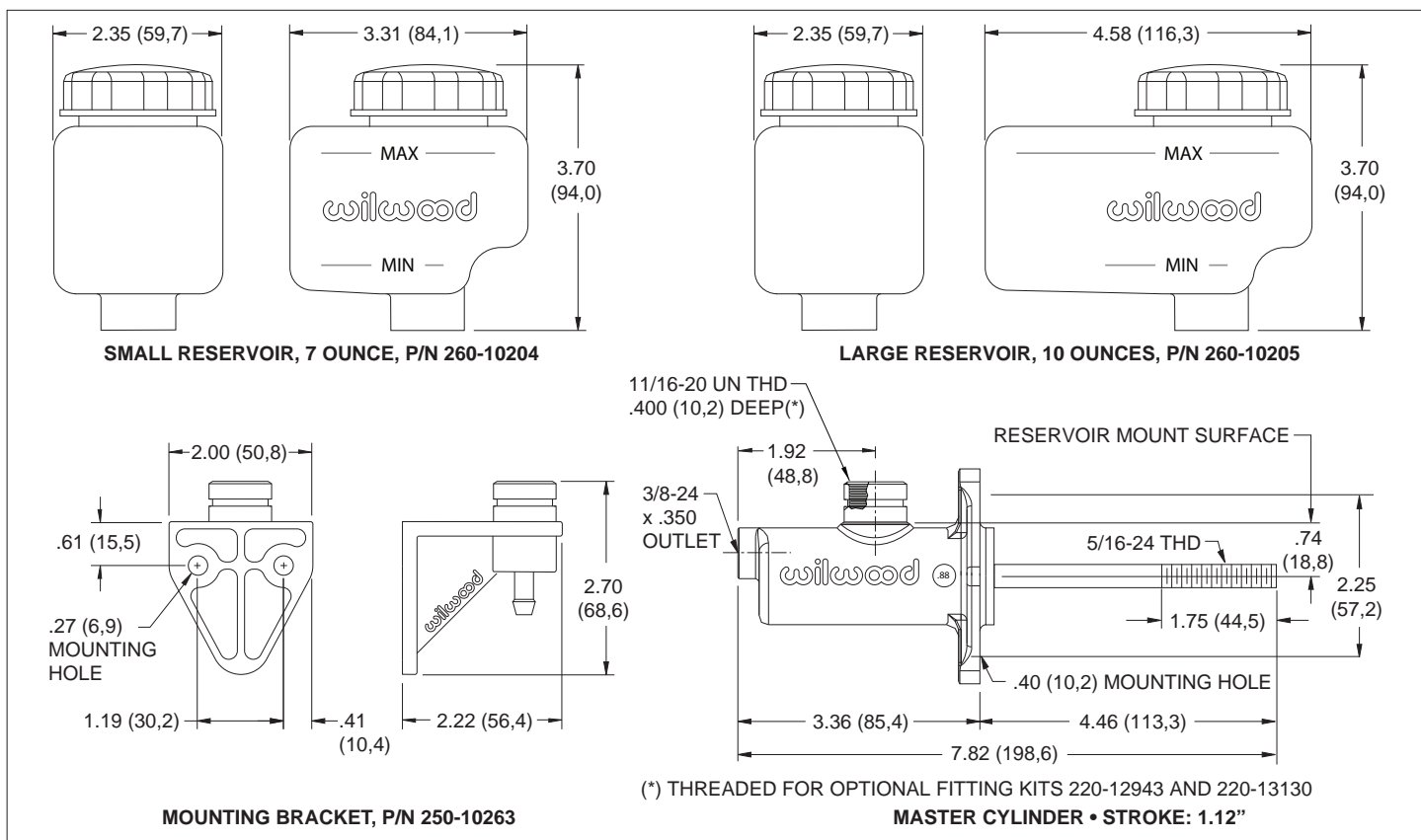


Figure 3. Minimum Mounting Requirements for Mounting Bracket, Master Cylinder and Reservoirs

General Information and Installation Instructions

Installation of this kit should **ONLY** be performed by persons experienced in the installation and proper operation of disc brake systems. Before installing the Wilwood remote master cylinder kit, read the following instructions carefully to ensure a trouble-free installation.

Reservoir Selection:

The small or large reservoir will mount directly on the master cylinder body, or in a remote location using the remote mounting bracket (connected by the brake hose included with the kit). Use the large reservoir with two or more large displacement calipers, otherwise the small reservoir is adequate. Always use the clamps provided with the reservoirs and remote inlet adapter. Do not over tighten.

Mounting Location:

Master cylinders should be firmly mounted to appropriate pedal assemblies and kept away from heat sources. Use tie straps, or small hose clamps to secure hose when remote reservoir is used. Check to verify that the full stroke of pushrod is unimpeded when depressing brake pedal and that pushrod is allowed to fully retract when brake pedal is released.

Residual Pressure Valves:

Use of an external residual pressure valve should be utilized when the master cylinder is mounted below the horizontal plane of the brake calipers (or drum wheel cylinders).

Bench Bleeding Instructions:

- Bolt the cylinder to a pedal bracket or gently hold it in a vise. Remove the reservoir cap. Fill the reservoir approximately 2/3 full with Wilwood Hi-Temp[®] 570 brake fluid (P/N 290-0632), or for severe braking or sustained high heat operation, use Wilwood EXP 600 Plus Racing Brake Fluid (P/N 290-6209). **WARNING: Do not use DOT 5 silicone brake fluid for racing or performance driving, use only DOT 3, DOT 4 or DOT 5.1 brake fluid.** Firmly push the cylinder rod all the way down and place a finger over the outlet fitting. Let the rod return all the way before removing the finger from the outlet hole. Repeat the process until all the fluid coming from the outlet is bubble free. Be sure to watch the fluid level in the reservoir. If the reservoir is less than 1/3 full, add fluid before further bleeding. Temporarily plug the outlet fitting and install the reservoir cap.

Alternative Bench Bleeding Method:

- **Alternative bench bleeding method:** Temporarily install a pipe thread to tubing fitting and clear plastic return line (not supplied) back to the reservoir. Slowly pump and return master cylinder piston throughout its full stroke until no bubbles return to the reservoir. Disconnect tubing and fitting while temporarily plugging the outlet fitting, then install reservoir cap.
- Install the master cylinder in the chassis. Connect the brake line being careful not to let air into the outlet fitting. Thread the push rod into the pedal clevis. Remove the reservoir cap and bleed the brake system as normal. Be sure to refill the reservoir if the fluid level falls below 1/3 full. If a power bleeder is used, follow the manufacturer's instructions.

Bleed The System:

- 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.
- A dual master cylinder application will require three people for bleeding, one pushing the brake pedal and one each on the front and rear of the car. Be sure to bench bleed and fill master cylinder with fluid, then install on the chassis. Elevate the right side of the car and bleed both front wheel and rear wheel outboard bleed screws simultaneously. Repeat the procedure for the inboard bleed screws. Lower the right side and elevate the left side of the car. Simultaneously bleed the left side front and rear outboard screws first, then the inboard. If the brake pedal does not feel firm when applying pressure, repeat this procedure starting with the right side of the car.
- If the master cylinder is mounted lower than the disc brake calipers, some fluid flowback to the master cylinder reservoir may occur, thus 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 has moved all the pistons out against the pad again. A Wilwood in-line two pound residual pressure valve, installed near the master cylinder will stop the fluid flowback and keep the pedal firm and responsive.
- After the system is bled, fill the reservoir to the max line of the top and replace the cap. Adjust the push rod for proper pedal position and tighten the jam nut against the pedal clevis. Make sure that the pedal allows the push rod to return completely.
- Inspect for leaks at all pressure connections. Use a Wilwood Pressure Gauge (P/N 260-0966) to verify line pressure at each caliper and to pre-adjust the balance bar, if used.

Maintenance:

Master cylinder rebuild kits are available for all bore sizes (see ordering information on the next page) and should be rebuilt periodically (reference Figure 4, page 4). Always inspect master cylinders before and after every race for damage or leakage. When rebuilding master cylinders, take care not to damage piston seals. Test master cylinder before usage. Use Wilwood Hi-Temp[®] 570 or EXP 600 Plus brake fluid as a lubricant when assembling.

General Information and Installation Instructions (Continued)

Ordering Information:

5/8" Combination Master Cylinder Kit (1.12 stroke)	260-13618
3/4" Combination Master Cylinder Kit (1.12 stroke)	260-13619
13/16" Combination Master Cylinder Kit (1.12 stroke)	260-13620
7/8" Combination Master Cylinder Kit (1.12 stroke)	260-13621
1" Combination Master Cylinder Kit (1.12 stroke)	260-13622
1-1/8" Combination Master Cylinder Kit (1.12 stroke)	260-13623

5/8" Combination Rebuild Kit	260-10513
3/4" Combination Rebuild Kit	260-10514
13/16" Combination Rebuild Kit	260-10515
7/8" Combination Rebuild Kit	260-10516
1" Combination Rebuild Kit	260-10517
1-1/8" Combination Rebuild Kit	260-10518

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

Exploded Diagram

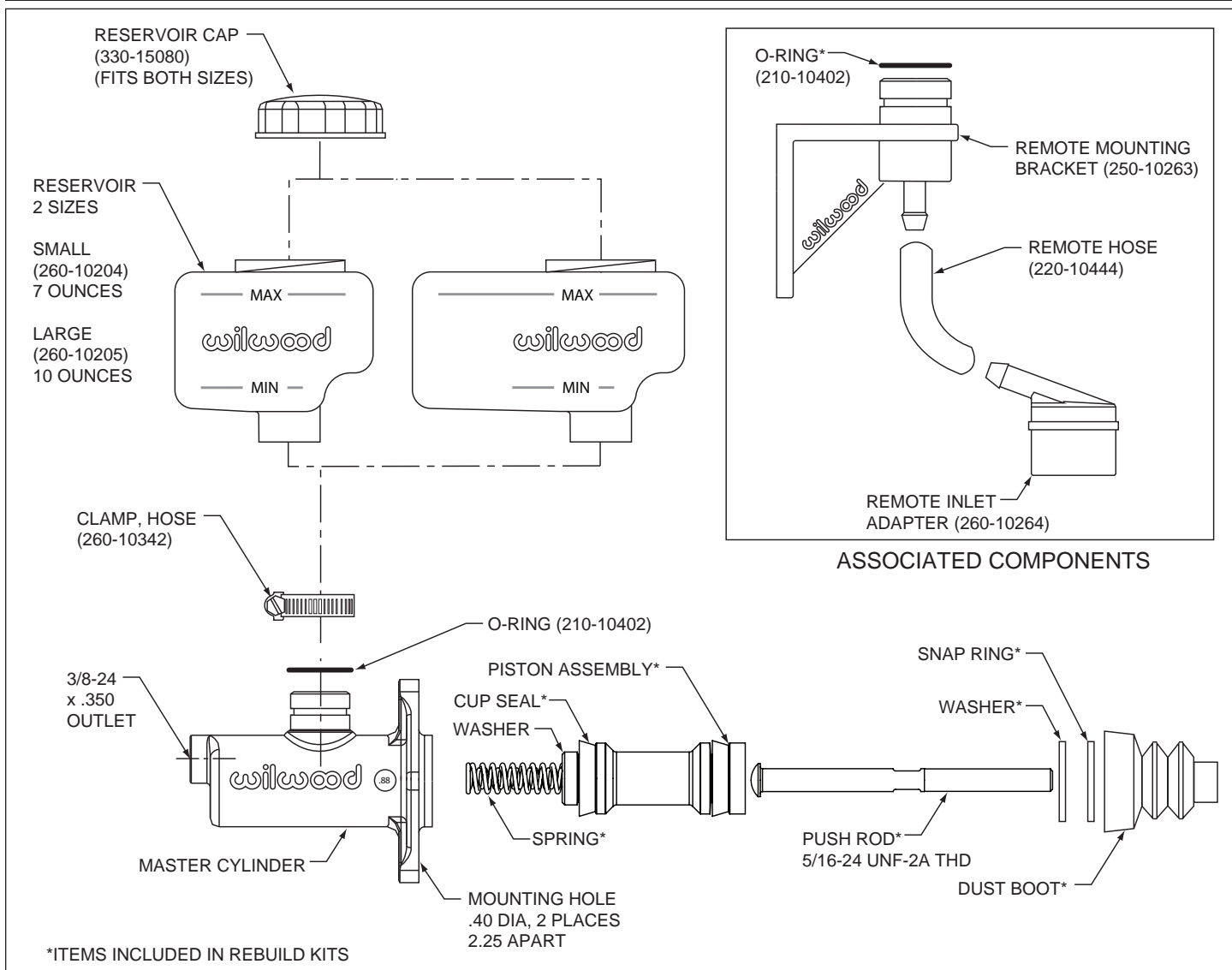


Figure 4. Master Cylinder and Associated Components

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)
260-1876	Wilwood Residual Pressure Valve (10 lb for drum brakes)
260-2220	Wilwood Proportioning Valve
290-0632	Wilwood Racing Brake Fluid (Hi-Temp° 570) (12 oz)
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)
260-6764	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)
350-2038	1971 - 1973 Pinto Rack and Pinion (new, not rebuilt)
270-2016	Quick Release Steering Hub (3/4 inch shaft)
270-2017	Quick Release Steering Hub (5/8 inch shaft)
220-13674	Fitting Kit, Banjo, -3 Male, 3/8-24 Banjo, Bolt and Washers (Consult the Wilwood Catalog for a complete parts list)