

Prep and Install Instructions: Vanco 15" \ 16" Big Brake Kit for Jeep Applications

Prep Instructions for Jeep Applications, Pages 1 –5

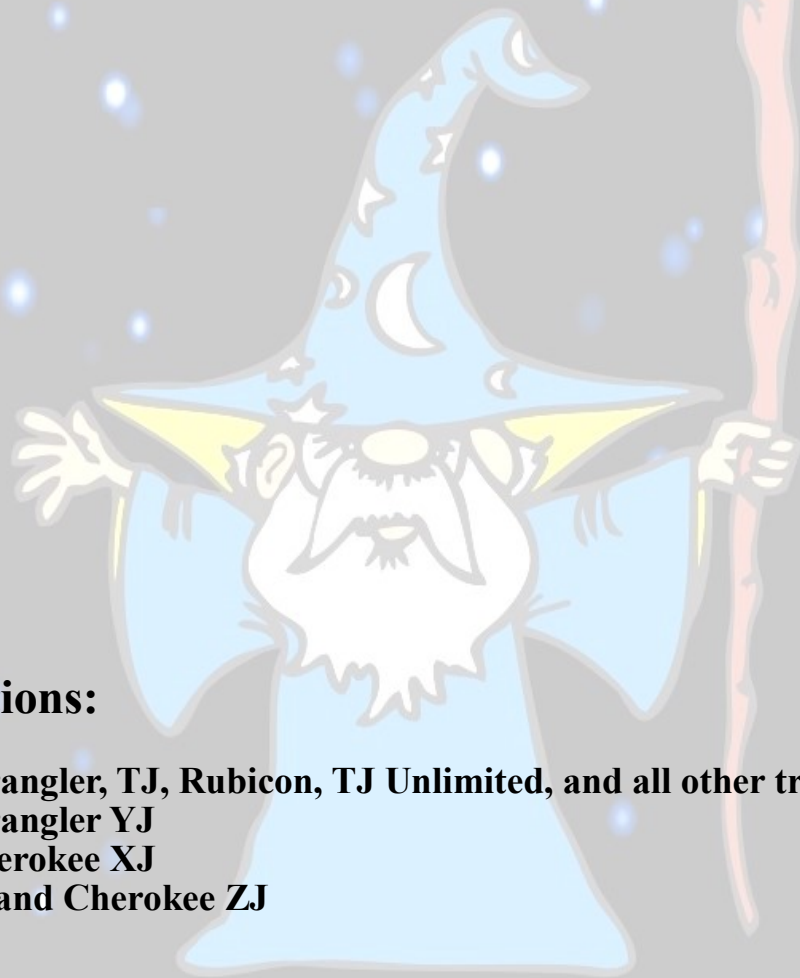
Vanco 15" \ 16" Big Brake Kit Install Instructions, Pages 6 - 10
(Numbered Pages 1-5, 15" \ 16" Big Brake Kit Installation Instructions)

Jeep Applications:

**97-06 Jeep Wrangler, TJ, Rubicon, TJ Unlimited, and all other trim packages.
90-95 Jeep Wrangler YJ
90-01 Jeep Cherokee XJ
93-98 Jeep Grand Cherokee ZJ**

BLACK MAGIC BRAKES

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Thank you for purchasing one of our big brake upgrade kits. Enclosed you will find a set of instructions that will enable you to install the kit with little more than basic hand tools. If you are not comfortable with your mechanical ability when it comes to performing work on one of your vehicle's major safety systems, please enlist the aid of a competent mechanic to assist you with this installation.

The installation of this kit affects your brakes, it is ***imperative*** that it be installed correctly. If you attempt the install and find yourself not understanding what needs to be done, please stop and contact us at the number listed above or by email **mrblaine@blackmagicbrakes.com** with your technical issue. Do not attempt alternative solutions that may alter the design or function of any of the components included in this kit.

This is a bolt on kit. The only modification required in most cases is a small amount of grinding on the unit bearing flange so that the rotor hat will fit over it easily.

Parts and tools needed for installation-

Outside of the parts supplied in the kit, you will need personal safety equipment, brake fluid, red liquid Loctite 271 or equivalent, assorted hand tools, and a small grinder or equivalent to complete the installation.

Note to RCV axle kit owners– Not all kits are compatible. Double check your kit's application before attempting the installation. The RCV compatible kits have been machined for the proper clearances to make the RCV axle install easy.

Fitment– We supply kits that fit inside most all rims sizes currently in use including 15", 16" and 17".

Parts list will depend on which kit is being installed and that list will be at the beginning of each kit specific set of installation instructions.

Note I- calipers are supplied with new copper crush washers, banjo bolts and abutment clips.

Note II– Please follow the break-in instructions included with each set of brake pads and retain them for reference.

Note III- Do not use paste or gel type thread locking compounds.

Note IV- Some versions of these kits have caliper adapter brackets pre-installed with thread locking compound to retain the bolts. Do not loosen or tighten them. If you need to remove and re-install the bracket for any reason, re-apply red liquid Loctite 271 or equivalent to the threaded holes in the knuckles and torque the 7/16" bolts to 75 ft lbs.

The following Prep Application pages are the same for all kits and will be used to get the front axle and inner C's to the point where all the kits will start their kit specific installation differences. When you are done with page 5, the instructions will start over at page 1 specific to the kit being installed.

The applications for these Big Brake Kits include the following-

97-06 Jeep Wrangler, TJ, Rubicon, TJ Unlimited, and all other trim packages.

90-95 Jeep Wrangler YJ

90-01 Jeep Cherokee XJ

93-98 Jeep Grand Cherokee ZJ

Step 1

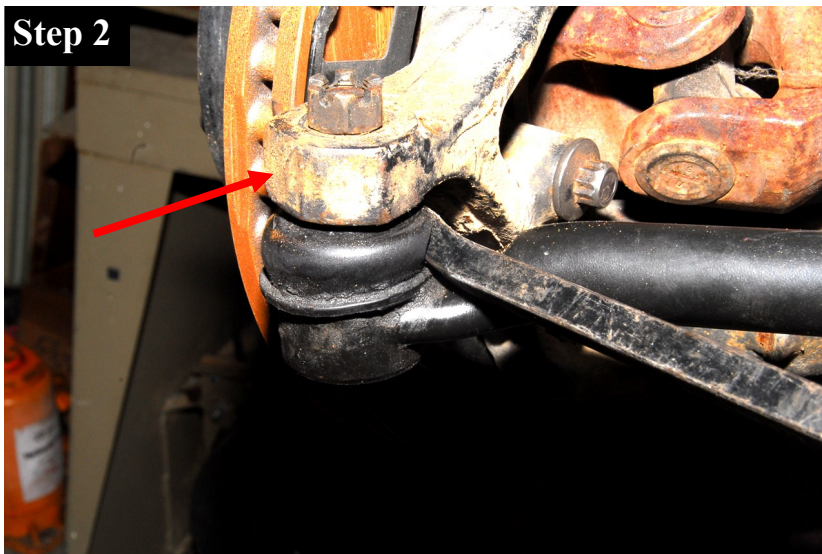


As in all things automotive repair related, be safe, wear appropriate safety gear, ensure that your vehicle is correctly supported on jack stands, and is blocked in such a manner as to stop it from rolling.

Remove the wheels to get ready to start the installation.

Pull the cotter pin and remove the castellated nut from the draglink and tie rod. After full removal of the nut, replace it and turn it down a couple of threads to catch the steering link after removal. This will clean up the threads and prevent a stuck nut from just turning the pin after it's knocked loose. If that does happen, simply force the tapered pin back into the hole and remove the nut.

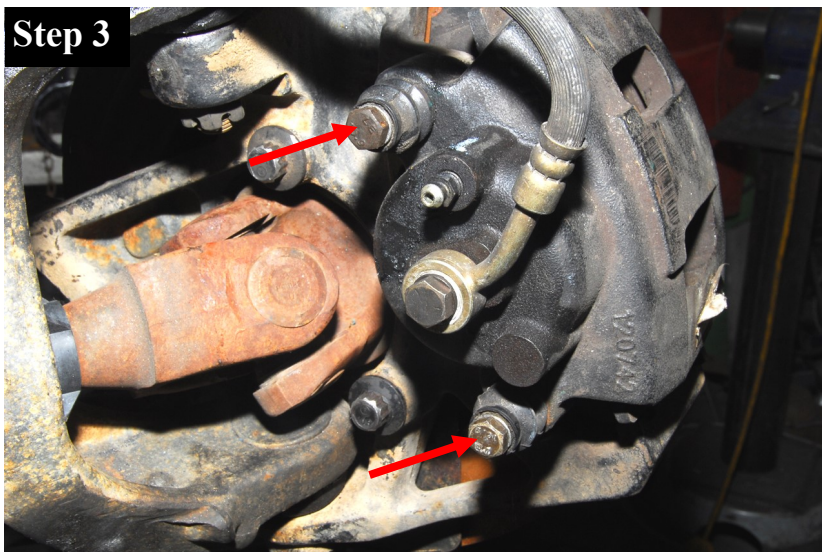
Step 2



To remove either the draglink or tie rod from the steering knuckle, place a pry-bar over the top of the bar as shown and wedge it under the steering arm. Apply downward pressure and strike the end of the steering arm with a medium ball peen hammer in the direction the arrow indicates.

When you get it popped loose, remove the castellated nut and drop the link out. Do both sides and tie the steering up out of your way to make it easier to accomplish the rest of the swap.

Step 3



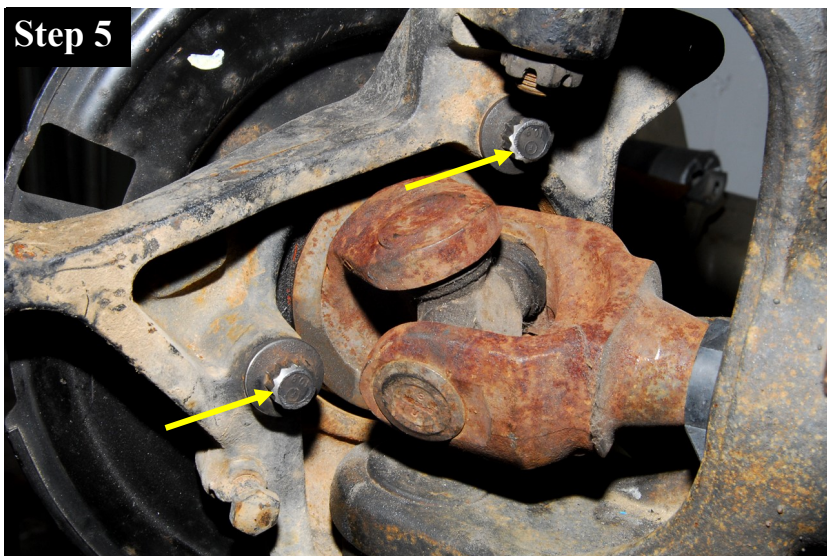
Remove the two caliper mounting bolts and hang the caliper back out of the way. Leave the flex hose connected until it's time to install the new calipers.

Step 4



Remove rotor to access unit bearing as shown.

Step 5



Remove the unit-bearing and axle shafts as an assembly. To do so, remove the three 12 point flange head bolts that retain the unit-bearing.

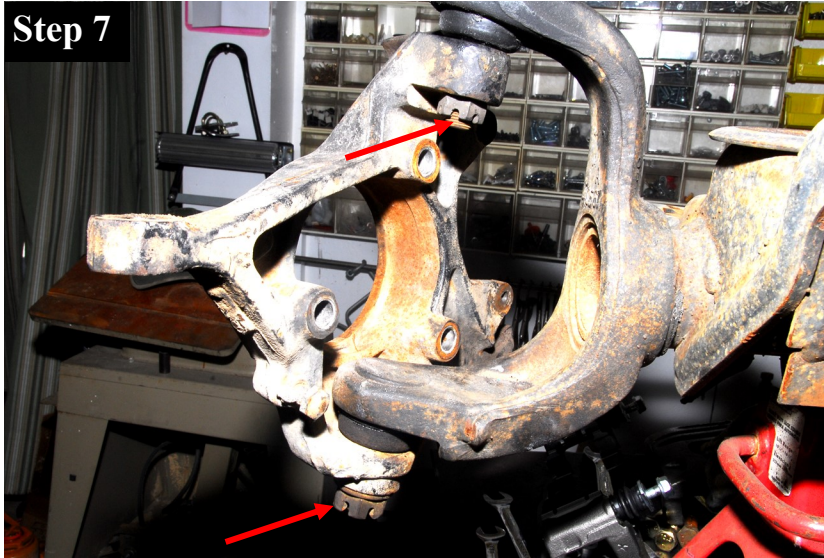
A 1/2" drive 13mm 12 point socket is usually required.

Step 6



This shows the third of the three flange head bolts that need to be removed. After they are removed, pull the axle shafts and unit-bearing as an assembly and set aside for the time being. Take care to keep the splined area and the seal surfaces clean and undamaged.

Step 7



Remove cotter pins and castellated nuts from both the upper and lower ball-joints.

Step 8



Thread the lower nut back on a couple of turns to catch the knuckle after it's popped loose.

Take a 3 lb shop hammer and strike the little shelf on the knuckle straight down as indicated by the yellow arrow. It may take 2-4 very heavy blows, but it will readily pop off the ball-joint pins with this method.

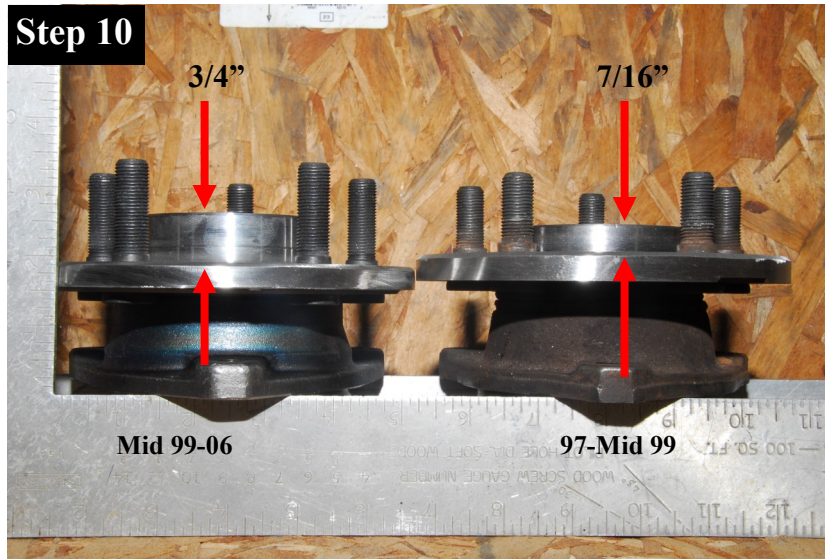
Remove the nut and set the knuckle aside.

Step 9



At this point you should have your inner C looking like this. This is a good time to inspect the upper and lower ball-joints and replace them if needed.

Step 10

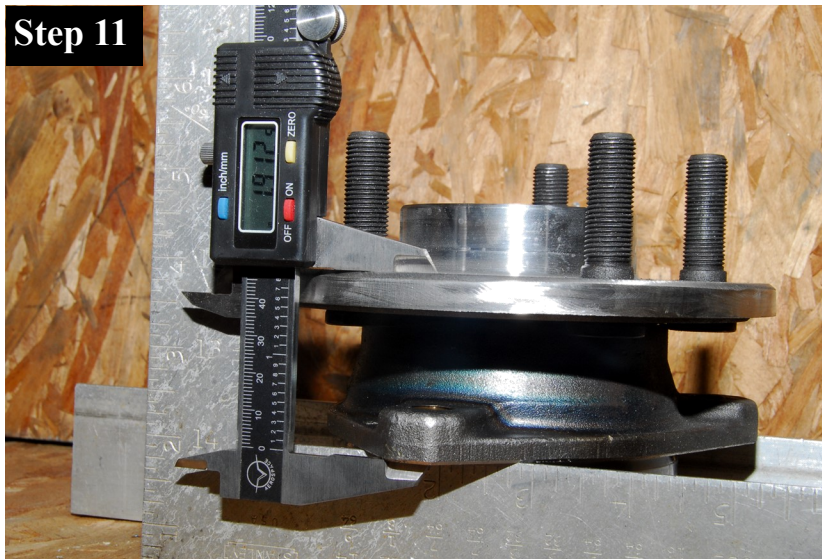


The TJ came equipped with two different unit-bearings depending on when it was made. The later mid 99-06 is shown on the left and the early 97-99 is on the right.

The pilot that registers in the OEM rim center-bore measures roughly 3/4" for the later version and roughly 7/16" for the early version.

This outlines one of the major differences, the most important one is shown in the next steps.

Step 11

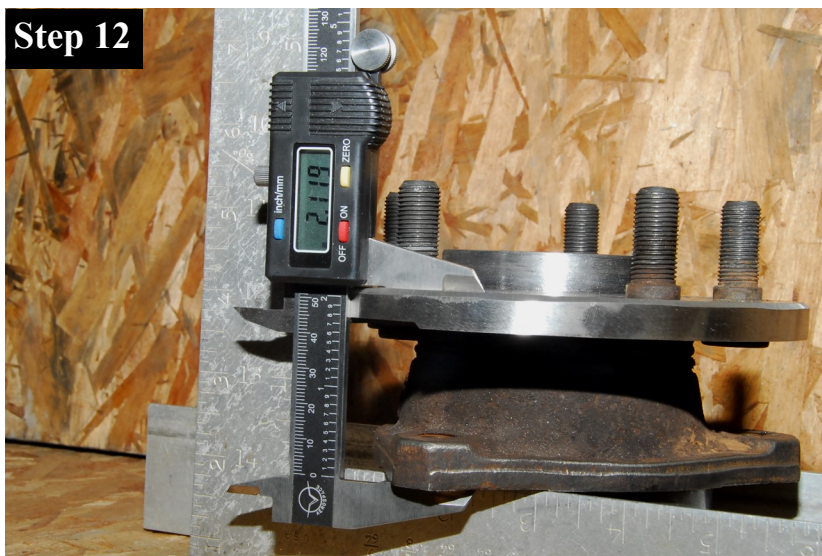


The overall depth from the wheel mounting flange to the face that sits against the steering knuckle is the most important dimension as it affects where the rotor will wind up in the new caliper saddle.

The late unit-bearing is shown at left.

The dimension is 1.912" or roughly 1 15/16"

Step 12



The early unit-bearing is shown and the dimension is 2.119" or slightly under 2 1/8".

Install Instructions: Vanco 15" \ 16" Big Brake Kit for Jeep Applications with RCV & Larger U-Joint Kits

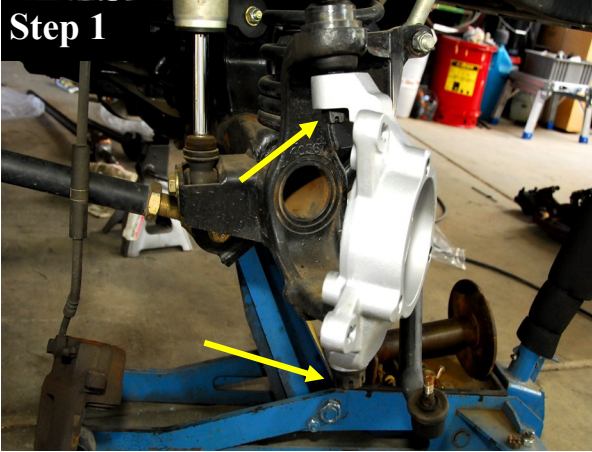
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Parts List: Vanco 15" \ 16" Big Brake Kit for Jeep Applications with RCV & Larger U-Joint Kits

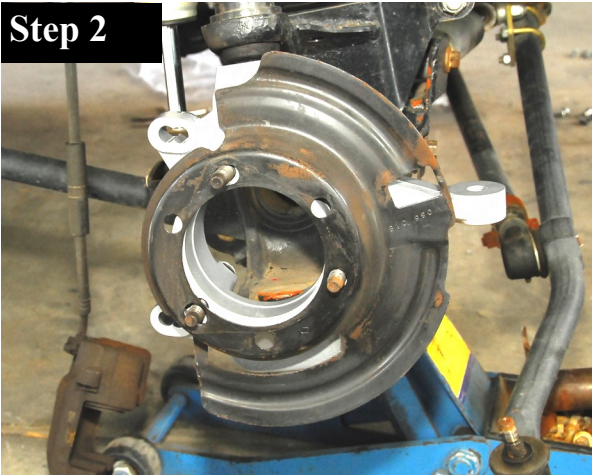
- (1) Set of 833 Black Magic Brake Pads**
- (1) Literature Packet with Hardware Packet**
- (2) Centric Premium Rotors**
- (2) Dual Piston Calipers with Hardware**
- (2) 15"\16" Dual Mode Steering Knuckles**

Step 1



Install the knuckle onto the ball joint pins. Tighten the castellated nuts in accordance with factory recommended specifications. Once they are installed, insert a new cotter pin into each hole and bend the ends over.

Step 2



Insert the 3 factory unit bearing bolts into the holes in the knuckle and hang the dust shield on them.

Step 3



Install the unit bearing and axle assembly into the knuckle, thread the unit bearing bolts into the holes and tighten them to 75 ft. lbs.

The arrow points at a reference line that has been drawn around the perimeter to give an indication of how much material will need to be removed in order for the rotor to fit the flange correctly.

(Disregard the out of order assembly which shows the tie rod end installed which will be covered later)

Step 4



A closer view is shown. The reference line is to show the minimal amount of material that needs to be removed to fit the new rotor hat over the flange. A grinder with a coarse grit sanding flap disc works well for removal.

Step 5



Here you can see the amount of material removed from the circumference of the flange relative to the reference line.

Test fit the rotor and make sure it slides over the flange easily without any dragging or hanging up on any high spots. Keep grinding around the perimeter until it slides on smoothly without interference and easily registers on the pilot.

Step 6



The arrow indicates the new 45° chamfer that has been put back on after the grinding to fit is finished. This is important so that the edge of the flange does **not** contact the small radius where the rotor hat flat face meets the side wall of the hat. If there is contact, the rotor will wobble and dramatically decrease brake performance.

Install rotor and clamp in place with a couple of lugnuts or regular hex nuts.

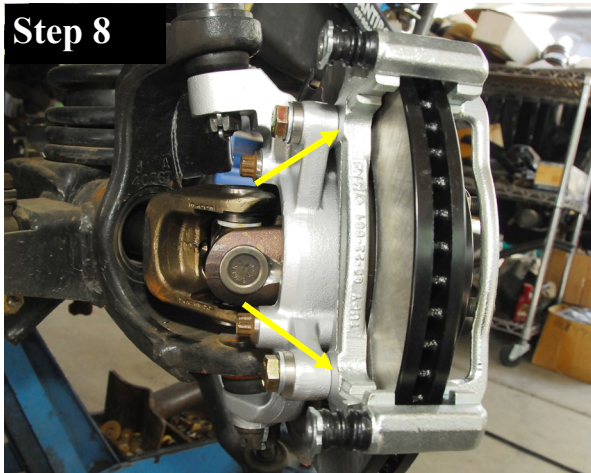
Step 7



After the rotor is installed and clamped in place, it is time to install the caliper saddle which should have the caliper removed from it. Prep the two caliper saddle to knuckle bolts by putting a the washer and spacer on. That is for the late model unit bearings. The early model will only get the washer under the head of the bolt and the spacer will go between the caliper saddle and the hole in the knuckle to move the saddle outboard for the taller unit bearing.

Use a couple of drops of Red Liquid Loctite 271 or equivalent on the threads.

Step 8

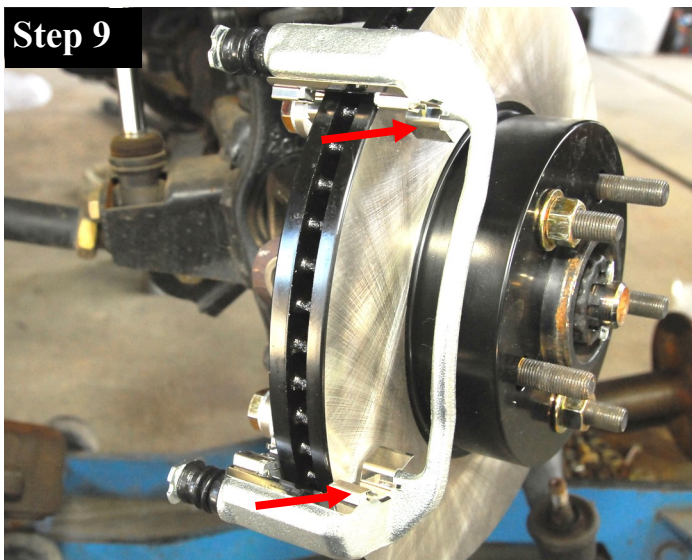


This shows the correct orientation of the spacers for the late model unit bearings with the spacer between the washer and knuckle.

The arrows show where they will be used if the vehicle is equipped with the early model unit bearings.

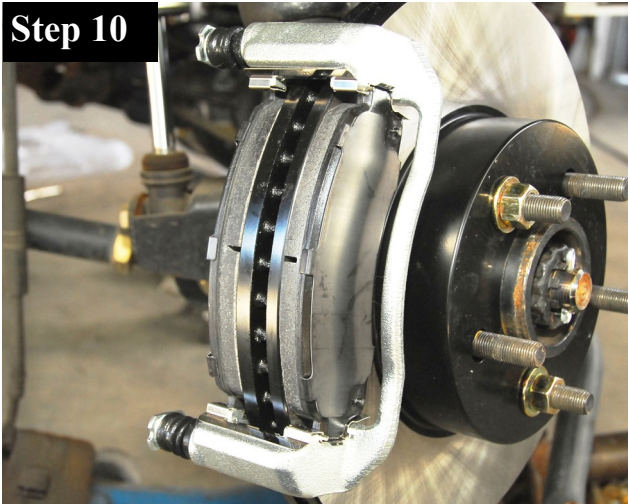
Torque the 12mm bolts to 75 ft lbs.

Step 9



Install the brake pad anti-rattle abutment clips into the saddle slots as shown with the arrows.

Step 10



Install both brake pads as shown. Be sure that the friction layer is to the inboard side of the bracket against the rotor.

Step 11

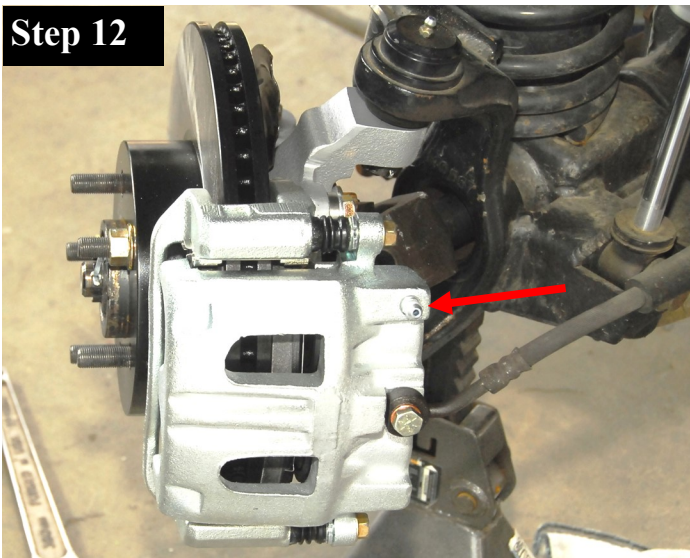


If you are re-using the stock brake lines, the banjo fitting will need to be modified by grinding the shoulder off shown on the left until it is flush like the one on the right.

Clamping a couple of small squares of cardboard over the holes on each side will keep the metal bits from contaminating the bores.

Most aftermarket lines work without any modification due to different configurations of the banjo fitting.

Step 12



The caliper gets installed next. Make certain that the bleeder screw indicated by the red arrow is above the flex hose. Install the flex hose with two crush washers and the banjo bolt.

Put a crush washer on the bolt, insert bolt through the banjo fitting, then place another crush washer on the bolt before threading it into the caliper.

Caliper bolts should be tightened to 15 ft lbs and the banjo bolt should start at 30 ft lbs and gradually increase if there are leaks until the leak stops.

Step 13



After the brake lines are installed, it's time to put the steering back together. Push the tie rod ends back into the tapered holes in both steering knuckles, tighten down the castellated nuts to factory torque specifications, insert and bend over the cotter pins.

Step 14

After the steering is installed, you will need to check the toe-in due to small variances in steering knuckle fitment and variations in axle manufacture. After setting the toe correctly, you will need to bleed the new calipers. The best method we have found requires one person to open and close the bleed screws and a helper to work the brake pedal.

Do not forget to transfer the steering stop bolts from the old knuckle to the new ones.

Note-remove cap from brake fluid reservoir before bleeding. Remove rubber gasket from cap and loosely place cap back on reservoir to keep fluid from splashing out during the bleed process. Do not forget to reinstall gasket when you're done.

Do not let the reservoir run dry. Keep an eye on the level and replenish as needed during the bleeding process.

A clear tube and a container for collecting the fluid is needed. Put the clear tube on the bleed screw with the other end in the container. Orient the wrench so you get a pretty wide swing from closed to open as fully as possible in one shot.

Step 1 Open bleed screw and have the helper press the brake pedal all the way to the floor with a fair bit of enthusiasm and tell you when it's all the way down.

Step 2 When the pedal is down, close the bleed screw and tell the helper to let the pedal up and tell you when it's up.

Repeat steps one and two 4-6 times per caliper starting with the passenger side until the fluid flows in the tube with no noticeable air bubbles. After you do both the calipers, repeat for both starting back at the passenger side. Pay close attention to the brake fluid reservoir and do not let it run out of fluid. It should not be necessary to bleed the rear brake circuit unless you let the master run too low on fluid.

Step 15

When you are finished bleeding the brakes, put the tires back on and torque the lug nuts to the appropriate torque value. Give everything a once over and make sure you haven't left any fasteners loose or failed to install the cotter pins. Get the vehicle ready to drive so the brake pads can be broken in and do so. The Black Magic Brake pads come with break in instructions that should be followed for the best performance.