

86-95 Suzuki Samurai Rear Wheel Bearing Kit

(SKU# SAX-RWB)



Instructions also include:

- | | |
|------------------------------------|----------------|
| Rear Hub Bolt Kit | (SKU# SAX-AS) |
| SJ410 Backing Plate | (SKU# SAX-410) |
| SJ413 Rear Drum Brake Hardware Kit | (SKU# SB-RBHK) |
| Rear Drum Brake Shoes | (SKU# SB-RBS) |
| Rear Brake Wheel Cylinder | (SKU# SB-SRWC) |
| Rear Axle Shafts | (SKU# SAX-RCS) |

Installation Instructions



Wheel Bearing Kit



SJ410 Backing Plate

CAUTION: Safety glasses should be worn at all times when working with vehicles and related tools and equipment.



Suggested Tools:

- Penetrating Oil
- Floor Jack
- Safety Stand (1)
- 19 mm Wheel Lug Wrench
- Large Ball Peen Hammer
- Cold Chisel
- Brake Cleaner (1 Aerosol Can)
- Large Standard Screwdriver
- Needle Nose Pliers
- Combination Wrench 10 & 12 mm
- Large Dead Blow Hammer
- Sockets: 12,14,17 & 19 mm
- 4" Angle Grinder
- 3 Boards: 2X8X10"
- 1 Pipe: 1 1/2" ID 32" Long
- Seal Driver 2 3/4" OD (or a socket of similar size)
- Wheel Bearing Grease
- Permatex® Gear Oil RTV Silicone Sealant.
- Brake Parts Lubricant
- 10 mm Tubing (Flair Nut) Wrench



Added tools if installing SJ410 Backing Plate

- Drill Press
- 3" Metal Cutting Hole Saw
- Round File (or Die Grinder)



Step 1

When working on suspension or drive train parts it is a good idea to spray all fasteners with penetrating oil a day ahead. If not done a day ahead, an hour or even minutes ahead is helpful.

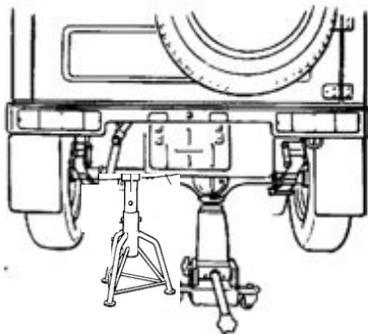


Step 2

Lift and support the vehicle on a twin post lift.

Note: We used a twin post lift, but this job could easily be done with a floor jack and (1) safety stand.

These instructions are designed to be used on the DRIVERS side of the vehicle, but can easily be adapted to the passenger side if needed.



Step 3

If you are using a floor jack and safety stand, raise the rear of the vehicle and place one safety stand under the axle housing as shown.

Step 4

Release the parking brake if applied (Lever down).



Step 5

Remove the wheel center cap by removing the (1) center bolt using a 14 mm socket.



Step 6

Remove the wheel assembly by removing the (5) wheel lug nuts using a 19 mm lug wrench or socket.

Caution - Danger

Some brake shoe lining materials contain asbestos. Consequently, the dust created in the brake drums could have asbestos in it. If this dust becomes airborne and then inhaled by individuals, it could increase the risk of lung cancer and other respiratory diseases. Therefore you should never clean brake parts by spraying them with compressed air. Always wash brake parts with a safe liquid and then dispose of the liquid in accordance with state and federal regulations. Using a respirator is also a good idea to reduce the risk of inhaling harmful asbestos dust.



Step 7

Remove the (4) axle nuts and wheel center cap bracket using a 17 mm socket.



Step 8

Remove the brake drum and set it aside.





Tech Tip:

Rusted brake drums can be loosened by pounding on them with a large ball peen (or small sledge) hammer in the locations shown above.

Caution: Do not hit the wheel or hub studs as thread damage will result and the nuts will not thread on properly.



Step 9

Clean all brake parts by placing a pan under the brakes and spraying all brake parts with brake cleaner. If brakes are particularly dirty you may need to use a cleaning brush along with the spray.



Step 10

Inspect the drum for cracks, scoring or grooves. If the drum is cracked, the drum is unsafe and will need to be replaced. If scoring is excessive the drum will need to be replaced. If scoring is minor you may be able to have the drum machined. Machining should be performed by a qualified professional who will measure the drum before and after machining to insure it is safe for reuse.



Step 11

Also inspect the drum for excessive wear by measuring the inside diameter of the drum. If the drum measures greater than 8.740" it will need to be replaced.

Note: If you do not have the tools and/or know-how to measure the drum, we recommend you have it measured by a qualified professional.



Brake Lining

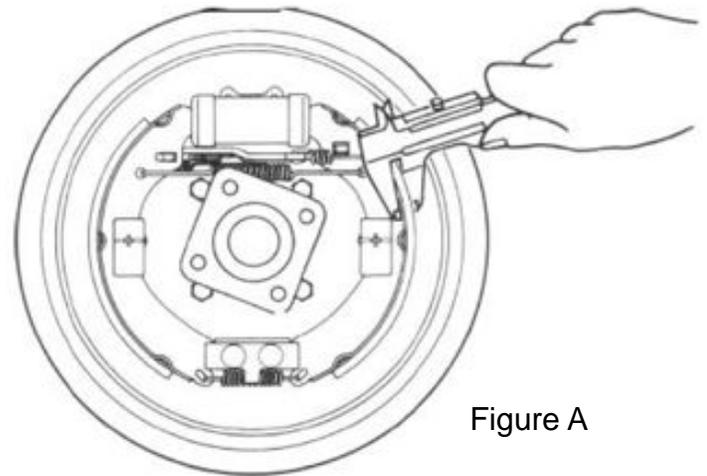


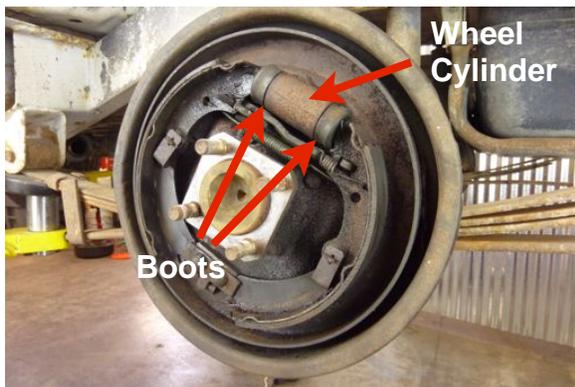
Figure A

Step 12

Inspect the brake shoe linings for cracks or separation from the metal part of the shoe. If any of these conditions exist, the shoes will need replacing.

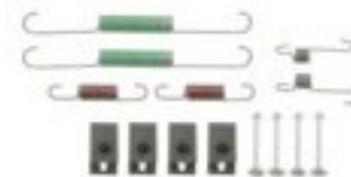
Step 13

Measure the shoe as shown above. If the shoe measures less than 1/8" (.125" or 3.0 mm) at any point, the shoes should be replaced. Click [HERE](#) to see what is available through Low Range Off-Road.



Boots

Wheel Cylinder



Step 14

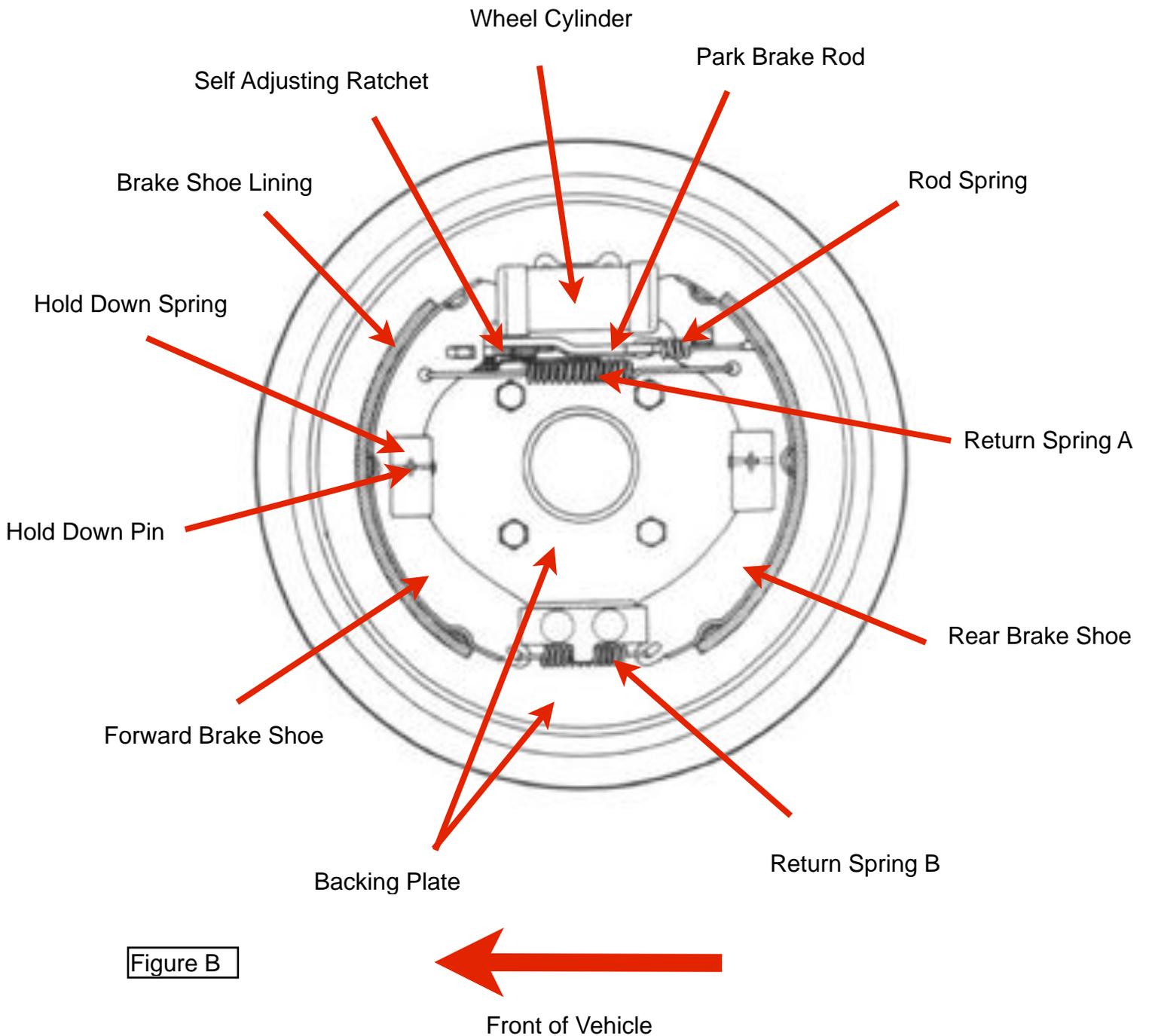
Check the wheel cylinder for leakage by peeling back the boots in the locations indicated by the arrows. If fluid leaks out, the wheel cylinder needs to be replaced. Click [HERE](#) to see what is available through Low Range Off-Road.

Step 15

Inspect all the springs and other hardware as the shoes are removed. If the springs are stretched, worn or rusted they should be replaced. Click [HERE](#) to see what is available through our web site.



Drum Brake Parts Identification



Brake Shoe Removal

Note: This will need to be done whether you are replacing the shoes or not.



Step 16

Remove return spring B.



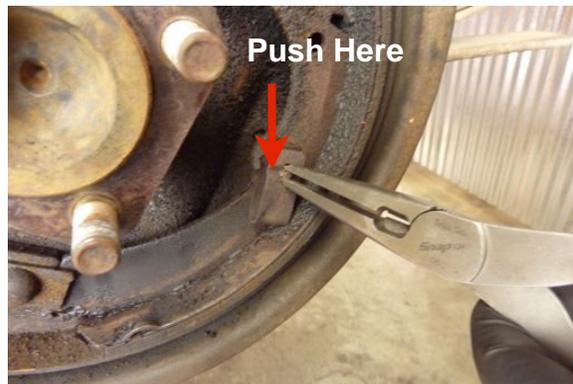
Step 17

Remove the rod spring.



Step 18

Remove return spring A.



Step 19

Remove the rear brake shoe by pushing inward on the brake shoe hold down spring and twisting the hold down pin $\frac{1}{4}$ turn. Remove the pin from the rear of the backing plate and set it aside.



Step 20

Disconnect the rear shoe from the park brake rod and set the shoe aside.



Step 21

Remove the forward brake shoe in the same way as the rear brake shoe.



Step 21 Continued

Forward shoe removed.



Step 22

Clean the backing plate with a wire brush.

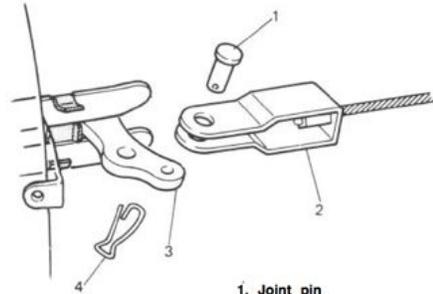


Axle Shaft and Wheel Bearing Removal



Step 23

Begin disconnecting the park brake cable by removing the clip. See Figure C for more detail.



1. Joint pin
2. Cable joint
3. Parking brake shoe lever
4. Clip

Figure C



Step 24

Finish disconnecting the parking brake cable by removing the pin as shown.



Step 24 Continued

Parking brake cable disconnected.





Step 25

Place a pan under the brake bleeder screw and remove the brake bleeder screw using a 10 mm box end wrench.

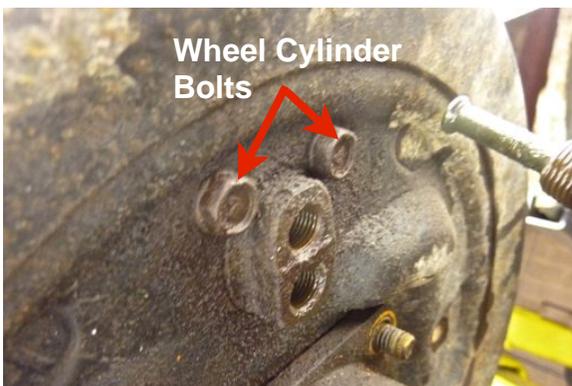
Note: This step is not required but it gives better access for removing the brake line, which is the next step.



Step 26

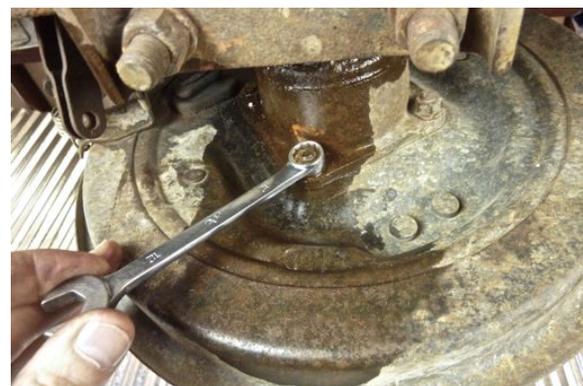
Remove the brake line from the wheel cylinder. It is highly recommended that you use a tubing wrench (10 mm) instead of an open end wrench for brake line removal. Using a tubing wrench will reduce the risk of rounding up the flair nut.

Note: If you are changing the brake fluid let it drain into a pan. If you are not, you will want to plug the brake line with something to keep the fluid from draining out of the system. A piece of vacuum hose and a golf tee works well.



Step 27

Remove the Wheel Cylinder by removing (2) bolts using a 10 mm box end wrench or socket.



Step 28

Remove (4) backing plate bolts using 12 mm box end wrench or socket.





Tech Tip

Axle shaft and bearing removal normally requires a tool like the one shown above. If you do not have such a tool, we recommend removing the axle and bearing as illustrated in the following steps. It may take a little more time and effort but it works well.



Step 29

Temporarily install the brake drum and tighten the axle hub nuts. No need to tighten to full torque at this point, just snug is fine.



Step 30

Temporarily reinstall the wheel assembly and tighten the wheel lug nuts. No need to tighten to full torque at this point, just snug if fine.



Tech Tip

If you are working on a twin post lift (where the vehicle is level side to side) there may be a small amount of gear oil that comes out of the axle housing during the next step. So place a pan under the wheel to catch the oil if it does come out. If you are working with one jack stand under the axle housing, gear oil should not come out.



Step 31

Pound on the inside of the rim (or tire) with a large dead blow hammer until the axle, brakes and wheel assembly comes out of the axle housing.

Caution: Do not hit the backing plate.



Step 31 Continued

Allow the axle to move out of the axle housing about 6 inches.



Step 32

Remove the wheel assembly.



Step 33

Remove the brake drum.



Step 34

Remove the axle, bearing, and backing plate assembly from the axle housing.



Step 35

Inspect the axle splines to see that they are still straight and not twisted. If they are twisted or damaged the axle will need to be replaced.



Step 35 Continued

Twisted Splines



Axle Seal Replacement



Step 36

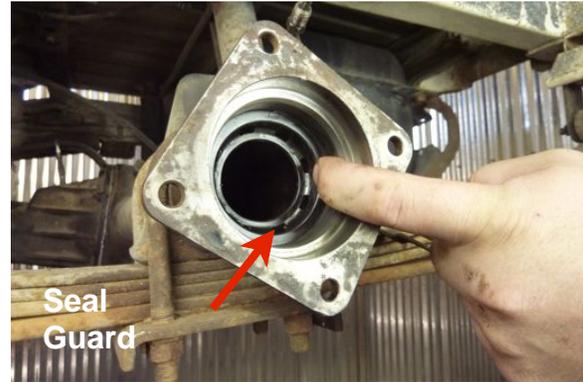
Using a large screwdriver, pry out the old seal.

Caution: Do not gouge the axle housing with the tip of the screwdriver. Gouging can cause a leak between the new seal and the axle housing.



Step 38

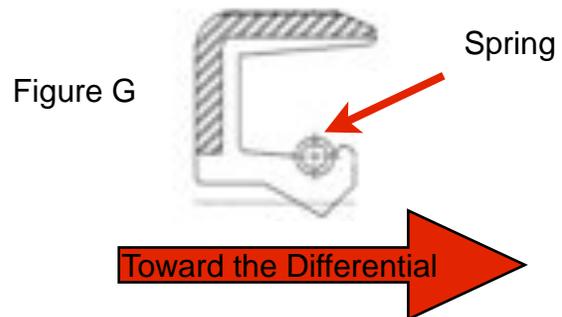
Position the new seal as shown.



Step 37

Insure that the seal guard is still positioned properly inside the axle housing.

Cross Section View of a Seal



Step 38 Continued

The spring of the seal should be installed away from you, toward the differential.



Step 39

Start the seal by tapping gently with a small hammer.

Caution: Do not distort metal part of the seal.



Step 40

After the seal has started, drive it into place with the correct size seal driver.

Note: The correct size seal driver is large enough to cover the seal but small enough to fit inside the seal cavity. We used a seal driver that was 2 3/4" O. D.

Note: You could also use a socket of the correct outside diameter (2 3/4") and a dead blow hammer.



Step 40 Continued

Seal correctly installed in the axle housing.



Wheel Bearing Removal



Step 41

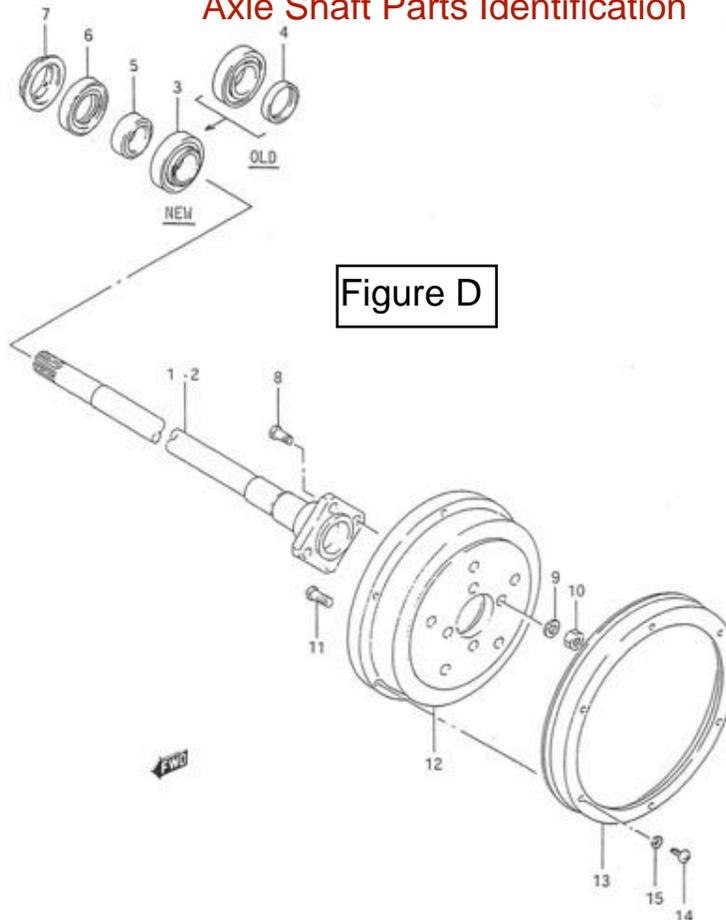
Remove the (4) press fitted backing plate bolts by tapping them with a hammer as shown.

Caution: do not damage the threads. It may be necessary to install the nuts to protect the threads.

Step 41 Continued

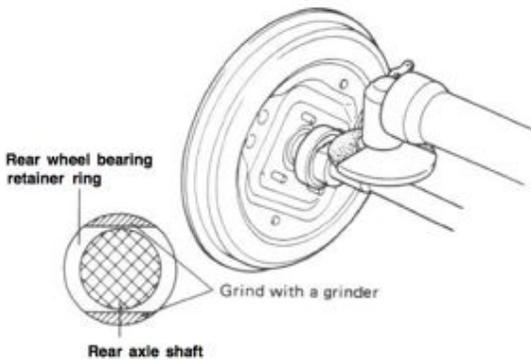
Backing plate bolt removed.

Axle Shaft Parts Identification



- 1 & 2 Rear Axle Shaft
- 3 Wheel Bearing
- 4 Rear Shaft Spacer
- 5 Bearing Retainer
- 6 Oil Seal
- 7 Oil Seal Protector
- 8 Rear Hub Bolt
- 9 Lock Washer
- 10 Nut
- 11 Wheel Stud
- 12 Brake Drum

Figure E



Step 42

Remove the bearing retainer (See Figure D) by grinding it on both sides as shown in Figure E.

Caution: Do NOT grind the axle in any way. If you do, it will likely weaken the axle and cause premature axle failure.

Step 42 Continued

The objective is to grind the retainer as thin as you can without touching the axle itself.



Step 42 Continued

Axle properly ground on one side.

Step 43

Once both sides are ground, strike the retainer with a sharp cold chisel as shown until the retainer splits open.



Step 43 Continued

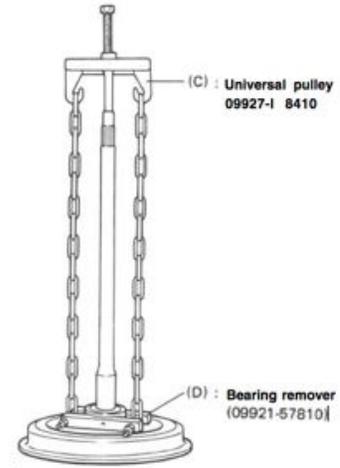
Split bearing retainer.



Step 44 Option B

If you have a press like the one shown here, press the bearing off the axle shaft using the press manufacturers instructions. If you do not have a press like the one shown above, follow the steps that start with **Option C**.

Figure F



Step 44 Option A

Press the bearing off the axle shaft as shown in Figure F if you have this type tool.

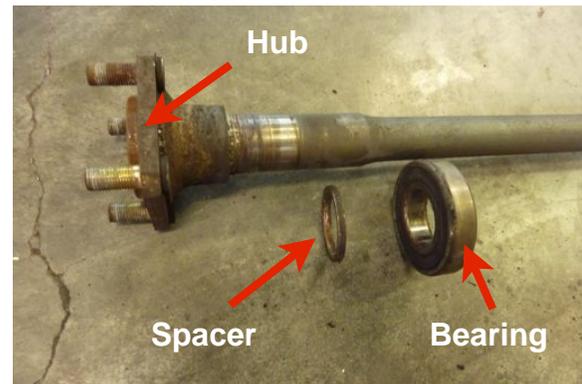


Step 44 Option C

Place a board on the floor.

Note: The board is to protect the axle splines during the removal process.





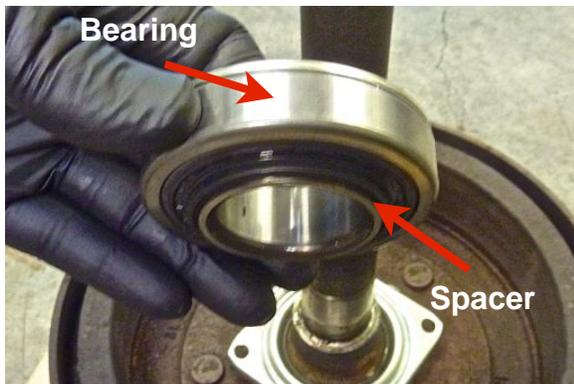
Step 45

Hold the backing plate with both hands. Raise the axle assembly about a foot above the board. Then lower the axle and backing plate with force against the board. Be sure not to miss the board. With each pounding the bearing will slide farther down the shaft until the bearing and backing plate can be removed.

Tech Tip

This picture shows the old bearing removed from the axle.

Note: The old bearing has a spacer on the hub side of the bearing. The new bearing has the spacer as part of the bearing.



Tech Tip

New bearing the with spacer as part of the bearing.



Rear Hub Bolt (Stud) Replacement

If you are not replacing the Axle Hub Studs, skip to next section.



Step 46

Reinstall the (4) axle hub stud nuts. The nuts should be flush with the end of the stud as shown.

Step 47

Place the spline end of the axle shaft on a board to protect the splines. Using a hammer to drive the (4) hub studs from the axle hub.



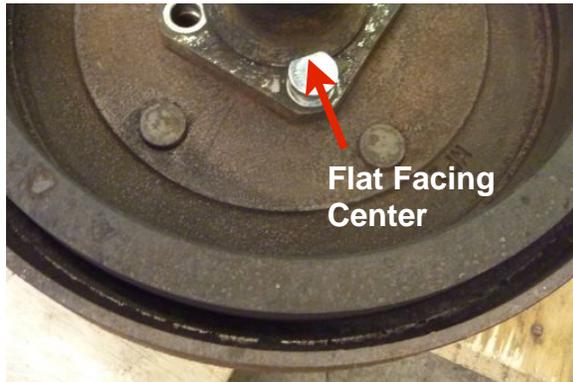
Step 48

Then remove the nuts and studs from the axle hub.

Step 49

Place three boards (2X6X10") on the floor as shown. Position the brake drum on top of the boards.

Note: This is done so the wheel studs in do not get damaged.



Step 50

Align the axle hub stud holes with the brake drum holes and insert a new hub stud. Make sure the flat on the hub stud faces the center of the axle. Drive the hub stud into place with a hammer. Repeat the process on the remaining (3) studs.



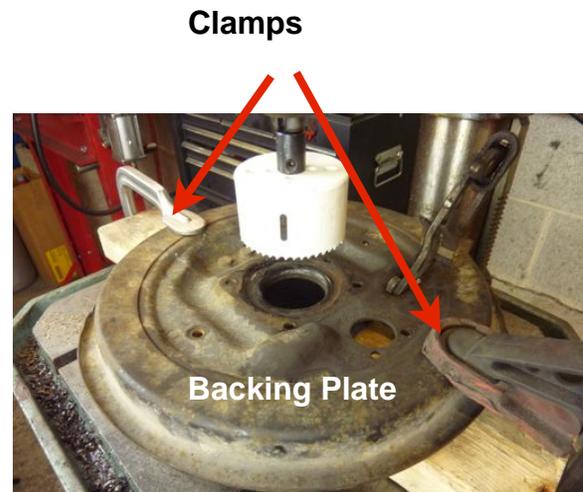
Step 50 Continued

This picture shows the hub studs properly installed. Notice all the flats facing the center.

SJ410 Backing Plate Installation.

If you are not installing the SJ410 Backing Plate, skip to **Step 73**.

The SJ410 Backing Plate, once installed, will allow the axle shaft, wheel bearing and seal to be removed and replaced without having to remove any brake components. Click [HERE](#) for more information on our SJ410 Backing Plate.



Step 51

Insert a 3" metal cutting hole saw in the drill press chuck and tighten it securely.

Step 52

Place a board (2X10X12") on the drill press and clamp the backing plate to a drill press as shown.

Note: Be sure the hole saw is centered on the center hole of the backing plate. Also, be sure the backing plate is very secure, using at least two strong clamps.



Step 53

Turn the drill press on and slowly feed the hole saw into the backing plate.

Note: The drill press should be set to turn at the slowest speed possible.



Step 54

Remove the backing plate from the drill press and smooth the edges of the hole with a file or die grinder.



Wheel Bearing Installation using the SJ410 backing plate.

If you are not using the SJ410 Backing Plate skip to **Step 73**.



Step 55

Position the drum and axle on the boards as shown.

Note: There is no need to install the axle hub nuts at this point.

Step 56

Position the SJ410 backing plate on the axle shaft as shown.



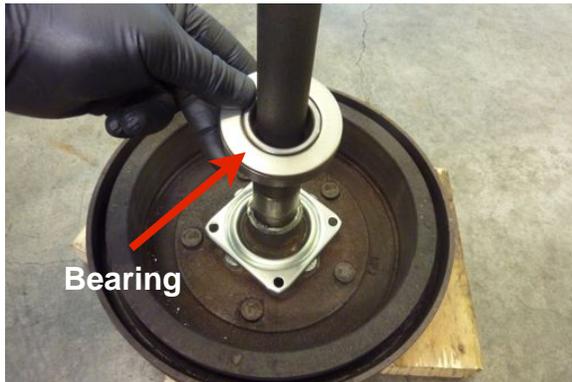
Step 56 Continued

Be sure to install the SJ410 backing plate with this side up.

Step 56 Continued

The "tab" side goes toward the axle hub.





Step 57

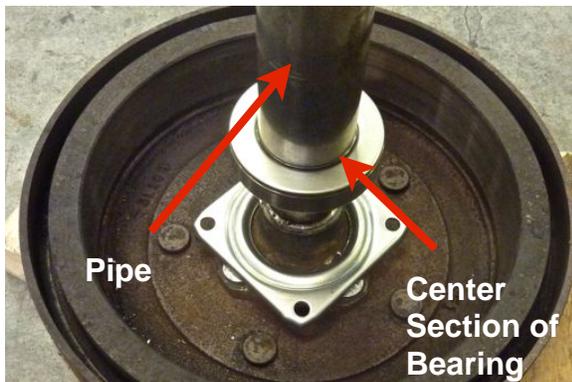
Install the bearing on the axle shaft with the flat side up.



Step 57 Continued

This side of the bearing goes down.

Note: Notice the built in spacer goes down toward the hub.



Step 58

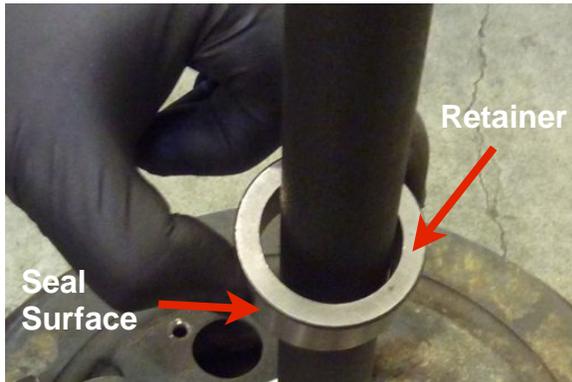
Select a pipe that is large enough to fit over the axle shaft but small enough to contact the center part of the bearing. We used a 1½" Inside diameter steel pipe 32" long.

Caution: If the pipe does not contact the center section of the bearing, the bearing will be damaged.



Step 59

Using a large hammer, drive the bearing down the axle shaft into place.



Step 60

Install the axle bearing retainer using the pipe and hammer just as you did the axle bearing.

Note: Be careful not to damage the outside surface of the bearing retainer. This smooth surface rides against the axle seal. If it is damaged it will cause the axle seal to leak gear oil.



Step 60 Continued

This is how all the parts should look when properly installed.



Axle Shaft Installation with SJ410 Backing Plate

If you are reusing the OEM backing plate skip to **Step 73**.

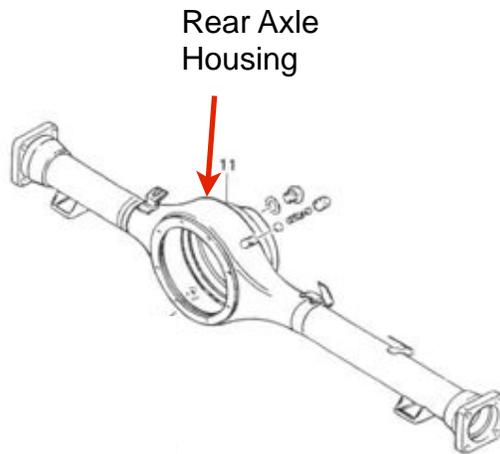


Figure H



Step 61

Insert the axle shaft into the axle housing (see Figure H) as shown.



Step 62

Apply some bearing grease to the bearing retainer. This lubricates the seal temporarily until the gear oil can find its way to the seal.



Step 63

Apply a thin layer of gasket maker to the surface shown above to keep water out of the axle housing.

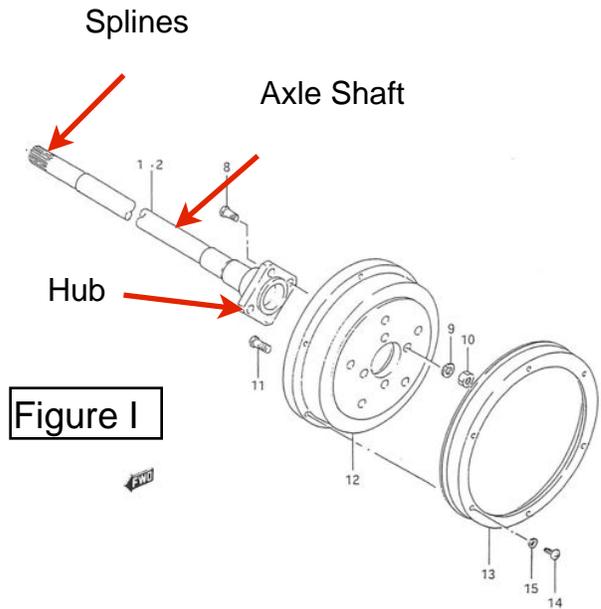
Note: Permatex® Gear Oil RTV Silicone is the best choice here.





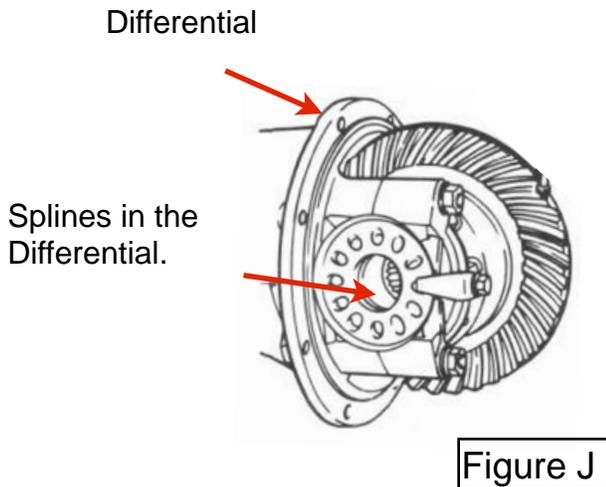
Step 64

Continue inserting the axle shaft into the axle housing until it stops.



Step 65

Once the axle shaft stops, lift up slightly on the spline end of the axle shaft (See Figure I) so that the splines of axle shaft can be inserted into the splines of the differential (See Figure J). This is done by pushing down on the axle at the hub end (See Figure I) of the axle. Since the axle is resting on the seal guard (See picture below), pushing down on the hub end of the axle will raise the spine end up.





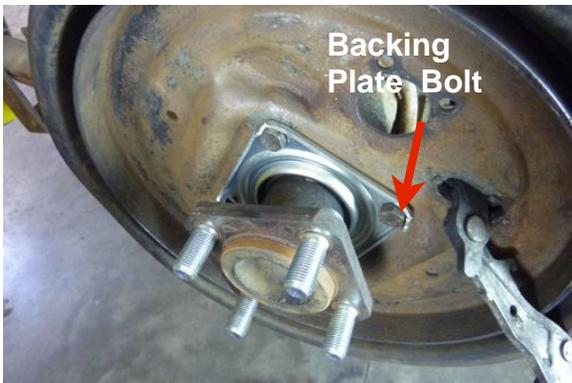
Step 66

When the splines of the axle shaft align with splines inside the differential (See Figure J) you will be able to push the axle shaft farther inward.



Step 67

Position the wheel bearing in the axle housing and pound the axle (and bearing) farther into place with a dead blow hammer as shown.



Step 68

Install the (4) backing plate bolts.

Note: Be sure that the corners on the head of the bolts fit the corners in the backing plate.



Step 69

Note: It is important that these nuts not come off. We recommend using blue Loctite® on the threads.

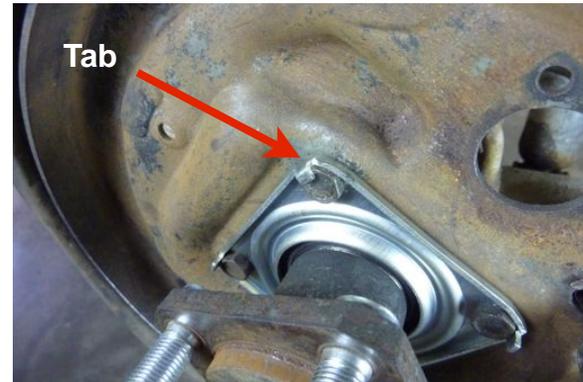
Install the (4) backing plate nuts and tighten them evenly, a little at a time, such that each nut is tightened at the same rate. Torque the nuts. (13.5-20.0 ft. lbs.)





Step 70

Bend down the tabs (4) on each backing plate bolt using a large tapered punch and hammer.



Step 70 Continued

This shows one tab bent down properly.



Step 71

Reconnect the parking brake cable and install the pin as shown.



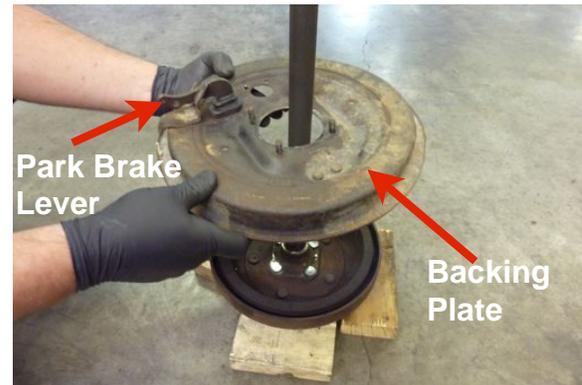
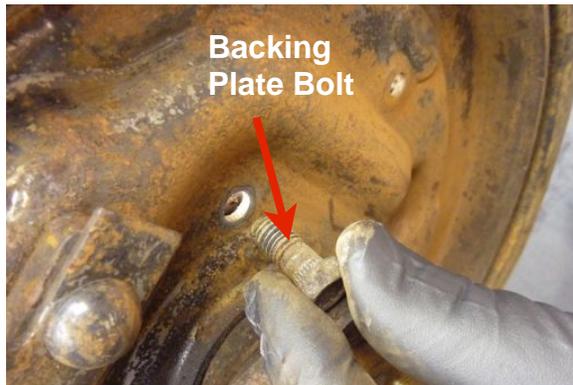
Step 72

Install the park brake cable clip as shown.

Skip Ahead to Step 91



Bearing Installation When Reusing the OEM Backing Plate Without the SJ410 Backing Plate



Step 73

Reinstall the (4) backing plate bolts by driving them in with a hammer.

Step 74

Position the brake drum and axle on 3 boards as shown. Then position the backing plate on the axle.

Note: Be sure the parking brake lever side of the backing plate is up as shown.



Step 75

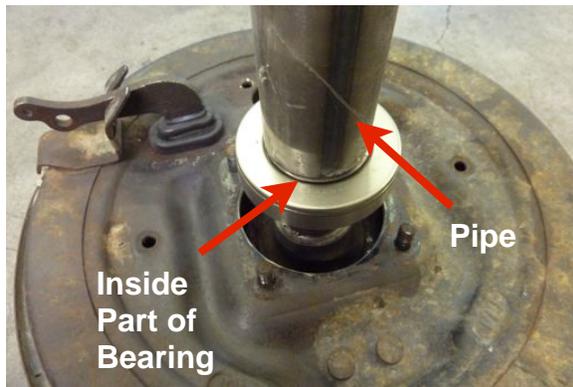
Install the bearing on the axle shaft with the flat side up.

Tech Tip

This side of the bearing goes down.

Note: Notice the built in spacer goes down.





Step 76

Select a pipe that is large enough to fit over the axle shaft but small enough to contact the center part of the bearing. We used a 1½" Inside diameter pipe 32" long.

Caution: The pipe must be small enough in diameter to contact the inside of the bearing, or the bearing will be damaged.



Step 77

Using a large hammer, drive the bearing down the axle shaft into place.



Step 78

Position the bearing retainer on the axle shaft. It does not matter which side goes up.

Note: Be careful not to damage the outside surface of the bearing retainer. This smooth surface rides against the axle seal. If this surface becomes damaged it will cause the axle seal to leak gear oil.



Step 79

Drive the retainer into place with the same pipe and hammer used to drive on the bearing.

Axle Installation When Reusing OEM Backing Plate



Step 80

Insert the axle shaft, bearing and backing plate into the axle housing as shown.

Step 81

Apply some bearing grease to the bearing retainer. This lubricates the seal temporarily until the gear oil can find its way to the seal.



Step 82

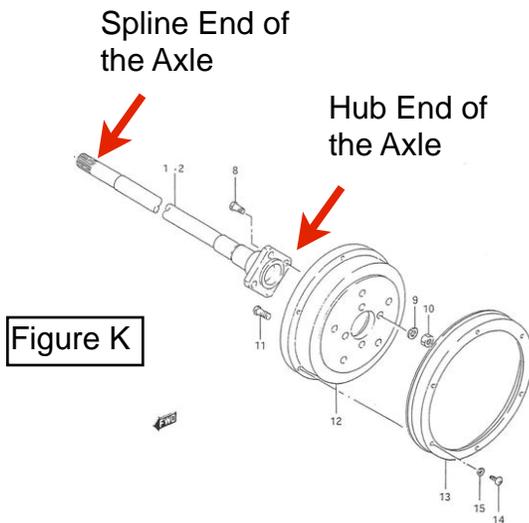
Clean this area and apply a thin layer of gasket maker/sealer to this surface to keep water out of the axle housing.

Step 83

Continue inserting the axle shaft into the axle housing until it stops

Note: Permatex® Gear Oil RTV Silicone is the best choice here.

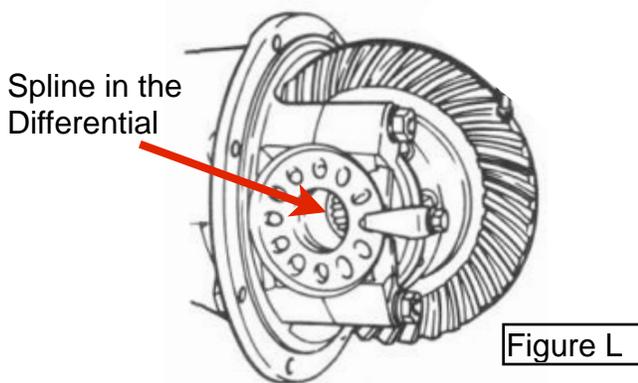




Step 84

Once the axle shaft stops, lift up slightly on the spline end of the axle shaft (See Figure K). This is done by pushing down on the hub end of the axle. Since the axle is resting on the seal guard (See next picture), pushing down on the hub end of the axle will raise the spine end up.

Step 84 Continued



Step 85

When the splines of the axle shaft align with splines inside the differential (See Figure L) you will be able to push the axle shaft farther inward.

Step 86

Align the backing plate bolts with holes in the axle housing.





Step 87

Install the brake drum and pound the axle and bearing farther into position with a dead blow hammer as shown.



Step 88

Note: It is important that these nuts not come off. We recommend using blue Loctite® on the threads.

Install the (4) backing plate nuts and tighten them evenly, a little at a time, such that each nut is tightened at the same rate. Torque the nuts. (13.5-20.0 ft. lbs.)



Step 89

Reconnect the parking brake cable and install the pin as shown.



Step 90

Install the park brake cable clip as shown.

Wheel Cylinder Installation

If the wheel cylinder was not removed, skip ahead to the “Brake Shoe Installation” Instructions on the next page.



Step 91

Install the wheel cylinder and torque (2) bolts. (6 to 8.5 ft. lbs.)

Step 92

Reinstall the brake line to the wheel cylinder and tighten. (10.5 to 13.0 ft. lbs.)

Caution: Brake line flare nuts are easily cross-threaded. You will want to start the flare nut by hand for several turns before using a wrench on it. You may need to bend the brake line slightly to get the fitting to align and thread properly.

Note: Notice that we removed the bleeder screw for easier access to the brake line.



Step 93

Reinstall the brake bleeder screw if removed earlier.

Brake Shoes Installation

Drum Brake Parts Identification

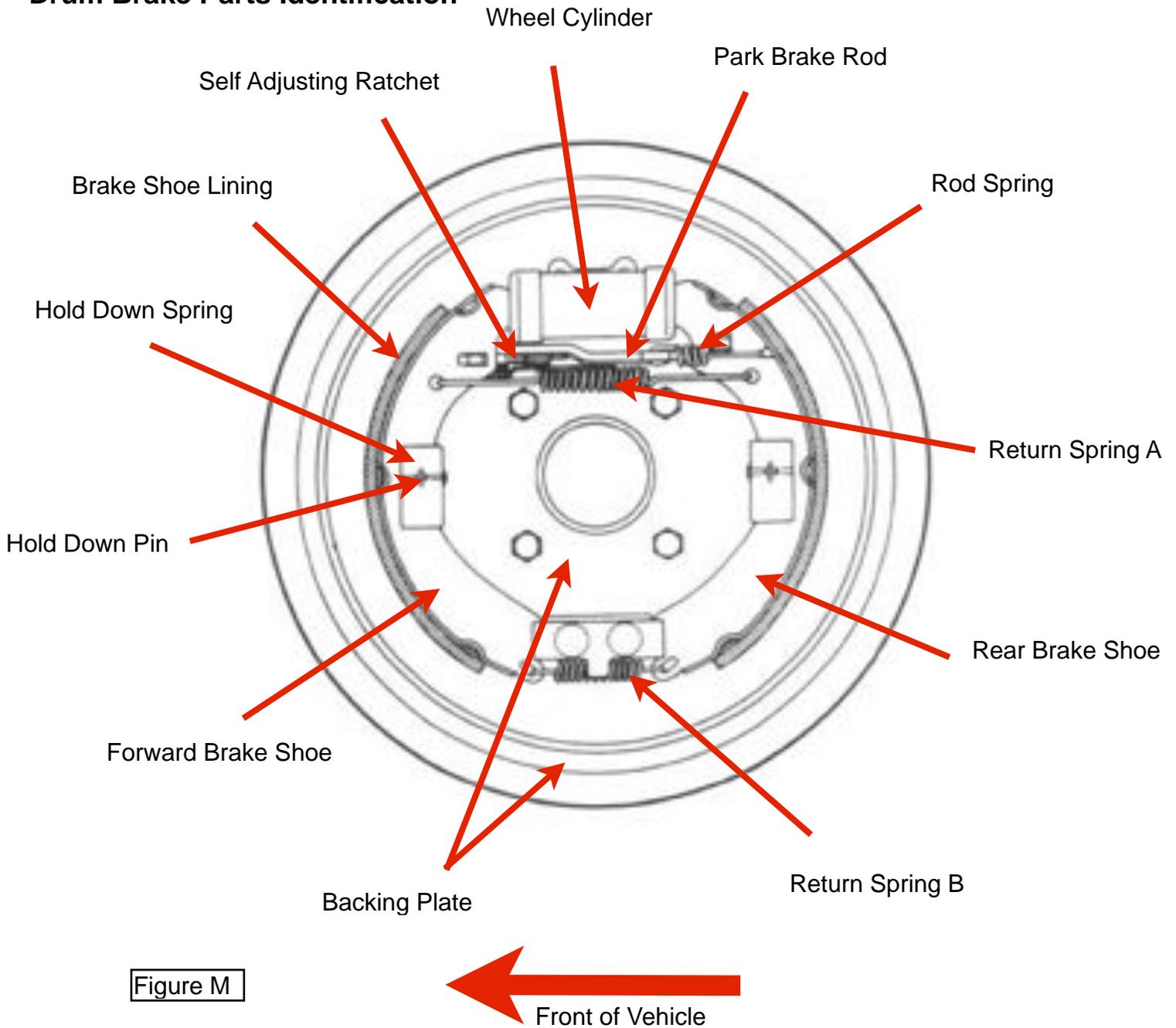
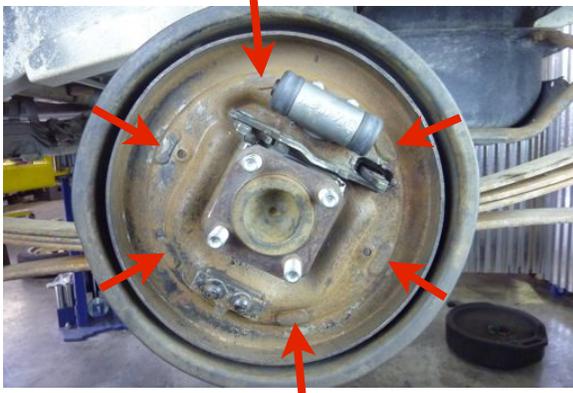


Figure M



Step 94

Lube the backing plate bosses with a good quality brake parts lubricant in the (6) locations shown above.



Step 95

Install the forward shoe hold down pin from the rear of the backing plate.



Step 96

Position the forward brake shoe as shown.

Note: Be sure the parking brake rod is fitted properly in the top of the shoe.



Step 97

Depress the brake shoe hold down spring, twist the hold down pin $\frac{1}{4}$ turn and then release the spring.



Step 98

Install the rear shoe hold down pin from the rear of the backing plate.



Step 99

Position the rear brake shoe as shown.



Step 100

Depress the brake shoe hold down spring, twist the hold down pin $\frac{1}{4}$ turn and then release the spring.



Step 101

Install return spring B.



Step 102

Install the rod spring.



Step 103

Be sure the self-adjusting ratchet is at its lowest setting. This means the ratchet should be positioned as shown. See Figure N for more detail.



Step 104

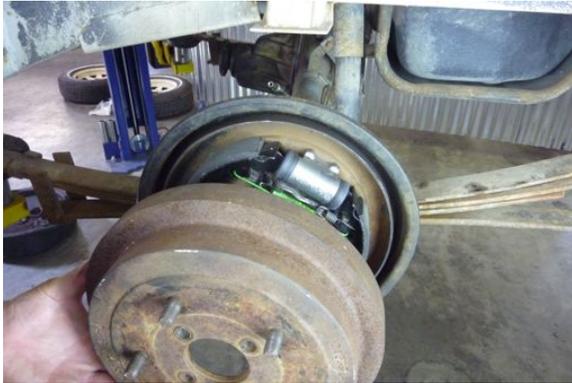
Install return spring A.



Tech Tip

This is what the brake shoes should look like when properly installed.

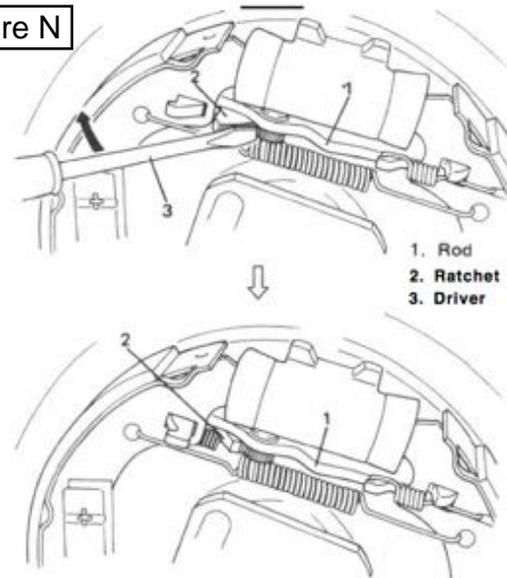




Step 105

Install the brake drum.

Figure N



Self adjusting ratchet at its lowest setting.

Tech Tip

If the drum will not fit over the shoes, check to see that the shoes are in their proper position. If the drum is still not fitting, check to see that the self adjusting ratchet is adjusted to its lowest setting (See Figure N). If the drum still will not fit, you may need to open the bleeder screw, force the shoes together, and close the bleeder screw.



Step 106

Install the center cap bracket and axle hub nuts and torque. (36 to 57.5 ft. lbs.)



Step 107

Install the rear wheels and torque the wheel lug nuts. (36.5 to 57.5 ft. lbs.)



Step 108

Install the wheel center cap and tighten the bolt.



Step 110

Fill the rear axle assembly with gear oil if any was lost during the repairs. We recommend using SAE 75W90 Gear Oil.

Note: When oil runs out of the rear axle fill hole, it is full.

Step 109

Repeat procedures on the passenger side axle as needed.



Step 111

Danger: Because the brake lines have been disconnected, there is air in the brake hydraulic system. This means the brakes will **NOT** work. Therefore, it is **EXTREMELY** important to bleed the brake system before moving this vehicle. Brake Bleeding instructions can be found in our Instruction Library at www.lowrangeoffroad.com

As always, If you experience any difficulty during the installation of this product please contact Low Range Off-Road Technical Support at 801-805-6644 M-F 8am-5pm MST. Thank you for purchasing from Low Range Off-Road.



These instructions are designed as a general installation guide. Installation of many Low Range Off-Road products require specialized skills such as metal fabrication, welding and mechanical trouble shooting. If you have any questions or are unsure about how to proceed, please contact our shop at 801-805-6644 or seek help from a competent fabricator. Using fabrication tools such as welders, torches and grinders can cause serious bodily harm and death. Please operate equipment carefully and observe proper safety procedures.

Rock crawling and off-road driving are inherently dangerous activities. Some modifications will adversely affect the on-road handling characteristics of your vehicle. All products sold by Low Range Off-Road are sold for off road use only. Any other use or application is the responsibility of the purchaser and/or user. Some modifications and installation of certain aftermarket parts may under certain circumstances void your original dealer warranty. Modification of your vehicle may create dangerous conditions, which could cause roll-overs resulting in serious bodily injury or death. Buyers and users of these products hereby expressly assume all risks associated with any such modifications and use.

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