

These original notes came from Derek S. Heaton. After having my cables done by a very experienced Lotus mechanic, I'm offering some changes in the directions per his instructions. I'll note the changes he added in **red**. Then you can print out the old ones and these new ones and compare. Pay particular attention to his changes of the drill holes on the bracket.

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Lotus to Geo/Isuzu shift cable swap

"Rewritten Destructions"

Parts: (see parts diagram):

1. Fore/Aft (F/A) and Crossgate (C/G) cables from a Geo Storm or Isuzu Impulse/Piazza (?)
2. F/A cable stud from the transmission lever. Includes threaded stud and lock nut.
3. F/A cable ball and socket end from the gearshift lever.
4. All washers and clips from both cables
5. Four 5/8" (inside diameter) washers.
6. Cable bracket from the transmission. This is a stepped bracket that must be slightly modified for use in the M100.
7. **Friend who is not easily agitated.**
8. **More than one beer.**

NOTE: Items 2 & 6 not needed if cables installed with Isuzu short shift kit.

Used or New?

Whether you buy used or new parts is really up to you. Used parts are certainly cheaper, but are, as the name implies, used. The real benefit of buying used parts is that you get all of the little stuff, clips, washers, etc. without looking up each separate part number. Part numbers are referenced in the illustration.

All new parts shown in the diagram, purchased directly from an ISUZU dealership, cost me \$140.30 (including a few extra clips and washers).

First things first

Some amount of mechanical ingenuity is involved; so if you don't feel confident after reading these instructions, please do not proceed. The author makes no guarantees. If the directions are followed, however, this swap is completely reversible with no modifications to the car itself. All instructions are for US model LHD M100s. All efforts will be made to explain in a non-US biased way when possible.

The M100 has two cables that operate the transmission. One is called the Fore/Aft (F/A) and the other is the Crossgate (C/G). F/A controls the back and forth motion of the gearshift lever and C/G controls the side to side.

The transmission is biased to the third/fourth/neutral plane. If you move the gearshift lever forward you engage third, backwards gets you fourth. Pushing the gearshift lever forward PULLS on the cable. Pulling the lever back PUSHES the cable. If you move the gearshift lever to the right, the C/G cable is pulled and visa versa. RHD drive cards may have this reversed. You may want to have someone operate the shift lever while you look at the operation of the cables. Removal of the coolant catch tank and intercooler to intake hose will open this area up.

Also, before you start, here's a trick gleaned from a service technician at the dealer. Instead of propping your hood at the normal place, prop it on the cam cover, in the threaded insert on top. Viola, new found headroom.

Removing the old cables.

(Deleted line)

Remove the oddments tray by releasing the two retaining screws. Remove the two console retaining bolts under the tray.

Pry up and unplug the mirror control and the window switches. Remove the two console retaining bolts, one each, through the window switch mounting holes.

You do not have to remove the gearshift knob, leather boot, or mounting brackets from the gearshift assembly to remove from car.

Pull off the parking brake outer handle. Twisting from side to side will loosen it up.

Remove the console by pulling it back and up, then forward.

Disconnect Cables from the Transmission

Disconnect the two hoses from the catch tank and remove the tank. (This might be a good time to inspect the catch tank brackets as the author's was wearing through two air con lines. Fixing the rubbing is a matter of cutting and grinding away the offensive parts). The bracket itself may be removed to provide more working room.

Loosen the two hose clamps that hold the intercooler to intake manifold pipe. Remove the pipe and block both openings with rags (don't forget to remove these later!!).

Remove the locking cotter pins from the cable ends by the transmission. Pull up and back on the retaining bend of the cotter pin. Save all the washers from the cable ends.

Remove the 'e' or wire spring clips from the cable ferrules at the bracket.

Remove the two bolts that hold the bracket to the transmission. Remove the bracket and save the bolts.

Tie a string to each of the two cable ends, you will need these later to route the replacement cables.

Pull the gearshift lever and bracket, **after removing 4 allen wrench bolts holding gearshift assembly to tunnel. Release handbrake to "off" position for better clearance.**

Invite a friend over for a beer

With one person under the hood and one inside the car, start pulling the cables out of the car through the inside. The person that is NOT on the pulling end should be routing the cables around any obstructions. This part can be flown solo, but is much easier with a copilot.

Preparations for the Swap

You should now have a shift lever in a bracket with two cables hanging off it. Note that the cables are different. One has an eye on each end (C/G) and one had a big eye on one end, with a ball and socket (or treaded section) on the other (F/A). Don't worry about confusing the cables ends, you can't.

(Section deleted) Not Necessary

Disconnect the old cables from the Gearshift lever

Pull both 'e' clips from the ferrules at the bracket. Pull the cotter pin off the C/G cable end and disconnect the cable. (Deleted). Remove the ball end stud from the bottom of the shift lever. Remove Cable.

Adjust the donor ball and socket

If your Isuzu cables came with the ball and socket end removed, replace it now. If not, check to see where it is adjusted. Make sure that is screwed in as far as it will go before you tighten the lock nut.

Cut the 5/8" washers

Measure the flat sides of the threaded Isuzu cable ends. This is how wide the slot needs to be to be in the washers. Mark and cut all four washers the same. Drill out to threaded part of cable size.

Redrill the holes on cable front bracket

See Diagram.

Reconnect the Cables, then route through the tunnel.

(Deleted).

Assemble cables to Gearshift assembly first, and then feed through the tunnel.

Reconnect the cables at the Gearshift lever. **IMPORTANT:** Adjust the nut closest to the gearshift lever end as close to the end as possible. Feed each cable through the correct hole (don't worry it only works one way). Position one cut washer and one nut on either side of the bracket hole. Tighten the nut furthest away from the near cable end. If you want you can SuperGlue the washers to the bracket to keep them from moving whilst you tighten. Make sure the washer cut outs are not aligned with the flat side of the cables.

The light and the end of the tunnel

Have someone finish pulling the cables through as you fit the gearshift lever back into its hole. When the gearshift lever is in place, mount it with the plastic bezel and four allen head bolts.

(Section deleted)

Reattach the re-drilled bracket using the new holes; A & B (see diagram). Tighten the bracket bolts. (Deleted). Route the cables into their respective stays and clip them in place. Make sure that the dimples in the clips fit into the small semicircular cutouts in the stays.

Reattach the cables and clip them in place. You may use a little grease between the washers and cable ends. Clip them back into place using the locking cotter pins.

Ready to Test

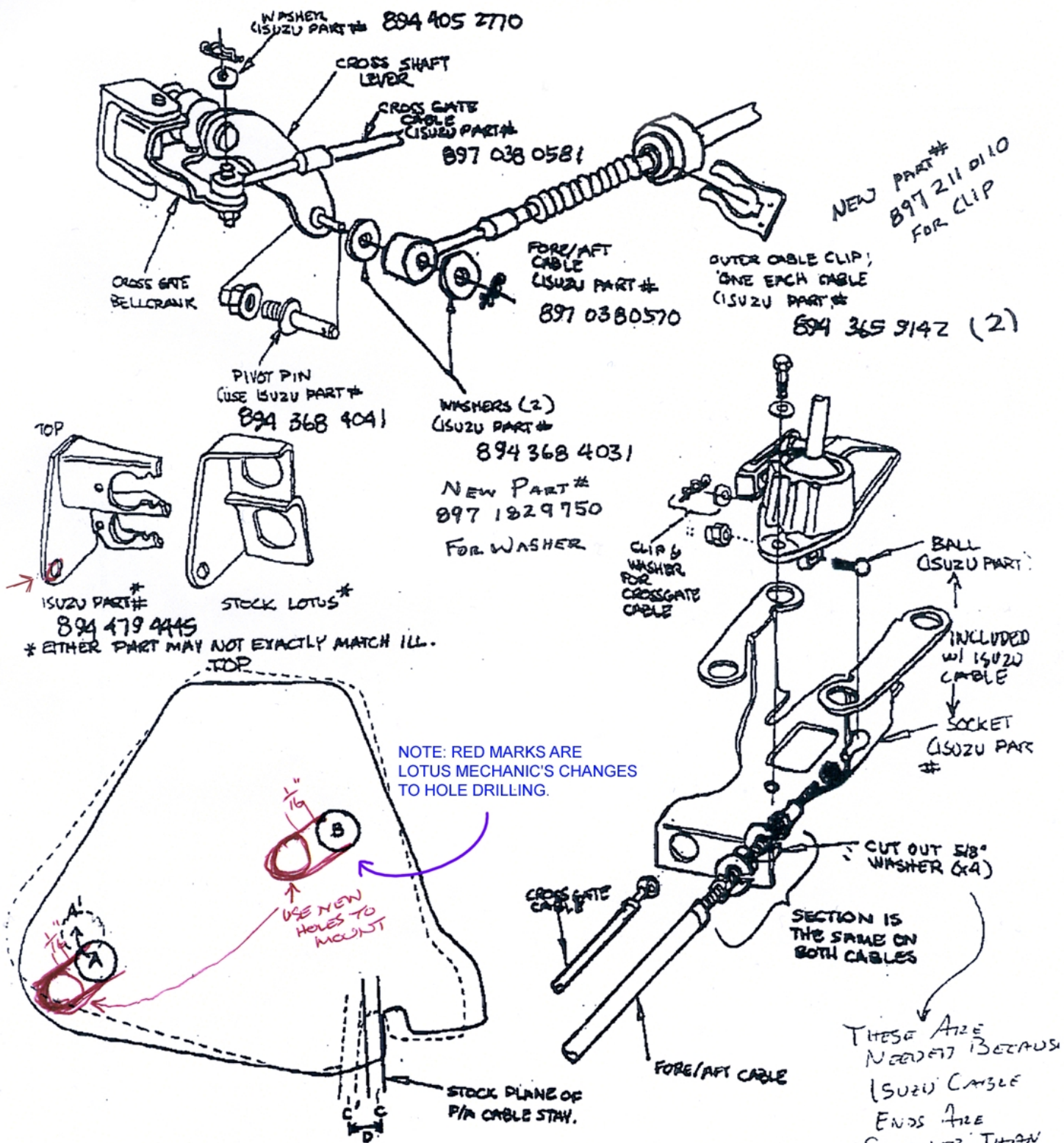
Test the movement of the gearshift with the car off. The action of the gearshift may have been moved forward a little. This is because the two cables are not exactly alike. I have heard that this is also the case with the 'new' replacement cables from Lotus. Have your friend (probably quite inebriated from all of the free beer so far) move the gearshift lever while you watch the action of the cross shaft lever and cross gate bellcrank. Put the car in third and look at the cross shaft lever. Check to see if third has been engaged by pushing the lever towards the middle of the car. If it won't move anymore, it's engaged. Make sure that the clutch is disengaged during this test and that the position of the gears themselves are not blocking shift action.

Put all the hoses (remove the rags) and tanks back. Reconnect the battery and take the car out for a test drive. The first test drive the author took after the swap gave him second, fourth, and reverse. This is when the author realized that he had to modify the cable bracket. If your car gets all of the right gears, you're done! If not, you might have to do a little more modification on the bracket or move the cable end at the gearshift lever. Remember it's easier with two people.

If any other problems occur, the author can be reached by e-mail at heaton@earthlink.net. Enjoy the cables and rejoice in a job well done.

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PLANE OF FORE/AFT CABLE MUST BE SHIFTED TO ACCOMMODATE PLAY IN ISUZU FORE/AFT CABLE. PLEASE SEE TEXT FOR DISCUSSION ON METHOD.

