ASSEMBLY INSTRUCTIONS
FOR
BACKDRAFT ROADSTER USING 1995 - 1999 BMW E36 BASED SUSPENSION W/BACKDRAFT KNOCKOFF HUBS ONLY
DYNAPRO PRO SERIES REAR HUB KIT WITH 12.19” DIAMETER VENTED ROTOR

BASE PART NUMBER
140-10960

DISC BRAKES SHOULD ONLY BE INSTALLED BY SOMEONE EXPERIENCED AND COMPETENT IN THE INSTALLATION AND MAINTENANCE OF DISC BRAKES

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.

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.
- 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.

Exploded Assembly Diagram

Figure 1. Typical Installation Configuration
Disassembly Instructions

• 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 wheels, calipers, and rotors.
  
  • Remove and nicks or burs on the axle hub and upright that may interfere with the installation of the new brake components.
  
  • Clean and de-grease the axle hub and upright assembly.
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.

• Align caliper mounting bracket (1) with the corresponding holes to the face of the upright and attach using bolts (2) and washers (3), as shown in Figure 1. Temporarily tighten the mounting bolts. Ensure that the flanged heads of the clinch nuts in the bracket are facing outboard. NOTE: The bracket must fit squarely against the mounting points on the axle hub. Inspect for interference from casting irregularities, machining ridges, burrs, etc. Remove bolts one at a time, apply red Loctite® 271 to threads, and torque to 40 ft-lb.

• Orient the rotor (4) and the hat (5) as shown in Figure 1. Attach rotor to hat using bolts (7) and washers (6). Apply red Loctite® 271 to the bolt threads and torque to 140 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 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.

• Slide the hat/rotor assembly (4/5) onto the axle hub. NOTE: The hat must fit flush against the hub or excessive rotor run out may result. Install three customer supplied wheel bolts (finger tight) to keep the hat/rotor assembly in place while continuing with the installation.

• NOTE: Please reference the caution statement at the beginning of the assembly instructions. Mount the caliper (8) onto the caliper mounting bracket (1) using bolts (9) and washers (10), as shown in Figure 1. Initially place two .035” thick shims (11) on each bolt between the caliper and the bracket, Figure 1. Temporarily tighten the mounting bolts and view the rotor (4) through the top opening of the caliper. The rotor should be centered in the caliper. If not, adjust by adding or subtracting shims (11) between the bracket and the caliper. 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 nut, as shown in Figure 4. If necessary place spare shims between washer (10) and caliper mounting ear 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 40 ft-lb.

• Install the disc brake pads (12) into the caliper, with the friction material facing the rotor (4), and secure in place using the pad clip retainer (13).

• Temporarily install the wheel and torque wheel bolts to manufacturer’s specification. Ensure that the wheel rotates freely without any interference. Remove wheel for next step.

• 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 of adapter fitting for proper sealing to caliper) and enough steel braided line to allow for full suspension travel and turning radius, lock to lock. Wilwood offers a brake flex line hose kit to fit this application, order P/N 220-8799. Hose kit includes hoses, fittings, etc., all in one package for this application. Carefully route hoses to prevent contact with moving suspension, brake or wheel components. NOTE: 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.

• NOTE: 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.
• 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 UTESTED 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.

### Connect with Wilwood

Wilwood Facebook  
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### Associated Components

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>260-1874</td>
<td>Wilwood Residual Pressure Valve (2 lb for disc brakes)</td>
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<tr>
<td>260-1876</td>
<td>Wilwood Residual Pressure Valve (10 lb for drum brakes)</td>
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<td>260-8419</td>
<td>Wilwood Proportioning Valve</td>
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<td>Wilwood Racing Brake Fluid (Hi-Temp° 570) (12 oz)</td>
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<td>290-6209</td>
<td>Wilwood Racing Brake Fluid (EXP 600 Plus) (16.9 oz)</td>
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<td>340-1285</td>
<td>Wilwood Floor Mount Brake Pedal (with balance bar)</td>
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<td>340-1287</td>
<td>Wilwood Swing Mount Brake Pedal (with balance bar)</td>
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<td>Wilwood 3/4 inch High Volume Aluminum Master Cylinder</td>
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<td>Wilwood 7/8 inch High Volume Aluminum Master Cylinder</td>
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<td>Wilwood 1 inch Aluminum Tandem Chamber Master Cylinder</td>
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<td>Quick Release Steering Hub (3/4 inch shaft)</td>
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<tr>
<td>270-2017</td>
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<tr>
<td>220-8799</td>
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