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ASSEMBLY INSTRUCTIONS

FOR

DYNALITE PRO SERIES REAR KIT FOR OE PARKING BRAKE WITH 12.27” DIAMETER VENTED ROTOR

1995 - 2000 BMW E36, M3

PART NUMBER GROUP

140-8798

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.**
- **Rear brake kits are not supplied with hydraulic lines or fittings and may require the purchase of additional lines or fittings to complete the installation. Wilwood offers an extensive listing of brake lines and fittings on our web site: www.wilwood.com.**
- **Rear brake kits are not supplied with parking brake cables hardware or adapters. Please see the note in the assembly instructions for vendor recommendations to purchase.**
- **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

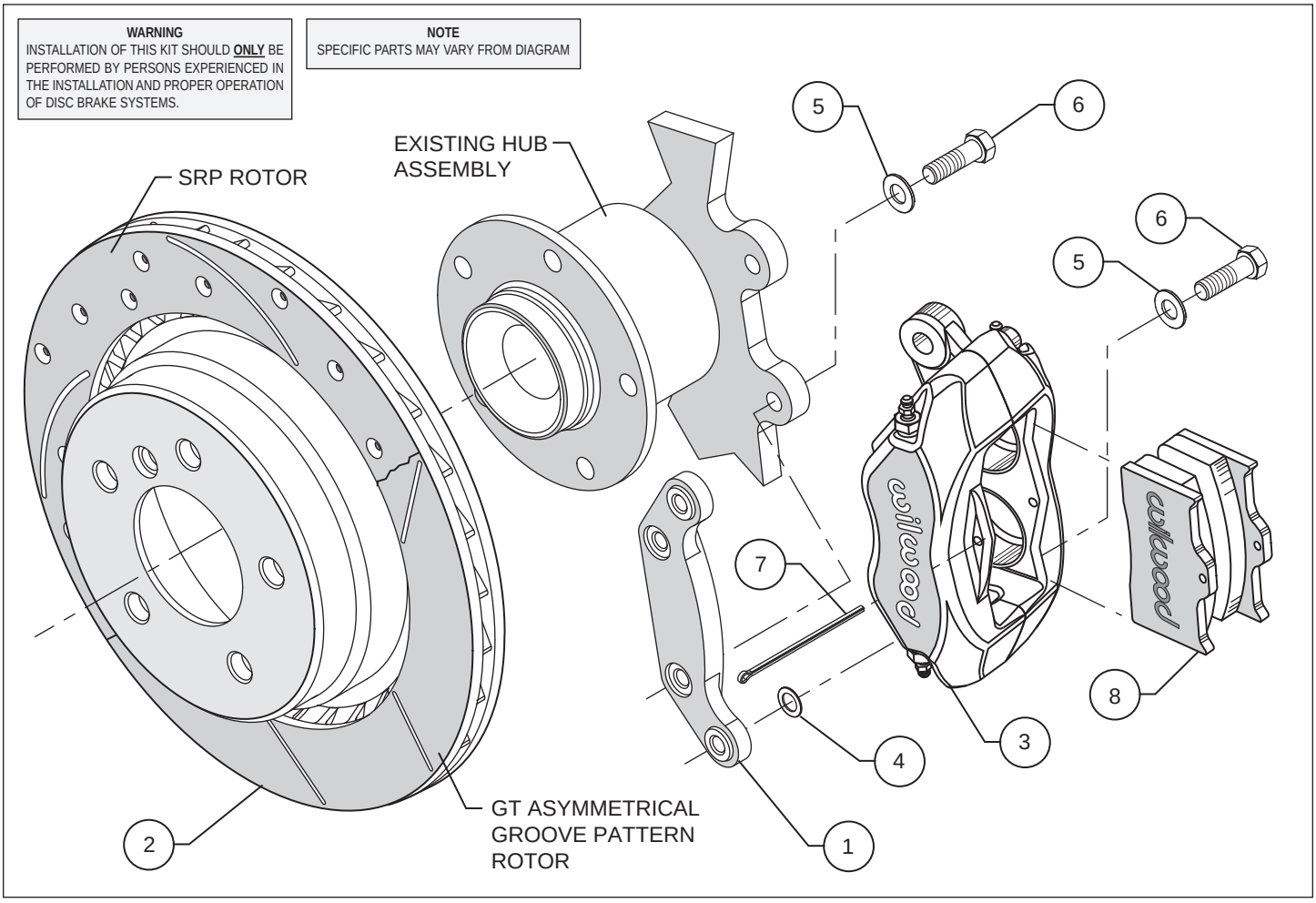

Figure 1. Typical Installation Configuration

Parts List

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	250-8782	Bracket, Caliper Mounting	2
2	160-8683/84	GT Rotor - 0.78" X 12.27" Dia, 5 x 4.75" Bolt Circle (one each, right and left)	2
2A	160-8685/86	Rotor, SRP Drilled and Slotted (one each, right and left)	2
3	120-9706	Caliper, DynaPro	2
3A	120-9706-RD	Caliper, DynaPro, Red	2
4	240-1159	Shim, .035 Thick	32
5	240-10190	Washer, .391 I.D. x .625 O.D. x .063 Thick	8
6	230-10025	Bolt, 3/8-24 x 1.25 Long, Hex Head	8
7	180-0055S	Cotter Pin	2
8	150-8946K	Pad, BP-10, Axle Set	1
8A	15Q-6824K	Pad, PolyMatrix, SRP Rotor Kit	1

NOTES:
Part Number 240-11861 Caliper Mounting Bolt Kit, includes P/N 230-10025, 240-10190 and 240-1159
Items 2A and 8A are optional item and included with the (D) drilled rotor kits. Add -D to end of part number when ordering.
Item 3A is an optional item and included in the (R) red caliper kits. Add -R to end of part number when ordering.
Wilwood offers an optional Braided Stainless Steel Hose Kit. Order part number 220-8800 (not included in kit).

General Information and Disasembly 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.

•Make sure this is the correct kit to fit the exact make and model year of the vehicles spindle. This kit is designed for direct bolt-on installation to 1995 through 2000 model year BMW E36, M3 hubs.

•Verify your wheel clearance using Figure 2.

•Verify that the factory hub and bolt pattern matches the hole pattern in the hats supplied with this kit.

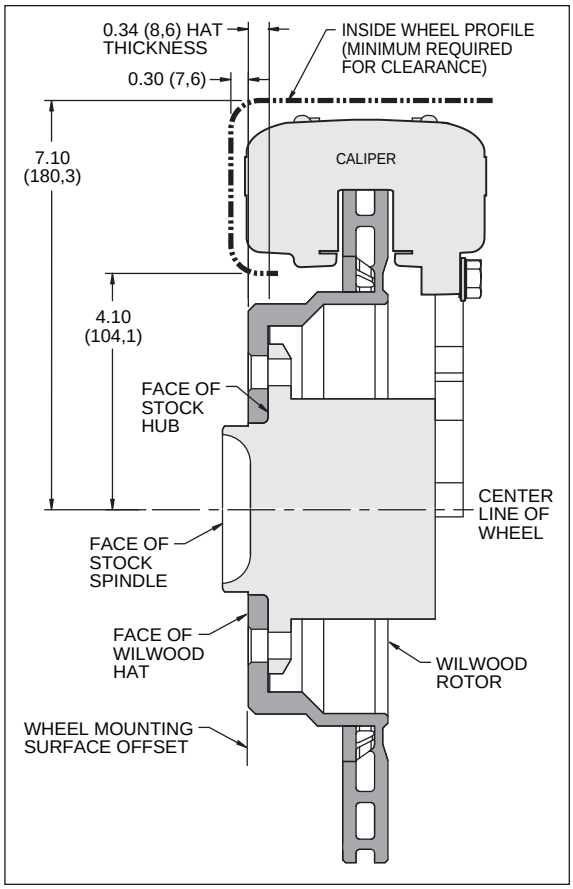

Figure 2. Wheel Clearance Diagram

Disassembly

•Disassemble the original equipment rear brakes: Raise the rear wheels off the ground and support the rear suspension according to the vehicle manufacturer's instructions.

•Remove the wheel. Disconnect the caliper brake hose from the brake line at the body. Remove the two bolts that hold the stock caliper to the stock caliper mounting bracket. Remove the caliper, then slide off the stock hat and rotor assembly. Save the stock caliper mounting bolts and washers, they will be utilized during reassembly.

•Clean and de-grease the stock bolts, washers and spindles while removing any nicks or burrs.

Assembly Instructions

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. Mount the bracket (1) using bolt (6) and washer (5) from the backside of the spindle with the threaded inserts facing the outside of the vehicle. The bracket must tighten squarely against the outboard side of the caliper mount bosses on the spindle body. Inspect for interference from casting irregularities, machining ridges, burrs, etc. 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 40 ft-lbs.

•Slide the rotor/hat assembly (2) onto the spindle. 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. Install a couple of wheel bolts (finger tighten) to keep the rotor/hat assembly in place while continuing with the installation and clearance checking procedures.

•***NOTE:*** *Please reference the caution statement at the beginning of the assembly instructions.* Mount the caliper (3) over the rotor (2) and onto the caliper mounting bracket (1) using lock washers (5) and mounting bolts (6). View the rotor through the top opening of the caliper. The rotor should be aligned in the center of the caliper. If not, adjust the caliper by using 0.035 inch shims (4) by placing them between the caliper mounting bracket (1) and the caliper (3). Finger tighten and recheck alignment. Add as many shim washers (4) as necessary to achieve the correct alignment. ***NOTE:*** *The end of the bolt must be flush with or slightly protuding from the head of the clinch nut. See Figure 3.* Always use the same amount of shims on both the top and bottom caliper mounting bolts (6). Loosen the two bolts (6) and apply red *Loctite*® 271 to the mounting bolt threads (6) and torque to 40 ft-lbs.

•Slide the brake pads (8) into the caliper (1) and secure with cotter pin (7). They should install easily without interference with the steel backing plate side of the brake pad facing the caliper pistons. Check that the outside radius of the brake pad is aligned with the outside diameter radius of the rotor face. Add or subtract shims (4) between the caliper and mount bracket (1) to gain the proper alignment.

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

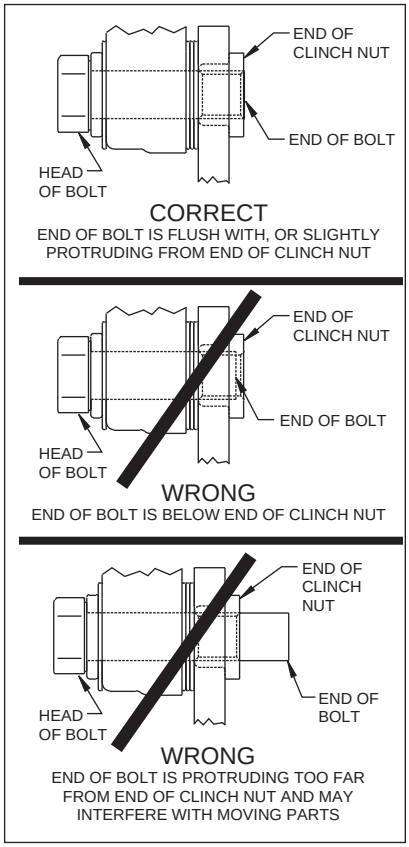

Figure 3.
Clinch Nut Engagement Diagram

•***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 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.** 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 220-8799, 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 general information and recommendations on page 5 for proper bleeding instructions.

•Repeat this entire procedure for the other wheel.

Additional Information and Recommendations

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

This BMW 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 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.

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.

Parking Brake

WARNING • PARKING BRAKE

- Parking brake must be properly adjusted before use and must be manually readjusted for wear if parking brake handle or foot lever travel becomes excessive.
- The holding ability of the brake should be tested by stopping on a sloping surface and applying the parking brake while holding car with the hydraulic foot brake. This should be accomplished both facing up and down hill.
- Do not rely exclusively on the parking brake to hold the car; Curb wheels as recommended by the applicable diagram and put gear selector in park, or shift into first gear or reverse with a manual transmission.

- Diagram A - When parking facing downhill, turn front wheels towards the curb or right shoulder. This will keep from rolling into traffic if the brakes become disengaged.
- Diagram B - Turn the steering wheel to the left so the wheels are turned towards the road if you are facing uphill with a curb. The tires will catch the curb if the car rolls backward.
- Diagram C - When facing uphill without a curb, turn the wheels sharply to the right. If the vehicle rolls, it will go off the road rather than into traffic.
- When parking on a hill, always set the parking brake and move the gear selector into park, or shift into first or reverse gear if your vehicle has a manual transmission.

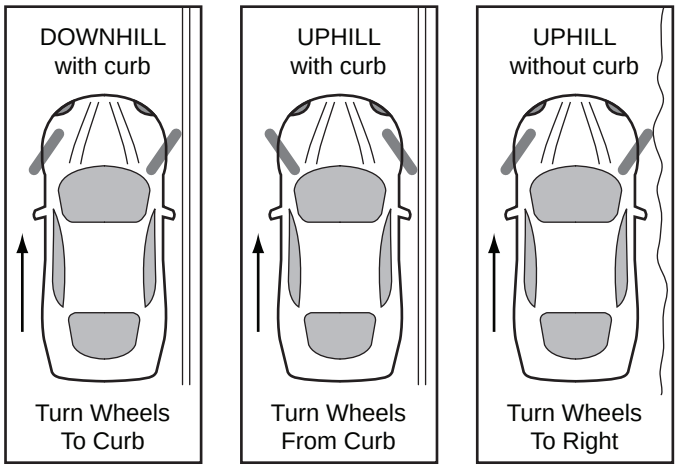

Diagram A Diagram B Diagram C

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Associated Components

PART NO.	DESCRIPTION
260-1874	Wilwood Residual Pressure Valve (2 lb for disc brakes)
260-1876	Wilwood Residual Pressure Valve (10 lb for drum brakes)
260-8419	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)
260-8555	Wilwood 1 inch Aluminum Tandem Chamber Master Cylinder
260-8556	Wilwood 1-1/8 inch Aluminum Tandem Chamber 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)
220-8799	Flexline Kit, BMW E36, M3