

ASSEMBLY INSTRUCTIONS

FOR

COMBINATION PARKING BRAKE (CPB) CALIPER REAR BRAKE KIT WITH 11.75" DIAMETER VENTED ROTOR

2002 - PRESENT BMW MINI COOPER AND MINI COOPER "S"

PART NUMBER GROUP

140-10885

**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.



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.

Parts List

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	250-10873	Bracket, Caliper Mounting	2
2	230-10331	Bolt, 3/8-16 x 1.75 Long Hex Head	4
3	240-10190	Washer, .391 I.D. x .625 O.D. x .063 Thick	4
4	240-10306	Shim, .016 Thick	4
5	240-1159	Shim, .035 Thick	16
6	160-5841	Rotor, UL .81" X 11.75" Dia, 8 x 7.00" Bolt Circle (one each, right and left)	2
6A	160-7101/02-BK	Rotor, Black, SRP Drilled and Slotted (one each, right and left)	2
7	170-10868	Hat, 4 x 3.93, .450 Offset, 8 x 7.00" Bolt Circle	2
8	240-10191	Washer, .328 I.D. x .562 O.D. x .063 Thick	16
9	230-8473	Bolt, 5/16-18 x 1.00 Long, HXHD	16
10	120-9808/09-BK	Caliper, CPB, 34 mm (one each, right and left)	2
10A	120-9808/09-RD	Caliper, CPB, 34 mm - Red (one each, right and left)	2
11	230-9183	Nut, 3/8-24, Self-Locking, 12 Point	4
12	240-10190	Washer, .391 I.D. x .625 O.D. x .063 Thick	4
13	230-9078	Stud, 3/8-16 x 3/8-24 x 2.50 long (pre installed in bracket)	4
14	240-1159	Shim, .035 Thick	16
15	150-9184K	Pad, BP-10, Axle Set	1

NOTES: Part Number 230-8390 Rotor Bolt Kit, includes P/N 230-8473 and 240-10191

Part Number 230-10887 Bracket Bolt Kit, includes P/N 230-10331, 240-10190, 240-10306 and 240-1159

Part Number 250-10886 Caliper Bracket Kit, includes P/N 250-10873, 230-9078, 230-9183, 240-1159 and 240-10190

Item 6A is an optional item and is included with the "-D" kits. Add "-D" to end of part number when ordering.

Item 10A is an optional item and is included with the "-R" kits. Add "-R" to end of part number when ordering.

Wilwood offers an optional Braided Stainless Steel Hose Kit. Order part number 220-10879 (not included in kit).

Parking brake cable kit is required for functionality. Order part number 330-10915 (not included in kit).

General Information and Disassembly 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 your axle. This kit is designed for direct bolt-on installation to 2002 through present model year Mini Cooper and Cooper "S".

- Verify your wheel clearance using Figure 2.

- Verify that the factory axle and stud pattern matches the stud hole pattern in the hats supplied with this kit. Axles 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.

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.

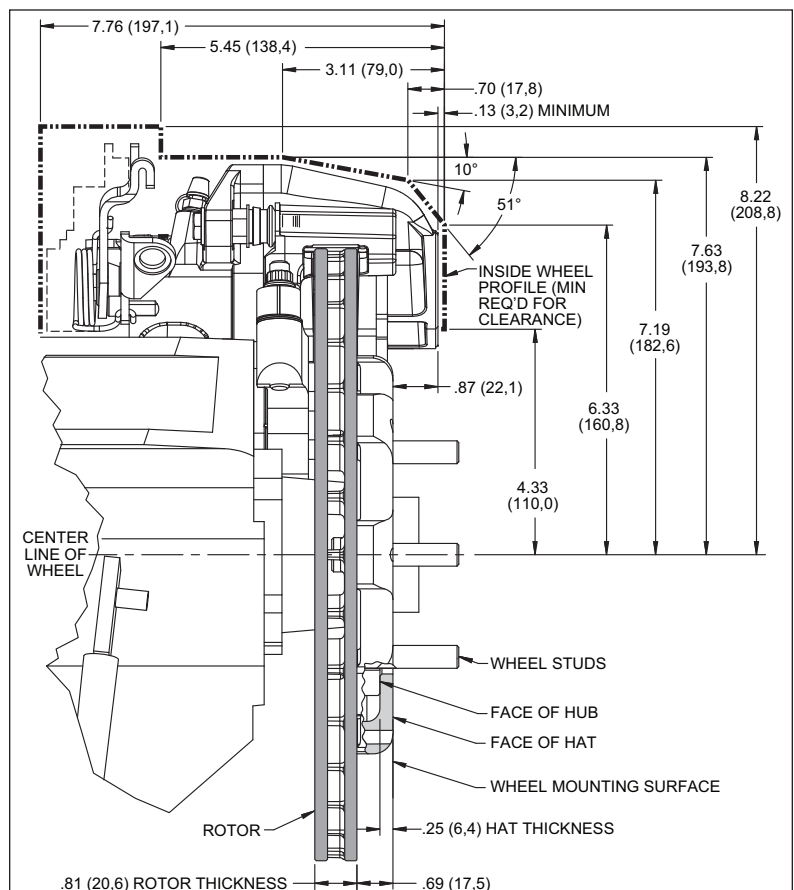


Figure 2. Wheel Clearance Diagram

Disassembly (Continued) and Assembly Instructions

- Remove the wheel. Remove caliper mounting bolts and lift off the bracket and stock caliper as one unit. You may have to unbolt the stock caliper from the caliper bracket before removal. Remove bolt retaining rotor to hub, then slide off the rotor.
- Clean, de-grease the stock hub while removing any nicks or burrs.

Assembly Instructions

IMPORTANT:

- **To ensure maximum performance from your parking brake system, the cables must be routed as straight as possible. Bends in the cable can significantly reduce efficiency and thus reduce pull force at the brake. Tight bends must be avoided with a minimum recommended bend radius of 6" to 8".**
- **Cables should be properly restrained to prevent "straightening" of bends when tension is applied. Restrain movement of cable by affixing the cable sheath to body or chassis by fitting cable clamps at various points over the length of cable or by using original equipment cable attachments points. The clamping method chosen will require that cable sheath be held tightly without movement, crushing or causing interference to the internal cable.**
- **Cables must be initially pre-stretched by multiple applications of the brake handle, then re-adjusted to correct tension.**

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

- The caliper mounting bracket (1) should be installed first with clean, dry threads on the mounting bolts. Install the bracket (1) on the outboard side of the hub assembly by sliding bolt (2) from the inboard side of the arm assembly through washer (3) through the existing OEM caliper mounting holes and thread into caliper mounting bracket (1). Place two shim washer (5) between the bracket (1) and the caliper mounting tabs (see figure 1). The mounting bracket (1) must tighten squarely against the outboard side of the arm assembly face. Inspect for interference from casting irregularities, machining ridges, burrs, etc.
- With the larger I.D. side of the rotor (6) facing away from the hat (7), attach rotor (6) to hat (7) using washers (8), and bolts (9) as shown in Figure 1. Using an alternating sequence, remove bolts one at a time, apply red *Loctite*® 271 to the threads, and torque to 180 **in-lbs**. The rotor mounting bolts (9) must be lockwired 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 (6 and 7) assembly onto the axle 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 three wheel bolts to hold the rotor and hat firmly against the hub during the next phases of the installation and clearance checking procedures.
- Slide the brake pads (15) up into the caliper (10) from the bottom compressing the "v" spring clip until the pad snaps into place against the caliper bracket, pads should install easily without interference.
- Lubricate caliper mounting studs and nuts with lightweight oil. Install two shims (14) over each stud (13) on the radial mount bracket (1). Slide the caliper (10) in place over the studs and rotor and install the washer (12) and lock nut (11) to hold the caliper in place. The caliper bleed screw should be pointing toward the rear of the vehicle. Snug the lock nuts (11) and check that the caliper (10) is centered over the rotor (6). Add or subtract .016" shims (4) and/or .035" shims (5) as necessary between the caliper mounting bracket (1) and the spindle face to center the caliper (10) on the rotor (6).
- Check that the outside radius of the brake pad (15) is flush with the outside diameter of the rotor face. Add or subtract shims (14) between the caliper (10) and the caliper mounting bracket (1) to gain the proper alignment.
- Check that the caliper is centered side to side on the rotor. Add or subtract shims, (4) and/or (5) between caliper bracket (1) and arm to properly position the caliper.

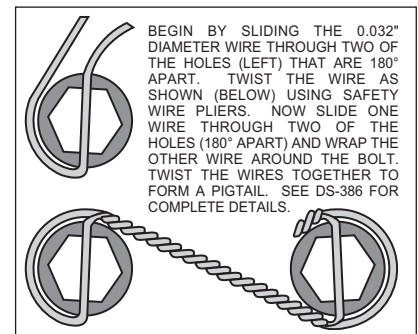


Figure 3. Safety Wire Diagram

Assembly Instructions (Continued)

- Remove the wheel bolts that were holding the hat/rotor in place. Install the wheel and torque the wheel bolts to manufacturer's specification. Check to see that the wheel rotates freely without interference.
- Once all clearances have been checked, remove the wheel, caliper and rotor from the axle flange. Secure the caliper mounting bracket (1) to the hub assembly mounting holes while applying red *Loctite*® 271 to the bolt threads (2). Torque bolts (2) to 22 ft-lbs. Reinstall the rotor and again use several wheel bolts to hold it in place. Reinstall the caliper, torque the caliper nuts (11) to 30 ft-lbs.
- **NOTE:** *OEM rubber brake hoses generally cannot be adapted to Wilwood calipers. The caliper inlet fitting is M10 x 1.0 banjo.* The preferred method is to use banjo fittings at the caliper with enough steel braided line to allow for full suspension travel. **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 220-10879, 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.
- Repeat this entire procedure for the other wheel.
- Bleed the brake system. Reference the additional information and recommendations on page 6 for proper bleeding instructions.
- Parking brake cable kit, P/N 330-10915 (not included in kit, must be ordered separately) is required for parking brake functionality. Please follow the instruction in DS-679 (available at www.wilwood.com/pdf/ds679.pdf) for installation procedure.
- Remove the wheel bolts that were used to hold the hat/rotor assembly in place during caliper installation. Check to be sure the hat seats squarely against the hub. Install the wheel and torque the wheel bolts to manufacturers specifications.

Additional Information and Recommendations

•**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.*

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

This Mini Cooper rear brake 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^o 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 and Pad Bedding

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 BEDDING PROCEDURE:

• Pump brakes at low speed to assure proper operation. On the race track, or other safe location, make a series of hard stops until some brake fade is experienced. Allow brakes to cool while driving at moderate speed to avoid use of the brakes. This process will properly burnish the brake pads, offering maximum performance.

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)
260-8419	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)
220-10879	Flexline Hose Kit, BMW Mini Cooper with CPB Caliper
330-10915	Parking Brake Cable Kit, BMW Mini Cooper with CPB Caliper