

**ASSEMBLY INSTRUCTIONS
FOR
REAR MOTORCYCLE CALIPER
GP 300**

1984 - 1999 HARLEY-DAVIDSON® SOFTAIL

PART NUMBER(S)

140-3964-P, 140-4174

**DISC BRAKES SHOULD ONLY BE INSTALLED BY SOMEONE
KNOWLEDGEABLE AND COMPETENT IN THE FUNCTIONING
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.

Exploded Assembly Diagram and Parts List

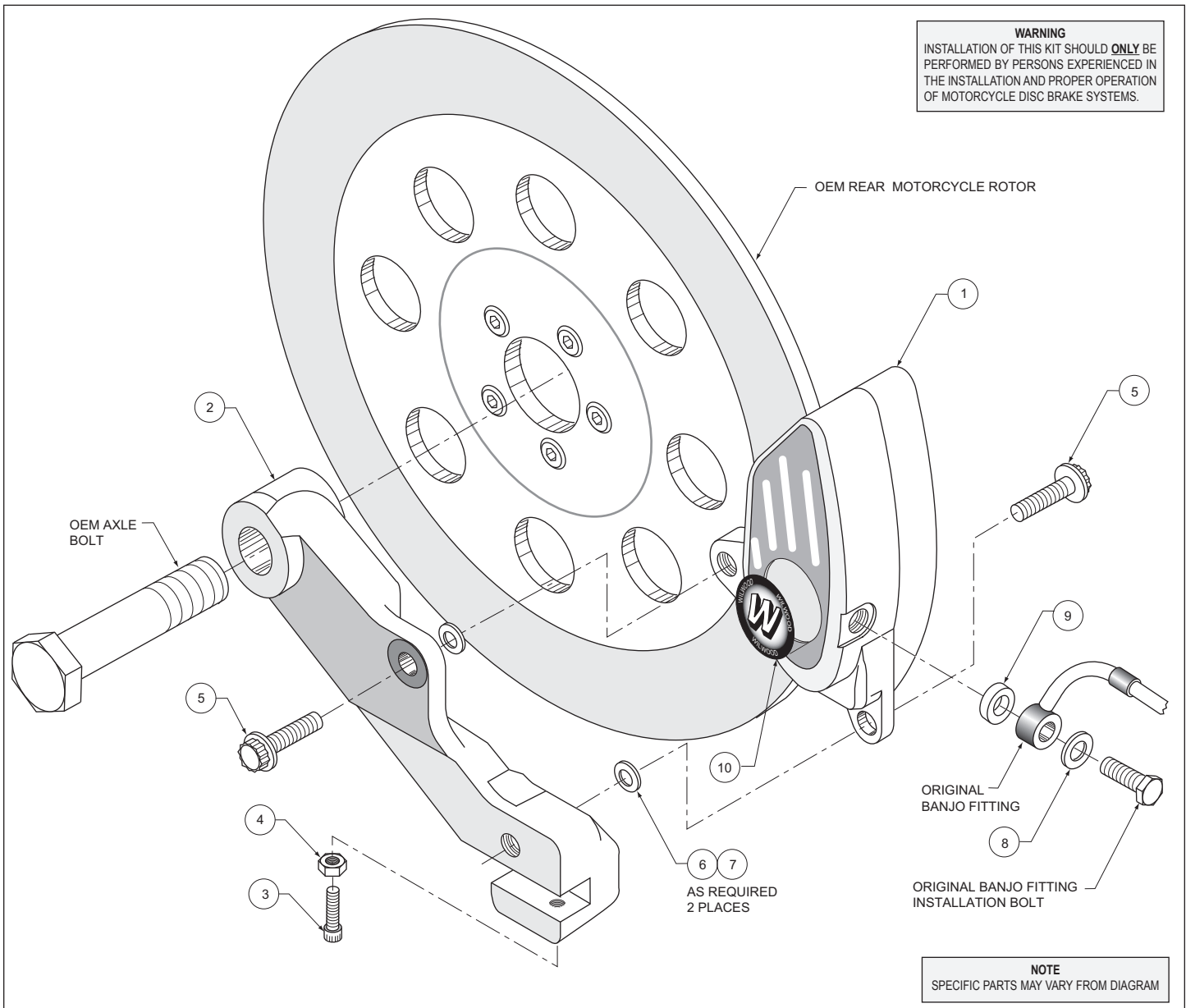


Figure 1. Typical GP 300 Rear Caliper Installation

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1 *	120-3935-P	Caliper, Polished, Rear GP 300	1
1 *	120-4172	Caliper, Chromed, Rear GP 300	1
2	250-3958	Mounting Bracket, Caliper	1
3	230-3539	Bolt, Socket Head Cap, 1/4-20 x 1.00 Long	1
4	230-3569	Nut, Hex, Jamb, 1/4-20	1
5	230-4011	Bolt, 12 Point, 3/8-16 x 1.00 Long	2
6	240-3812	Shim (washer), 3/8 I.D. x 3/4 O.D. x .010 Thick	4
7	240-3813	Shim (washer), 3/8 I.D. x 3/4 O.D. x .030 Thick	6
8	240-3967	Washer, Seal (top), 5/8 O.D. x .032 Thick, Banjo Bolt	1
9	240-3965	Washer, Seal (bottom), 5/8 O.D. x .128 Thick, Banjo Bolt	1
10	400-4175	Logo, Wilwood Button	1
NOT SHOWN		Pad, Brake, GP 300	2

*The kit includes one of these calipers, depending on which kit was ordered.

General Information and Assembly Instructions

GENERAL INFORMATION:

Installation of this kit should **ONLY** be performed by a trained mechanic experienced in the installation and proper operation of motorcycle disc brake systems. Read these instructions carefully before beginning work to be sure that the procedures are thoroughly understood. Before assembling the Wilwood GP 300 rear caliper disc brake kit, double check the following items to ensure a trouble-free installation.

- Make sure this is the correct kit to match the exact year and model Harley-Davidson® for which installation is intended.
- Inspect the package contents against the parts list to ensure that all components and hardware are included.
- There are no unique or special tools required. All tools and appropriate sizes will be mentioned throughout the instructions as applicable, and are standard mechanic's tools.

ASSEMBLY INSTRUCTIONS: (numbers in parenthesis refer to the parts list/diagram on the preceding page).

Safety Precautions:

Position the motorcycle on a flat surface, block the front wheel. Utilizing a suitable lift or stand, raise the rear wheel off the ground and secure the motorcycle so that it will not fall over.

Disassemble the original equipment:

Depending upon the configuration of your motorcycle, removal of the rear muffler or exhaust pipe may be necessary to facilitate the removal of the rear axle or rear brake caliper.

Remove the banjo fitting bolt (fluid fitting) and washers from the Original Equipment Manufacturer (OEM) caliper using a 3/8 inch box end wrench (12 point), note their positions before removal. Save the banjo fitting bolt. Brake fluid will drain from the brake line, have a suitable container handy to catch this fluid (a clear glass jar works well).

Using a 5/16 inch Allen wrench, loosen and remove the caliper mounting bolts from the stock mounting bracket, remove caliper.

Remove cotter pin and loosen axle adjusters and axle nut, then slide the axle out of the rear wheel. Remove the left wheel spacer and slowly lower the rear wheel while slipping the belt off the pulley simultaneously. Slide the rear wheel assembly away from the motorcycle. Remove the OEM caliper bracket. On some models, it may not be necessary to completely remove the rear wheel.

Installation (Refer to Figure 1 as necessary):

Position the GP 300 caliper mounting bracket into the same position as the stock bracket, being sure that the tab on the frame is in the slot on the front of the bracket.

Slip the rear wheel assembly into position and reinstall the stock axle bolt, tighten, but do not torque at this time.

Install the banjo fitting onto the Wilwood caliper utilizing the stock bolt and the new washers (8 and 9). The thinner washer (8) goes on the top and the thicker washer (9) is used on the bottom. Align the fitting to the same position as with the stock caliper. Using a torque wrench equipped with a 3/8 inch socket (12 point), tighten the banjo fitting bolt to 380-400 **in/lb** (32-33 ft/lb).

Install a 3/16 I.D. hose, approximately 24 inches long over the bleed screw and put the other end into the glass jar (the one you used earlier) to catch the brake fluid during the bleeding process (**DO NOT** reuse brake fluid that is bled from the system).

Place a strong flat spacer (to simulate the rotor), approximately 3/16 inch thick between the brake pads on the caliper (pick an item that will not damage the brake pads). This will hold the brake pads in an open position. Position caliper so that the bleed screw is pointing up.

Remove the brake fluid reservoir cover. Open the bleed screw using a 1/4 inch open end wrench. With the bleed screw pointing up, the mechanic should gently tap the caliper using the palm of his hand. This will allow the brake fluid to gravity feed into the caliper. Continue to allow the brake fluid to flow through the system until clean fluid is seen running into the jar. To avoid getting air bubbles into the system, assure that the brake fluid reservoir is kept full at all times (check the owners manual, or an authorized dealer for the proper brake fluid applicable to the model year of the motorcycle). Furthermore, do not squeeze and release the brake lever with the bleed screw open as this will draw air back into the system.

Tighten the bleed screw, keeping in mind that the caliper is **NOT** completely bled. Final bleeding of the system will be done later.

Remove the spacer between the brake pads. Position caliper (1) over the rotor and slip the top mounting bolt (5) through the bracket (2), screwing into the caliper (1), finger tighten. **NOTE:** Check for sufficient clearance between the end of the bolt (5) and the rotor. If additional clearance is necessary, use appropriate shim washer (6 or 7) under head of the bolt (5). Slide the bottom mounting bolt (5) through the caliper and screw into the bracket (2), finger tighten. Use a small mirror (looking from the bottom) to determine if the caliper is centered over the rotor correctly. If not, use shims (6 and 7) between the caliper (1) and caliper mounting bracket (2) to adjust the alignment. Use as many shims in whatever combination as necessary to achieve the correct alignment. The thicker the shim, the more the caliper will move in-board (toward the wheel). Always use the same amount of shim(s) (6 and 7) between the upper and lower mounting ears (uneven shimming could cause the rotor to be misaligned and cause it to jam). Recheck the caliper/rotor alignment with a mirror. If the alignment is correct, remove the bolts one at a time and reinstall them using a thread-locking compound similar to *Loctite*® 242 to coat the threads. Using a torque wrench, torque the bolts to 280-300 **in/lb** (23-25 ft/lb).

Screw the jam nut (4) all the way down onto the anti-rattle bolt (3). Install this assembly into the threaded hole on the underside of the brake bracket (2) and secure against the motorcycle frame. Tighten the jam nut (4) up against the bottom of the brake bracket (2).

Loosen the rear axle nut and slide the wheel back into approximately the correct alignment. Refer to the OEM service manual for realignment of the rear wheel and belt adjustment. Torque the axle bolt to manufacturers specifications and install a new cotter pin. Reinstall the OEM rear muffler or exhaust pipe if applicable.

With the new caliper properly installed, finish bleeding the brakes. With the help of an assistant, squeeze the brake lever several times to build pressure. Loosen the bleed screw while maintaining pressure on the brake lever. Do not release the brake lever until the bleed screw is closed. Continue this process until all air has been purged from the system and a firm brake lever is achieved. Occasionally check the fluid level in the reservoir during this process.

Remove bleed hose and torque the bleed screw to 30-40 in/lb. Verify that brake fluid is filled to the proper level and reinstall the reservoir cover.

General Information and Assembly Instructions (Continued)

CAUTION:

It is critical that all components, tires, pads and rotors are thoroughly cleaned of any excess brake fluid (brake fluid acts as a lubricant if not removed). Use a suitable brake cleaner available from your motorcycle retailer. Be careful to protect painted surfaces from both the brake fluid and cleaner.

Verify the wheel turns freely and stops when the brake lever is applied. Remove the motorcycle from the stand. Road test in a suitable area at low speeds until you have ensured that the installation was performed properly. The mechanic should give the end user an overview of the new system to help familiarize the consumer with its operational capabilities and maintenance.

NOTE:

Dispose of unwanted brake fluid in an environmentally safe manner.

PROBLEMS:

If problems arise with the installation, the mechanic should consult the dealer where the kit was purchased for further assistance.

BRAKE PAD REPLACEMENT:

The brake pads should be inspected periodically for wear. If the pads need replacement, it may be done in the following manner.

Remove the brake caliper from its mounted position over the rotor. Note the exact amount of shims and washers used on each mounting bolt so that the caliper may be re-installed without having to realign it.

Using a screwdriver, spread the old brake pads in order to retract the pistons. Avoid cocking the pistons in their bores which may result in damage to the caliper. Be aware that when retracting the pistons, fluid is being forced back into the master cylinder fluid reservoir. During this process it may be necessary to remove the excess fluid, if the reservoir fills up.

Using needle nose pliers, remove the retaining clip from the inboard side of the caliper. Remove the pad retaining pin and slide the brake pads out (one at a time) from the bottom of the caliper. The anti-rattle spring should stay in place and does not need to be removed.

A suitable brake cleaner may be used at this time to remove dirt and brake dust from the pad and rotor cavity areas of the caliper.

After the brake caliper is clean, insert the new brake pads (one at a time) with the friction material facing each other. Simultaneously push upward on the brake pads (to align the pin holes in the pads and caliper housing) and insert the pad retaining pin. Install the retaining clip, assuring that it seats properly in its groove.

As a good maintenance practice, the caliper bridge bolts (the four bolts holding the caliper halves together) should be "retorqued" to 130-140 in/lb (11-12 ft/lb).

Re-install the caliper over the rotor using the exact bolt, shim and washer combinations that were removed earlier. The mounting bolts should be installed as previously described in the assembly instructions.

Verify that the brake fluid is filled to the proper level.

Use the same cautions listed earlier in the assembly instructions before operating the vehicle.

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.