

ASSEMBLY INSTRUCTIONS
FOR
DYNALITE PRO SERIES REAR PARKING BRAKE KIT
WITH 12.19" DIAMETER VENTED ROTOR (2.36 OFFSET)
MOPAR 8-3/4 • DANA 60
FOR USE W/GREEN⁽¹⁾ NON-ADJUSTABLE BEARINGS W/SNAP RING
PART NUMBER GROUP
140-7144

**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?
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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.

(1) FOR USE WITH GREEN BEARINGS, P/N MO400.

Important Notice - Read This First

Before any tear-down or disassembly begins, review the following information:

- There are two types of “Green Bearings” being supplied by axle manufacturers. Your setup should look like Figure 2 (below right), not the Figure 1 configuration, otherwise this kit will not fit.
- Review the wheel clearance diagram (figure 4, 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 these parts.
- 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.

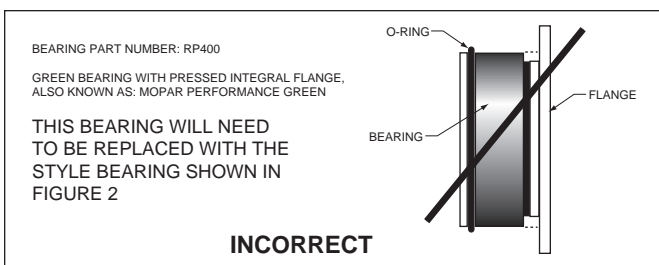


Figure 1. Press Fit Bearing Configuration

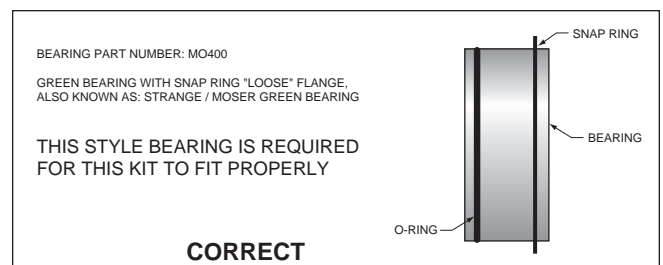


Figure 2. Loose Fit Bearing Configuration

Exploded Assembly Diagram

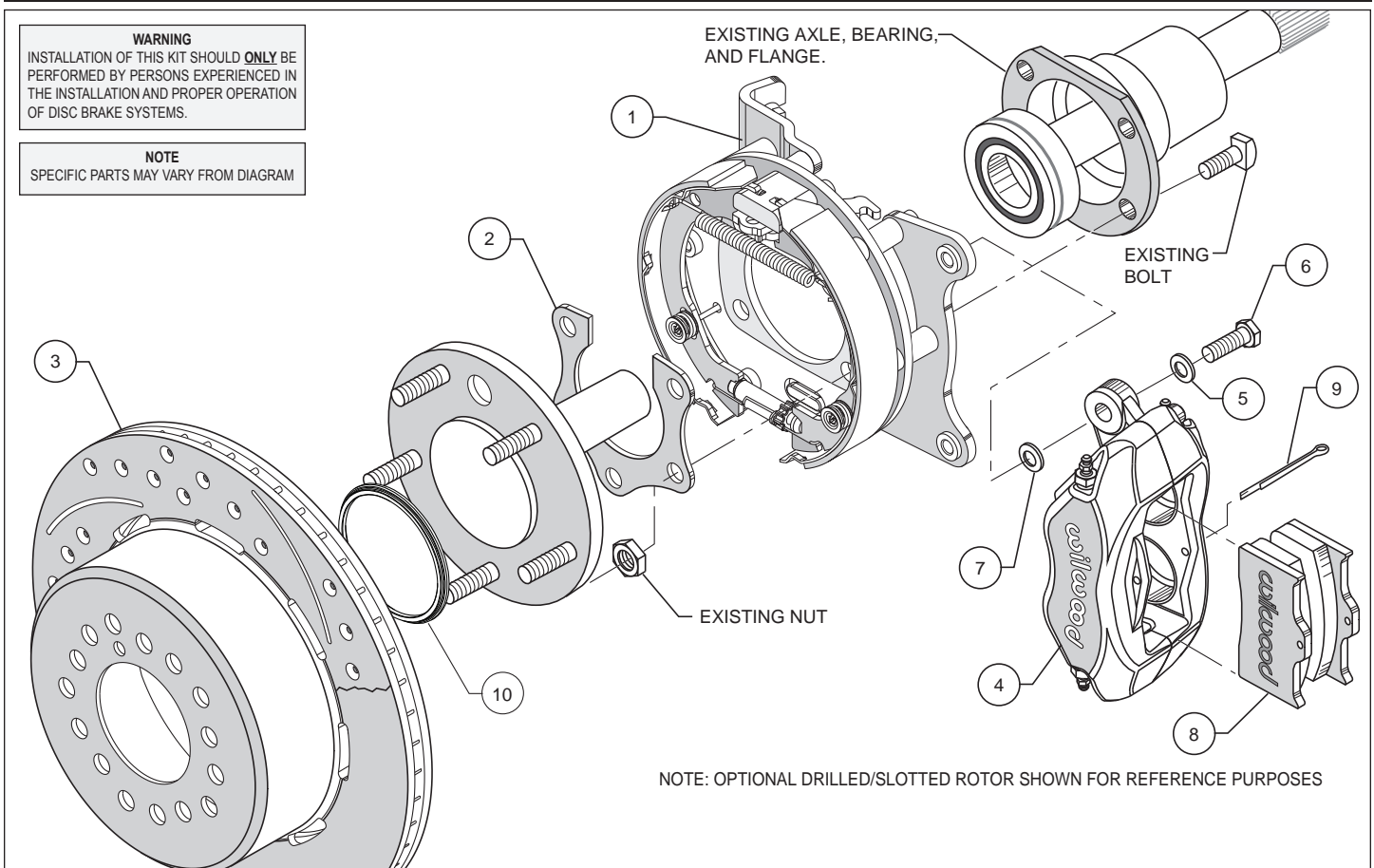


Figure 3. Typical Installation Configuration

Parts List

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	249-7116/17	Bracket Kit (pair, one each, left and right)	1
2	250-6488	Retainer, Bearing	2
3	160-7508	Rotor, .81" Thk x 12.19" Dia	2
3A	160-9812/13	Rotor, Drilled (pair, one each, left and right)	2
4	120-6806	Caliper, Forged Dynalite	2
4A	120-6791-P	Caliper, Forged Polished Dynalite	2
5	240-10190	Washer, .391 I.D. x .625 O.D. x .063 Thick	4
6	230-10025	Bolt, 3/8-24 x 1.25 Long, Hex Head	4
7	240-1159	Shim, .035 Thick	16
8	150-8850K	Pad, BP-10, Axle Set	1
9	180-0055S	Cotter Pin	2
10	300-11337	Adapter, Rotor Registration (supplied only with rotors with 3.06" center hole)	2

NOTES: Part Number 250-6488 is included with the bracket kit assembly 249-7116/17
Part Number 230-11861 Mounting Bolt Kit, includes P/N's 230-10025, 240-10190 and 240-1159

Item 3A is an optional item and is available in the (D) Drilled kits

Item 4A is an optional item and is available in the (P) Polished kits

General Information and Disassembly Instructions

Installation of this kit should **ONLY** be performed by persons experienced in the installation and proper operation of disc brake systems. Before assembling the Wilwood rear axle disc brake kit, double check the following items to ensure a trouble-free installation.

- Make sure this is the correct kit to fit the axle housing flange, not necessarily the rear end make. Many times after market manufacturers put a different make of axle housing flange on the stock rear end housing (see Figure 9). Example; Big Ford rear ends with Olds-Pontiac flanges, therefore, an Olds-Pontiac rear disc brake kit would be the correct kit to order. Also, shock clearance may be a problem. They may have to be modified and/or relocated to clear the Wilwood kit after final assembly.

- Inspect the package contents against the parts list to ensure that all components and hardware are included.

•Verify The Following Measurements Before Assembly.

- Bearing outside diameter.
- Axle center register diameter is 2.80", Figure 3. This kit may be supplied with Wilwood's removable center register adapters for rotors with larger 3.06" registers. Other rotors may have smaller 2.80" register and will not require or be supplied with register adapters.
- That the bearing is the snap ring style bearing with removable flange (see Figure 2, preceding page).
- Axle housing flange mounting pattern to pattern in bracket.
- Stud pattern on axle flange to stud pattern in hat.
- Dimension from wheel side of axle flange to wheel side of axle housing flange (see Figure 9, lower right hand corner). This dimension is critical to ensure proper alignment of the rotor to the caliper, and should match offset given in the kit description.
- Verify that the wheel axle stud size is 0.50" diameter. The Wilwood rotors utilized in these kits are drilled for 0.50" diameter wheel studs.
- Maximum axle flange diameter must be no larger than 6.61" w/.050" x 45° chamfer, Figure 5.

Disassembly Instructions:

- Disassemble the original equipment rear brakes:

Raise the rear wheels off the ground. Support the rear suspension by placing jack stands under the rear axle or vehicle frame. The vehicle's weight must be on jack stands. The vehicle must not be supported by a car jack or hoist.

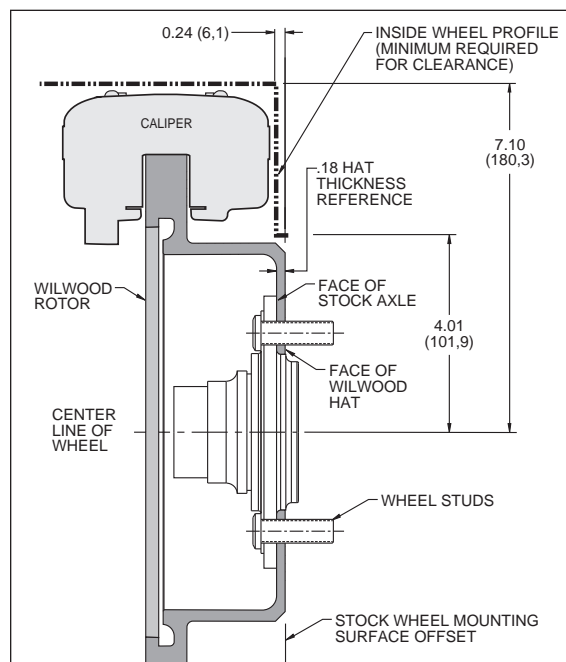


Figure 4. Wheel Clearance Diagram

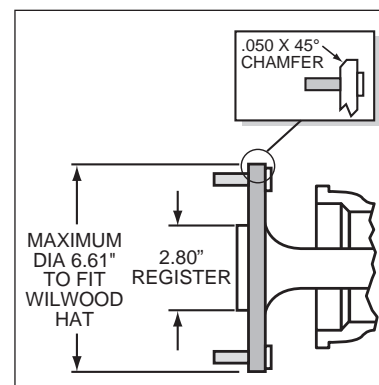


Figure 5. Axle Flange Maximum Dimension

Disassembly (Continued) and Assembly Instructions

Completely disassemble the stock brake system down to the bare axle. Dependent on the type of retainer supplied in the kit, the following steps must be performed.

A. **Full Circle Retainers** require the utilization of a qualified machine shop to press off the axle bearing and OEM retainer. Then have machine shop install new retainer (2), supplied with bracket kit with lip facing toward bearing and backing plate (or backing plate can be installed later by removal and replacement of bearing snap ring, reference Figures 4, 6 and 7 (we suggest that you install a new bearing at this time, not supplied with kit).

B. **"U" Retainers** require the removal of the OEM retainer by cutting or grinding a notch in the retainer to facilitate removal. Once OEM retainer is removed, install new retainer (2) supplied with bracket kit with the "U" opening facing up and the lip facing toward bearing, reference Figures 4, 6 and 7.

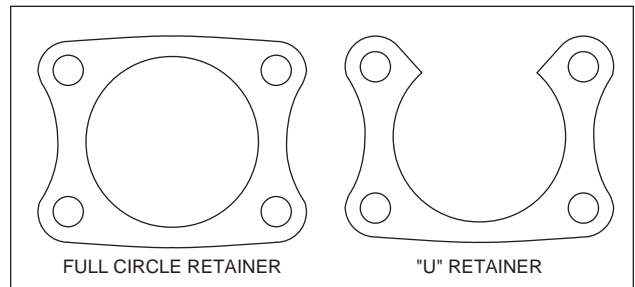


Figure 6. Retainer Styles

•Degrease and remove any dings and burrs on housing flange as well as axle flange which may interfere with brake assembly.

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): **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.

•Determine that the appropriate snap ring style Green bearing has been installed on the axle, as shown in Figure 2. Remove snap ring from bearing and slide retainer (2) (full circle retainers only, "U" retainers can be installed later) and caliper mounting bracket assembly (1) onto axle and over bearing assembly. Reinstall snap ring (this can also be accomplished at the time of bearing installation on axle without the removal of the snap ring). Insert axle with caliper mounting bracket assembly into axle end. Align bracket (1) and retainer (2) with the five holes in the axle end and secure using the stock Original Equipment Manufacturer (OEM) bolts and nuts. Stock OEM hex nuts that retain the caliper mounting bracket assembly (1) and retainer (2) should be on the wheel side of the bracket. Apply red *Loctite*® 271 to the stock OEM bolt threads and torque to OEM specifications. Make sure the heads of the caliper mounting bracket assembly (1) insert nuts are FACING OUTWARD TOWARDS THE WHEEL.

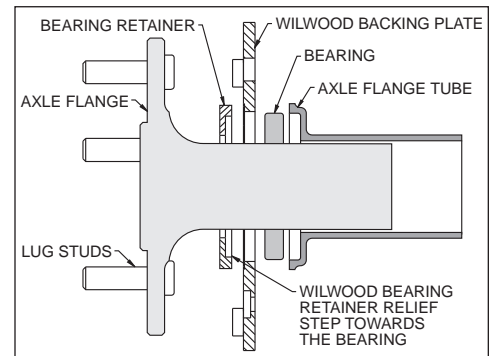


Figure 7. Retainer / Axle Diagram

•Align the correct hole pattern in the rotor (3) with the stud pattern on the axle flange. **NOTE:** Some OEM and after market axles come with stud sizes larger than 0.50" diameter. Verify stud size and have a qualified machine shop drill the bolt circle of the rotor to the correct stud size, if necessary. Slide the rotor (3) over the wheel studs covering the mounting bracket assembly (1) and against the axle flange face.

Assembly Instructions (Continued)

•**NOTE:** Please reference the caution statement at the beginning of the assembly instructions. Mount the caliper (4) over the rotor (3) and onto the caliper mounting bracket (1) using 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 (7) by placing them between the caliper mounting bracket (1) and the caliper (4). Add as many shim washers (7) as necessary to achieve the correct alignment. **NOTE:** The end of the bolt must be flush with or slightly protruding from the head of the clinch nut. See Figure 8. Place spare shims (7) between washer and caliper mounting ear to achieve the proper mounting fastener configuration. Always use the same amount of shims on both the top and bottom caliper mounting bolts (6). Apply red *Loctite*® 271 to the mounting bolt threads (6), torque to 40 ft-lb.

•Position the Wilwood disc brake pads (8) into the caliper (4) and fasten with cotter pin (9). Steel backing plate side of brake pad should face the caliper pistons.

•**NOTE:** Clevis and cable kits which attach to the parking brake assembly are not included in the Wilwood parking brake kit. Wilwood offers a generic style parking brake cable kit, P/N 330-9371 for this application which can be ordered separately from your local Wilwood dealer or by calling Wilwood customer service at (805) 388-1188.

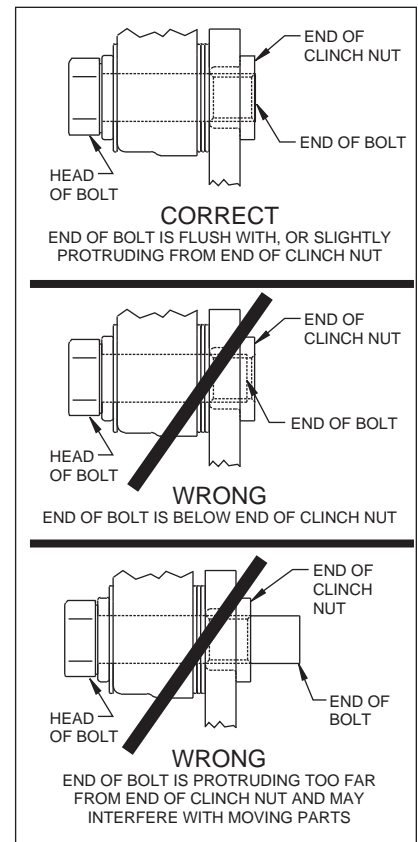
•Before final installation of the wheel, install a couple of lug nuts and adjust the parking brake shoes outward (using a drum shoe adjustment tool available at your local auto parts store) while spinning the rotor/hat (3) until a slight drag is felt again the hat/drum.

•**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.

•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 7 for proper bleeding instructions.



Assembly Instructions (Continued)

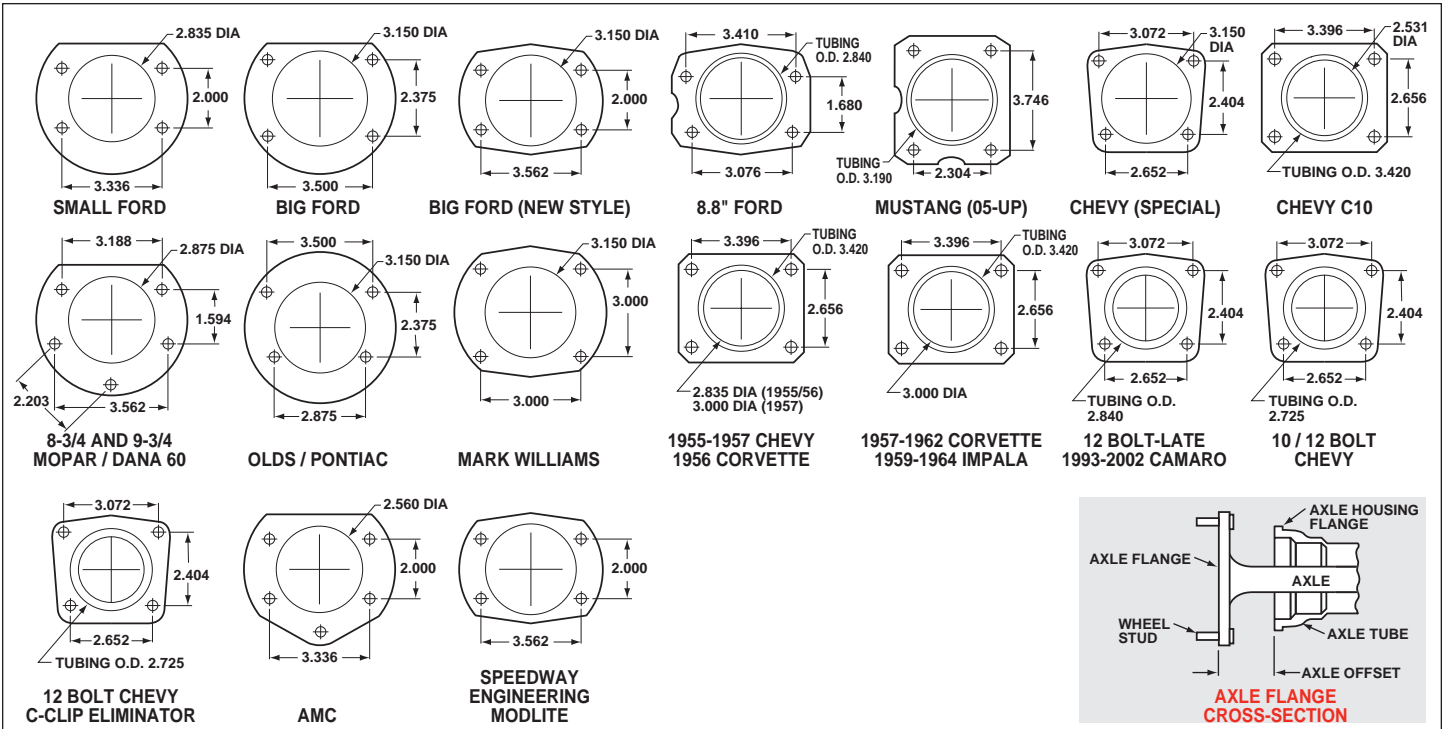


Figure 9. Rear Housing Flange Chart and Axle Flange / Offset Cross-Section

Additional Information and Recommendations

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

•OE Style or Single Mount Race Pedal with Tandem Outlet Master Cylinder:

Front to rear caliper piston sizes, rotor diameters, and pad compounds must be initially configured to provide the correct range of vehicle bias when using a single bore / tandem outlet master cylinder. If excessive rear brake bias is experienced, an inline adjustable proportioning valve can be used to decrease the rear line pressure to help bring the vehicle into balance. If excessive front brake bias is experienced, first consideration should be given to increasing the rear brake bias to bring the vehicle into overall balance.

•Race Pedal with Dual Master Cylinders and Balance Bar:

Master cylinders must be sized to match the calipers and allow the pedal balance bar to operate near the center of its travel. If it is not possible to fine tune the bias within the adjustable range of the balance bar, then consideration must be given to changing a master cylinder bore size or some other aspect of the brake system to bring the car into balance. Larger bore master cylinders will generate less pressure while decreasing pedal travel. Smaller bores master cylinders will generate higher line pressures with an increase in pedal travel.

•Fill and bleed the new system with Wilwood Hi-Temp^o 570 grade fluid or higher. 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.*

•If the master cylinder is mounted lower than the disc brake calipers, some fluid flowback to the master cylinder reservoir may occur, 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 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.

•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) will 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 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)
220-7056	Flexline Kit, Universal, 14 Inch, Domestic
220-7699	Flexline Kit, Universal, 16 Inch, Domestic
220-8307	Flexline Kit, Universal, 18 Inch, Domestic