

## 86-95 Suzuki Samurai Brake System Bleeding

### Instructions



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



#### Suggested Tools:

- Brake Fluid, DOT 3
- Combination Wrench, 10mm
- Drain Pan
- Tubing (or Flare nut) Wrench, 10 mm



Note: These Instructions are designed for the 87-95 Suzuki Samurai, but could apply to many other vehicles as well. The major difference being, the sequence in which each brake unit is bled. These instructions are NOT recommended for vehicles with ABS (Anti-Lock Braking Systems).

## Brake System Parts Identification

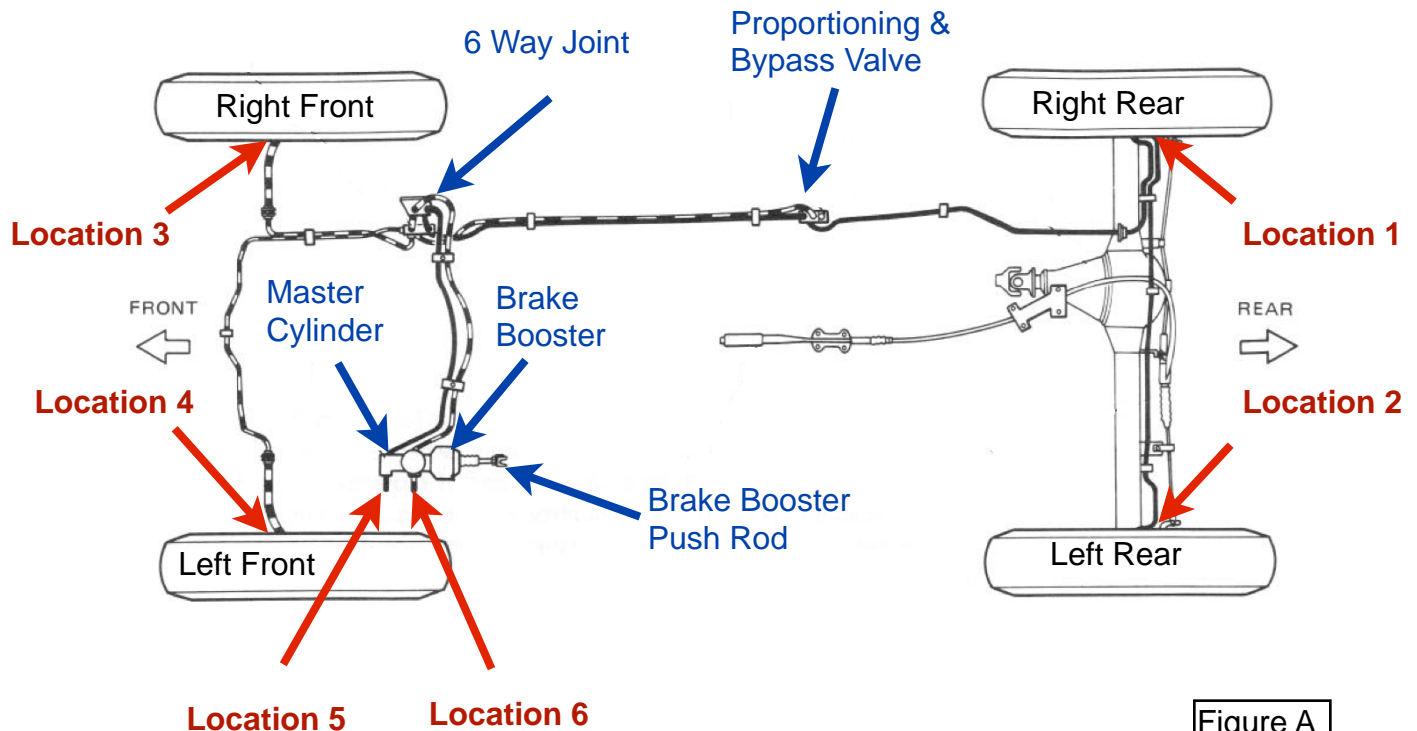


Figure A

### Basic Theory and General Overview of Brake System Bleeding.

**Caution:** Before proceeding with the brake bleeding process, we strongly recommend inspecting all flexible brake hoses for road hazard damage, for cracks and chafing of outer cover, and for leaks and blisters. If any of these conditions exist replace the hose. Also, check all solid brake lines for damage, cracks, dents and corrosion. If any defect is found, replace it.

**Bleeding:** If there is the smallest bubble of air in the hydraulic brake system, you will experience excessive pedal free-play or what is sometimes called a “spongy brake pedal”. Therefore, any air in the hydraulic brake system must be removed. To completely remove air from the brake system you will need to bleed (or flush-out) the air from the system. Bleeding must be done at 6 different locations. These locations are at each of the 4 wheels and 2 at the master cylinder (See Figure A). The sequence in which these locations are bleed is important. The sequence is as follows:

1. Right Rear Wheel
2. Left Rear Wheel
3. Right Front Wheel
4. Left Front Wheel
5. Forward Brake line at the master cylinder
6. Rear Brake line at the master cylinder



### Caution:

Brake fluid is extremely damaging to paint. If fluid should accidentally touch painted surfaces, immediately wipe fluid from the paint and clean the painted surface.

### Step 1

Position the vehicle on level ground, block the wheels to prevent the vehicle from rolling either direction (forward or backward) and release the parking brake.



### Step 2

Remove the cover from the master cylinder.

### Step 3

Add fluid to the MAX (Maximum) line.

Note: Always use DOT 3 brake fluid from a sealed container. Using fluid from a sealed container reduces the risk of using fluid that is contaminated.





### Step 4

Set the cover back on top of the master cylinder. No need to snap it down at this point. It will be removed several times throughout these instructions.

Note: This is done to keep fluid from squirting out when the brake pedal is depressed.



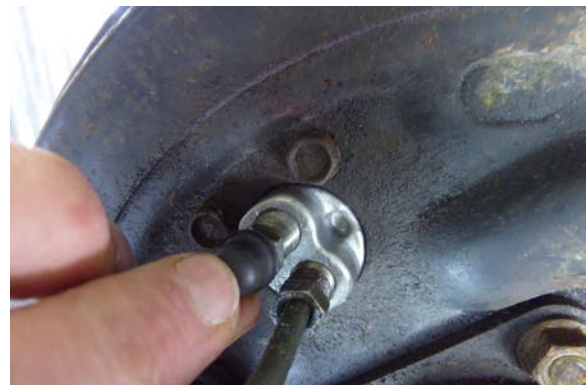
### Step 6

Have an assistant depress the brake pedal several times and hold it depressed.



### Step 5

Place a drain pan under the right rear wheel.



### Step 7

Remove the protective cap if installed.





## Step 8

Open (turn counterclockwise) the bleeder screw at the right rear wheel, 1/3 to 1/2 turn.

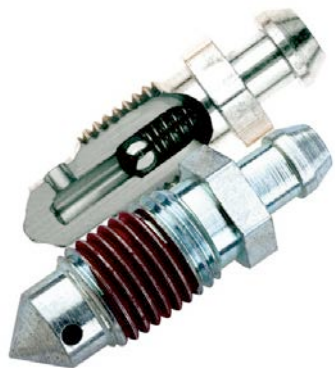
**Note:** Bleeder screws are easily stripped. Always use a 6-point socket or a box end wrench when opening the bleeder screw for the first time.



## Step 9

When the pedal reaches the floor (or fluid stops coming out), close the bleeder screw.

**Caution:** If the pedal is let up before the bleeder screw is closed, air will be drawn back into the system.



## Tech Tip:

Brake bleeding typically requires 2 people. However, with "Speed Bleeders" installed, it can be done much faster and with only 1 person. Click [HERE](#) for more information about our "Speed Bleeders".



## Step 10

Let the pedal up.





### Tech Tip:

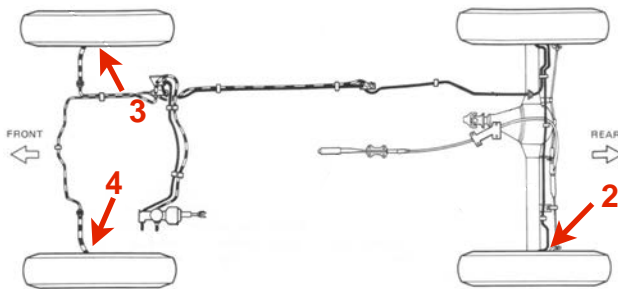
While the pedal is being pushed down, closely observe the stream of fluid exiting the bleeder screw. There should be **NO** bubbles. If bubbles are observed, repeat Steps 2 to 10 until there are no more bubbles.



### Step 11

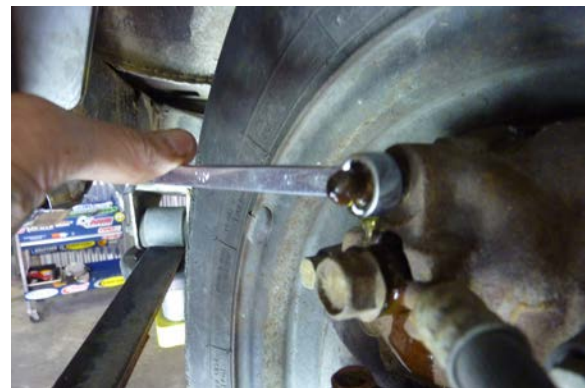
Add fluid to the master cylinder reservoir if needed.

Note: It is critical that you keep the master cylinder reservoir full. If the reservoir is allowed to go empty at any time, you will be introducing more air into the system at the master cylinder than you are getting out at the bleeder screws.



### Step 12

Repeat the bleeding procedures outlined in steps 2 to 10 at the other 3 wheels (locations 2, 3, & 4).



### Tech Tip

Locations 3 and 4 (the two front wheels) will look like the one pictured above. Bleeding will require a 10mm box end wrench.



## Master Cylinder Bleeding



### Step 13

Place a cloth under the master cylinder to absorb the fluid that comes out during this bleeding process.

**Caution:** To reduce the risk of damaging paint, wipe and then wash off



### Step 14

Add fluid to the master cylinder reservoir if needed.

Note: Be sure to set the cover back on the master cylinder to keep fluid from squirting out when the brake pedal is depressed.



### Step 15

Have an assistant depress the brake pedal several times and hold it depressed.

### Step 16

Using a 10mm tubing (or flare nut) wrench loosen the forward brake line (locations 5) 1/3 to 1/2 turn, counterclockwise.



Note: The corners of these fittings are easily rounded. Always use a tubing (or flare nut) wrench to loosen brake lines the first time.



### Step 17

When the brake pedal reaches the floor (or the fluid stops coming out), tighten the the brake line fitting.



### Tech Tip

During the bleeding process, observe the stream of fluid exiting the brake line. There should be **NO** bubbles. If there are bubbles, repeat steps 14 to 17 until there are no more bubbles.



### Step 18

Repeat steps 14 to 17 on the master cylinder rear brake line (location 6).

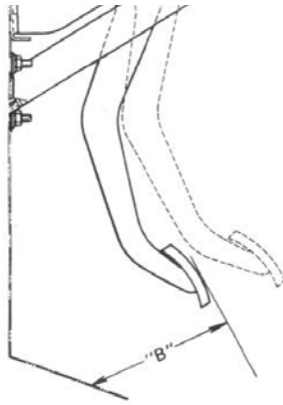
### Step 19 Double Checking

At each of the 6 locations, (See Figure A) perform the tasks listed below.

1. Check to see that the bleeder screw at each wheel and the brake lines at the master cylinder are tight.
2. Wipe away any visible brake fluid from around the bleeder screws (or brake line)
3. Have an assistant depress the brake pedal while you observe for fluid leaks. If leaks are observed tighten or repair as needed.
4. Check to see that all bleeder screw protective caps are properly installed.

We also recommend checking the Proportioning & Bypass valve as well as the 6 Way Valve for leaks. (See Figure A)





## Step 20 Safe Operation

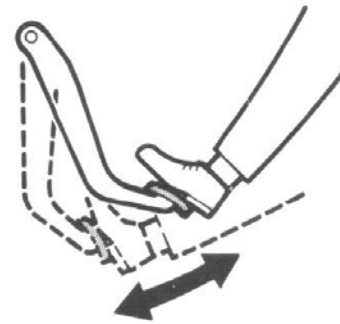
Check for excessive pedal travel or what is sometimes referred to as a “spongy pedal”. With the pedal depressed at approximately 66 pounds pressure, measurement “B” (See illustration above) should NOT exceed 2.95 inches from the floor. If it fails this test, repeat the entire bleeding process, beginning at the right rear wheel and finishing up at the master cylinder. If the brakes still do not pass this test you may want to try the Tech Tips in the next step. If you are unable to eliminate excessive pedal travel, you should seek professional help. Never, operate a vehicle unless you are absolutely sure the brakes are operating properly.



## Step 21

Add fluid to the master cylinder if needed.

Note: Do not exceed the “MAX” line.



## Tech Tip:

Possible causes of excessive pedal travel:

- Rear brake shoes worn beyond limit.
- Excessive rear shoe-to-drum clearance due to inoperative self-adjusters.
- Brake Booster push rod out of adjustment.



## Step 22

Secure the master cylinder lid and remove wheel chocks.



**Always dispose of waste fluids  
in accordance with State and  
National Environmental Laws.**

As always, If you experience any difficulty in using these installations contact Low Range Off-Road Technical Support at 801-805-6644 M-F 8am-5pm MST. Thank you for using our instructions.



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.

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