

ASSEMBLY INSTRUCTIONS

FOR

BILLET NARROW DYNALITE RADIAL INBOARD MIDGET KIT WITH 10.50" DIAMETER SOLID DRILLED ROTOR*

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

BASE PART NUMBER

140-11142

**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. OEM brake lines will not adapt to Wilwood calipers. 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 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

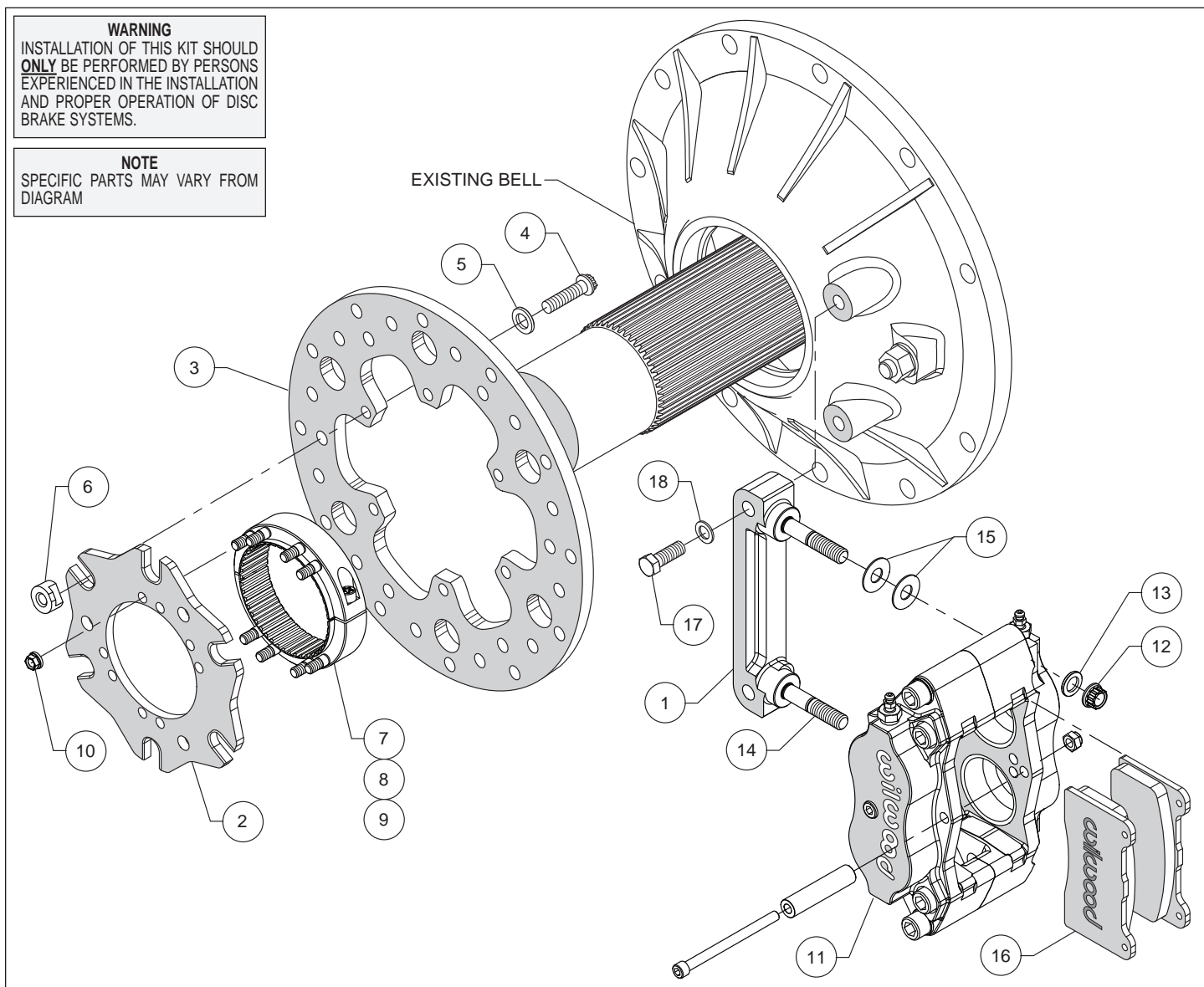


Figure 1. Typical Installation Configuration

Parts List

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	250-13178	Bracket, Caliper Mount	1
2	300-12581	Adapter, Rotor, Floating Mount	1
3	160-3455	Rotor, 0.35" Thick x 10.50" Diameter, 6 x 5.50" Bolt Circle	1
4	230-6739	Bolt, 5/16-24 x .812 Long, 12 Point	6
5	230-10191	Washer, .328 I.D. x .562 O.D. x .063 Thick	6
6	300-12739	T-Nut, 5/16-24	6
7	270-12580	Hub, Axle Clamp	1
8	230-9621	Stud, 1/4-28 x 1/4-20 x 1.00 Long (pre-installed)	8
9	230-5525	Bolt, 1/4-20 x .75 Long	2
10	230-9618	Nut, 1/4-28, Self-Lock	8
11	120-13405-N	Caliper, Narrow Dynalite, Radial Mount, Side Inlet	1
12	230-9183	Nut, 3/8-24, Self-Lock, 12 Point	2
13	240-10190	Washer, .391 I.D. x .625 O.D. x .063 Thick	2
14	230-9078	Stud, 3/8-16 x 3/8-24 x 2.50 Long (pre installed in bracket)	2
15	240-1159	Shim, .035 Thick	6
16	150-12248	Brake Pad, 7816, BP-40 Compound	2
17	230-10331	Bolt, 3/8-16 x 1.75 Long, Hex Head	2
18	240-10289	Washer, .375 I.D. x .874 O.D. x .062 Thick	2

NOTES:

P/N 270-12634 Hub Kit, includes part numbers 270-12580 and 300-12581

P/N 230-9752 Bolt Kit, Rotor, includes part numbers 230-6739, 240-10191, and 300-12739

P/N 250-13179 Caliper Mounting Bracket Kit, includes p/n's 230-9078, 230-9183, 230-10331, 240-1159, 240-10190, 240-10289 & 250-13178

General Information, Disassembly, and Assembly 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 your axle. This kit is designed for direct bolt-on installation to standard inboard midget sidebell with 3.50" mount centers and 2.50" x 38 spline axle.

Disassembly (if applicable)

- Disassemble the existing rear brakes. Raise the rear wheels off the ground and support the rear suspension per applicable racing guidelines.
- Clean, de-grease the axle and/or bell, and remove any nicks or burrs.

Assembly Instructions (numbers in parenthesis refer to the parts list/diagram on the preceding pages): **CAUTION:** All mounting bolts must fully engage threaded holes.

- Orient the bracket (1) as shown in Figure 1, and install using bolts (17), and washers (18). Temporarily tighten the mounting bolts. **NOTE:** The bracket must fit squarely against the mount bosses on the bell. Inspect for interference from casting irregularities, machining ridges, burrs, etc. Remove the bracket mounting bolts one at a time, apply red *Loctite*® 271 to the threads, and torque to 35 ft-lb.
- Orient the rotor adapter (2) and the rotor (3), as shown in Figure 1, and attach using bolts (4), washers (5) and t-nuts (6), Figure 1. Apply red *Loctite*® 271 to the threads before installing. Finger tighten. After all t-nuts have been installed, torque bolts in an alternating sequence to 220 **in-lbs**. Please refer to Wilwood's data sheet DS-669 (available at www.wilwood.com/Pdf/DataSheets/ds669.pdf) for complete t-nut bolt kit installation instructions.
- Safety wire bolts using standard 0.032 inch diameter stainless steel safety wire as shown in Figure 2. Please refer to Wilwood's data sheet DS-386 (available at www.wilwood.com/Pdf/DataSheets/ds386.pdf) for complete safety wire installation instructions.

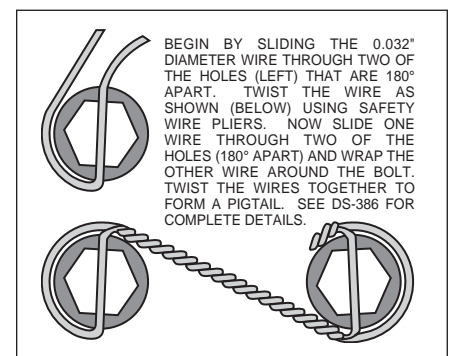


Figure 2. Safety Wire Diagram

Assembly Instructions (Continued)

- Orient the axle clamp assembly (7, 8 and 9, pre-assembled) as shown in Figure 1 and install onto the rotor adapter (2) using nuts (10). Tighten nuts part way while still allowing clamp-to-rotor movement. The nuts will be torqued later, after aligning the rotor. **NOTE:** *The axle clamp should be positioned inside of the rotor as shown in Figure 1, not offset, or outside of the rotor adapter.*
- Slide the rotor/adapter assembly onto the axle and into approximate position near the caliper bracket.
- Lubricate the caliper mounting studs (14) with lightweight oil. Initially place two .035" thick shims (15) on each stud as shown in Figure 1. Mount the caliper (11) onto the bracket (1) using lock nuts (12) and washers (13), Figure 1. Temporarily tighten the lock nuts and view the rotor through the top opening of the caliper. The rotor should be centered in the caliper. If not, slide the rotor/adapter assembly on the axle until the rotor is centered in the caliper. Tighten the clamp bolts (9) first, locking the clamp to the axle. Torque nuts (10) to 140 **in-lbs**.
- Remove the caliper center bridge pad retainer bolt, nut, and tube from the caliper. Insert the brake pads (16) into the caliper, with the friction material facing the rotor. Check that the top of the brake pad is flush with the outside diameter of the rotor. If not, adjust by adding or subtracting shims (15) between the caliper and the bracket. After the caliper pad height is set, torque the caliper lock nuts (12) to 30 ft-lb. Secure the brake pads in place with the center bridge pad retainer tube, bolt, and locknut. The locknut should be snug without play in the bolt or tube. Be cautious not to over tighten.
- 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 AN (37 degree) fittings at the caliper, and enough steel braided line to allow for full suspension travel. 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.
- Bleed the brake system. Reference the general information and recommendations below for proper bleeding instructions. Check system for leaks after bleeding.

Additional Information and Recommendations

- 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

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>
260-13706	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
260-6766	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