

Instructions Created by an:



**Automotive
Service
Excellence**
MASTER AUTO TECHNICIAN



3" Suzuki Samurai Drop Pitman Arm (SKU# SST-DPNS)

Installation Instructions



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



**FOR ADDITIONAL COPIES OF THESE
AND OTHER INSTRUCTIONS GO TO:**

www.lowrangeoffroad.com and click on the
"INSTRUCTIONS" tab.

Suggested Tools:

- Twin Post Lift (or Floor Jack and (2) Jack Stands)
- Diagonal Cutting Pliers
- Needle Nose Pliers
- Combination Wrenches: 14, 17, 19 mm
- Combination Wrench: 1 1/8"
- Socket: 17, 19 mm
- Ratchet to fit the above sockets
- 7/16 Socket: 1/2 in. Drive, 12 point (to fit the Ream)
- Impact Sockets: 17 & 30 mm
- 1/2" Drive Impact Wrench
- Ball Peen Hammer (24 oz.)
- Penetration Oil
- Torque Wrench, 150 ft. lb. minimum.

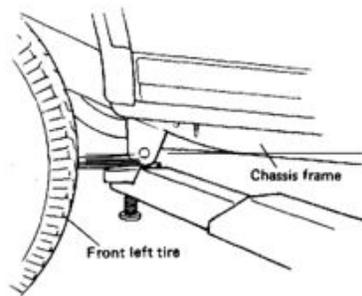
Lifting and Supporting the Vehicle



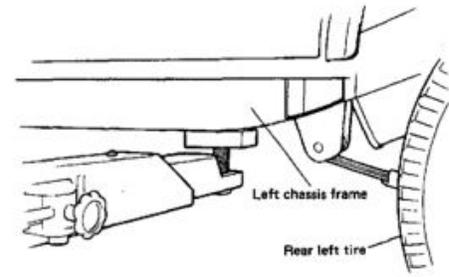
Lifting Option 1

Lift and support the vehicle on a twin post lift.

CAUTION: Always follow the safety guidelines associated with the lift you are using.



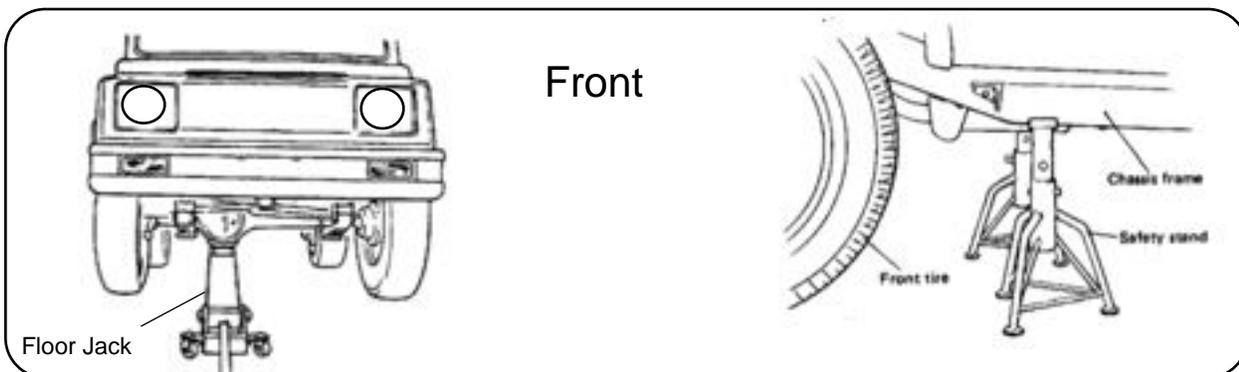
Front Support Location



Rear Support Location

Lifting Option 2

We used a twin post lift for these instructions, but this job could also be done with a floor jack and (2) safety stands.



Steering System Parts

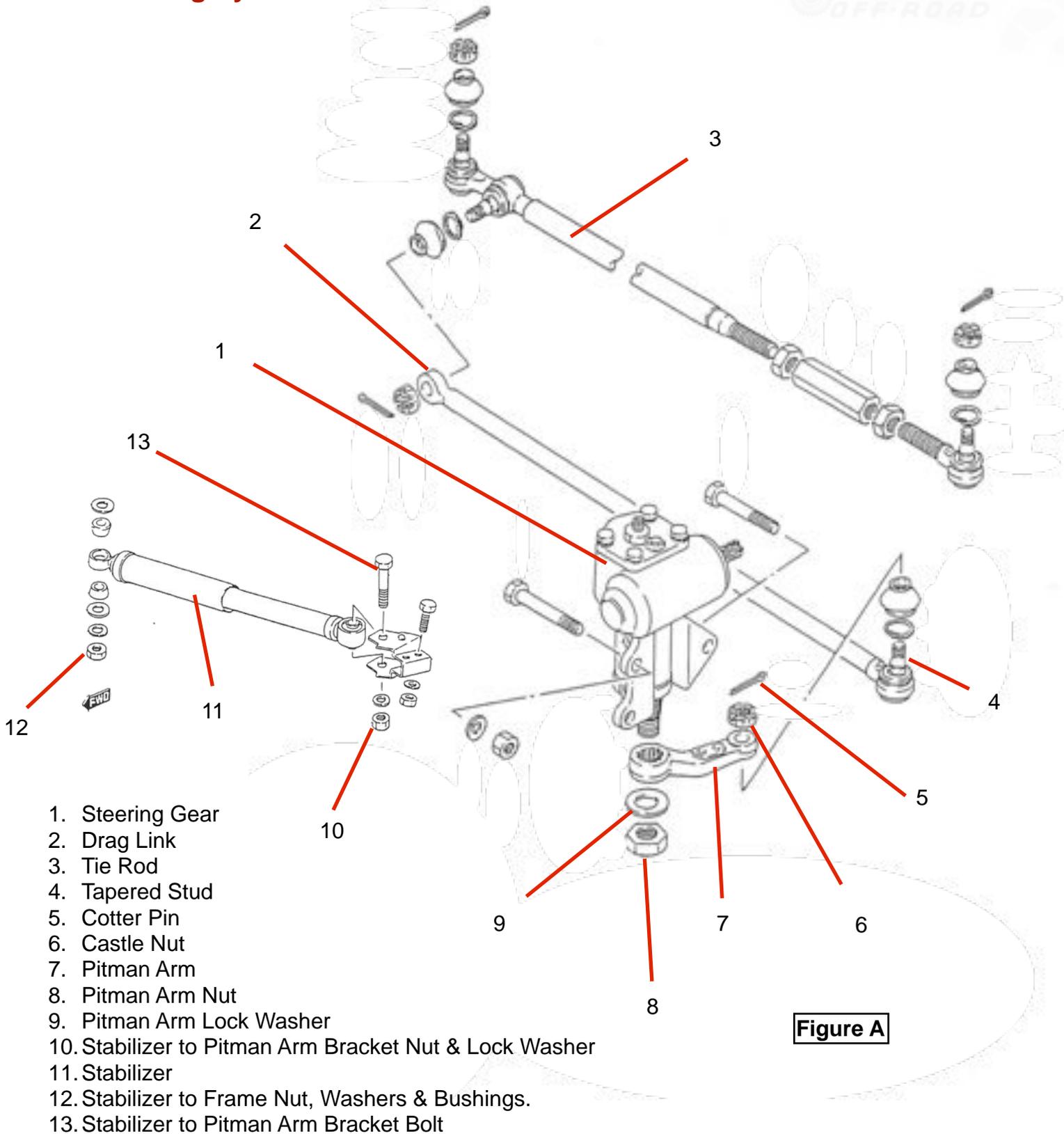


Figure A



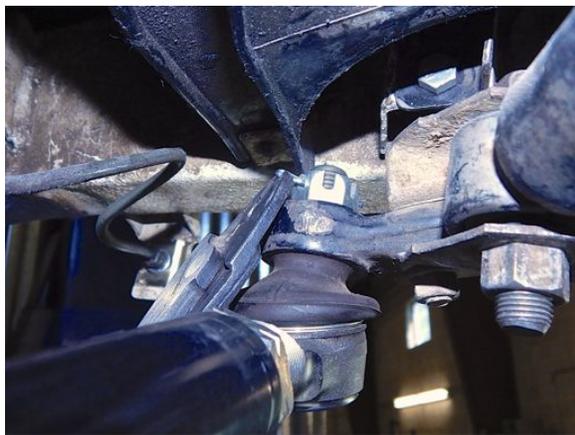
Tech Tip 1

When working on suspension, brakes 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 before is helpful.



Step 1

Begin removing the drag link stud cotter pin by straightening both ends using needle nose pliers.



Step 2

Remove the cotter pin using diagonal cutting pliers.



Step 3

Loosen the castle nut using the box end of a 19mm combination wrench. Continue loosening the nut until it is about 1/8 of an inch away from the pitman arm.





Step 4

Strike the end of the pitman arm sharply until the drag link tapered stud comes loose from the pitman arm.

Note: Don't be shy here. It will likely take several hard hits to brake this tapered stud loose from the pitman arm.



Step 5

Once the tapered stud breaks loose from the pitman arm, remove the castle nut and separate the drag link from the pitman arm.



Disconnecting the Steering Stabilizer



Step 6

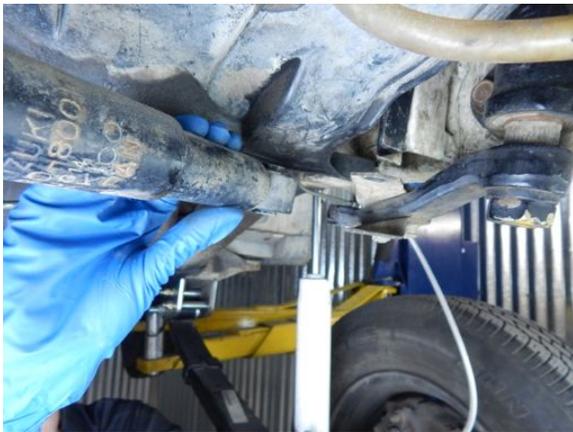
Hold the steering stabilizer bolt with a 17 mm combination wrench and remove the stabilizer nut using a 17 mm socket and an impact wrench.



Step 7

Remove the stabilizer bolt.

Note: You may need to turn the steering wheel to move the pitman arm in a position to where the bolt can be removed.



Step 8

Swing the stabilizer out of the way for now.



Step 9

Remove the pitman arm nut and lock washer using a 30 mm impact socket and a 1/2" driver impact wrench.

Note: Keep the nut and lock washer. You will need both later.

Removing the Pitman Arm

Note: There are several different ways of performing this task. We will show how we did it and then pass along some other ideas.



Pitman Arm Removal Method #1



Step 10

Remove the pitman arm from the steering gear shaft using a pitman arm puller.



Tech Tip 10A

It will help to spray some penetrating oil in the areas indicated by the arrows.



Tech Tip 10B

This shows the pitman arm puller we used.

Caution: Always follow the tool makers instructions. These tools can be broken.

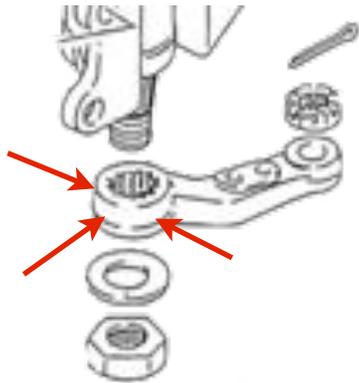


Step 11

Once the pitman arm puller is installed properly, tighten the bolt using an impact wrench and a 19mm impact socket.

Caution: Never use a standard (Chrome) socket with an impact wrench. The socket can shatter and cause serious injury or death.





Tech Tip 11

If the pitman arm does not come loose at first it is sometime helpful to remove the puller and strike the pitman arm several times with a ball peen hammer in the areas shown above.

Pitman Arm Removal Method #2



Tech Tip 12

This shows another style pitman arm puller.

Note: This style puller can be rented (or checked out with a refundable deposit) from many local Auto parts stores for a very reasonable cost. It is used in the same manner as the one shown in Method #1.



Pitman Arm Removal Method #3



Use this method at your own risk. It is a little unprofessional but it works!



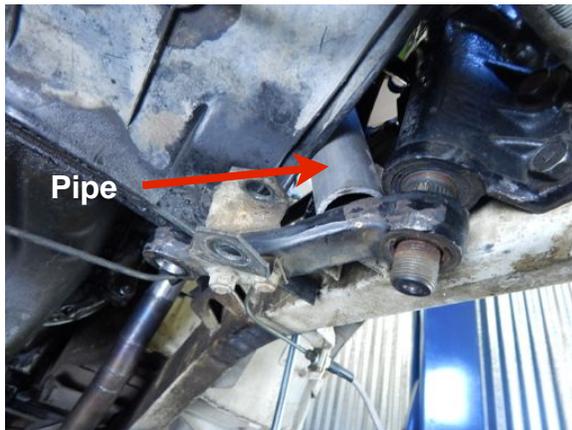
Step 13

Turn the steering wheel all the way as if making a right hand turn.



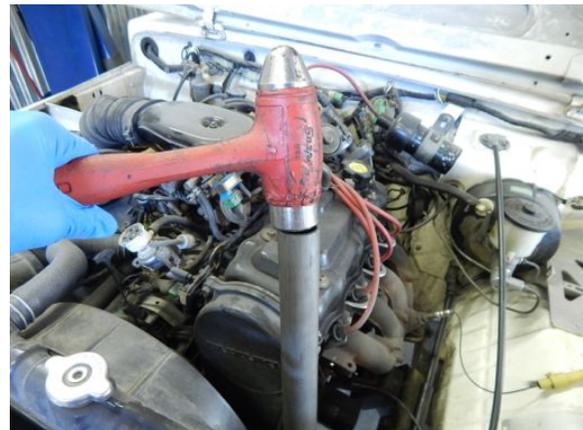
Step 14

Open the hood and place a 1.5" diameter piece of pipe as shown here. The pipe we used was about 3 ft. long.



Step 15

This shows where the pipe should be placed on the pitman arm. Be sure the pipe is positioned as close to the steering gear box as possible.



Step 16

Strike the pipe sharply with as large a hammer as you can swing. This will likely take several blows with the hammer. Make sure the pipe stays in position against the pitman arm after each blow. Continue until the pitman arm comes off. It may be necessary to use Tech Tip 10A and 11 during this procedure.



Placing the steering gear in “Center Steer” position.



Step 17

Turn the steering wheel all the way left.



Step 18

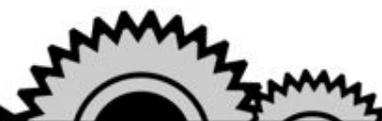
Turn the steering wheel all the way right, and count the total number of turns. Then divide the total number of turns by 2.



Step 19

Now turn the steering wheel back left the amount determined in the previous step.

Example: If it took 4 full turns to go from full left to full right. Steering gear “Center Steer” will be 2 full turns back toward the left from full right. Then leave the steering wheel EXACTLY at this point. It does not matter if the steering wheel is strait (or level) at this point. We will address that concern later.



Installing the Pitman Arm



0°



Step 20

After the steering gear has been placed at "Center Steer", install the new pitman arm so that it is oriented straight back. Another way to check for correct orientation of the pitman arm is that it is parallel with the frame.

Note: Be sure the steering wheel is not accidentally moved during this procedure.



Step 22

Snug the pitman nut using a 30 mm socket and impact wrench.



Step 21

Install the lock washer and nut.



Step 23

Torque the nut to 115 ft. lbs.

Note: You may need an assistant to hold the steering wheel when torquing this nut to insure the steering wheel and pitman arm does not move. If you suspect that the steering wheel did move, repeat the "Center Steer" Procedures. (Steps 17-19)

Reaming the New Pitman Arm



If you are running a Heavy Duty drag link (such as the one supplied with our Align Correct Cross Over Steering Kit) it is possible that the pitman arm tapered stud is too large to fit the new pitman arm. If so, you will need to ream the new pitman arm. (See Step 24.)



Step 24

Using the correct ream (See Tech Tip 24C) and an impact wrench, ream the hole until the tapered stud extends up through the hole enough for the nut and cotter pin to fit properly.

Tech Tip 24A

Proper castle nut fit is defined as: the cotter pin hole in the stud should fit in the bottom of the castle nut slot with the nut torqued to 50 ft. lbs.

Caution: Do not over ream the hole. Be sure to try the fit often during the reaming process.



Tech Tip 24B

We stopped reaming when the bottom of the ream cutters reached the bottom of the pitman arm.

Tech Tip 24C

This reaming tool comes in our "Suzuki Samurai Align-Correct HD Crossover High-Low Steering Kit." Click [HERE](#) for more information.



Connecting the Drag Link



Step 25

If raised, lower the vehicle to the floor. Place the front tires in the “straight ahead” position. This is done by sighting down the outside edge of the front tire to the outside edge of the rear tire. The three dots shown above should be in perfect alignment with each other. If the points indicated, are not in a straight line, move the front tire right to left by hand until they are.



Step 26

WITHOUT moving the pitman arm, the steering wheel or the front tires, see if the drag link tapered stud will fit into the pitman arm. If it will, skip to Step 30. If it will NOT and you have an adjustable drag link, continue to the next step. If the tapered shaft will NOT connect and you do not have an adjustable drag link (like the OEM Suzuki Samurai drag link) you will need to get an adjustable drag link. Click [HERE](#) to see what Low Range has to offer.



Step 27

Loosen the driver side jam nut on the drag link using an 1 1/8” open end wrench.



Step 28

Loosen the passenger side drag link jam nut.





Step 29

Hold the drag link end with your right hand and rotate the drag link adjusting sleeve with your left hand until the tapered stud will fit into the pitman arm.



Step 30

Install the tapered stud into the pitman arm and install the castle nut.



Step 31

Snug the castle nut using a 19 mm box end wrench.



Step 32

Torque the castle nut to 50 ft. lbs.



Long Leg



Step 33

If the cotter pin holes do not align, **TIGHTEN** (never loosen) the castle nut until the cotter pin holes do align.



Step 34

Install a new cotter pin with the long leg up.

Caution: Always use a new cotter pin in steering and suspension components.



Step 35

Bend the upper (long) leg up and over the top of the top of the tapered stud.





Step 36

Insure that the tires are still in the straight ahead position.



Step 37

Lock the drag link adjustment sleeve by tightening both (driver and passenger side) jam nuts.

Leveling the Steering Wheel



Note: If the steering wheel is in the straight ahead (level) position there is no need to perform Steps 38 to 45 and you can skip ahead to Step 46.



Step 38

Insure that the tires are still in the straight ahead position.

Step 39

Remove the horn button by pulling it upward.



Step 40

Remove the steering wheel nut using a 17mm box end wrench. Remove the washer as well. Then reinstall the nut leaving it about 1/8" away from the steering wheel.

Step 41

Loosen the steering wheel by hitting it with the palms of both hands, simultaneously. This should jar it loose. Once the steering wheel is loose, remove the nut and the steering wheel.





Step 42

Reposition the steering wheel in the level (or straight) position and place it back on the splined steering shaft.



Step 43

Reinstall the washer and nut.



Step 44

Snug the nut and then torque it to 20 ft. lbs.



Step 45

Replace the horn by popping it back into place.

Caution: Do this as quickly as you can if loud noises bother you. The horn will likely sound.



Steering Stabilizer



Step 46

In our application the steering stabilizer would not connect to the pitman arm, so we removed the steering stabilizer. If you have an OEM (Original Equipment Manufacturer) drag link you can connect an OEM steering stabilizer using our "Steering Stabilizer Bracket for 3" Drop Pitman Arm." Click [HERE](#) for more information.



Steering Stabilizer Bracket for 3" Drop Pitman Arm



Steering gear box	Recirculating ball-and-nut type
Gear ratio	15.6 – 18.1
Steering angle, inside	29° ± 3"
Steering angle, outside	26° ± 3"
Steering wheel diameter	400 mm (15.74 in.)
Minimum turning radius	5.1 m (16.73 ft.)
Toe-in	2 – 6 mm (0.079 – 0.236 in.)
Camber	1 degree (1") ± 45'
Kingpin inclination	9 degree (9") ± 2"
Caster	3 degree 30 minutes (3" 30') ± 1"
Side slip	

Step 47 Caution!

The installation of steering and suspension parts can negatively affect handling, braking, and tire tread life. We strongly recommend you have the wheels aligned by a qualified professional as soon as possible after this installation.

3" PATTERN TOE ALIGNMENT TOOL



Tech Tip 47

Some off road enthusiasts like to do as much of their own repairs as possible. That is why we designed this Toe Alignment Tool. It is pretty accurate and can save you a lot of time and money. Click [HERE](#) for more information.

Congratulations!

You have successfully installed a 3" Drop Pitman Arm on a Suzuki Samurai. We hope it has been a good experience! Please let us know if you have suggestions on how our instructions or products could be improved.



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 7:30am-5:30pm 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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