# Replacing SW20 gearshift cables

***In last months 'Track Record' was discussed the article by Kevin Clarence on what to do if you break a cable, along with instructions for fitting a new one.***
***The link to Kevin's article is:*** **http://www.mr2.com/TEXT/RepairShiftCable.html**

***Following on from Kevin's article, I would like to share some more information I have discovered about SW20 gear shift cables that may be of interest to Club members.***

**Getting the car home**

Just in case I ever broke a cable, I wondered how hard it would be to reach under the car and move the shift lever into 3rd gear to hopefully allow you to get the car home, so as a matter of interest I decided to find out, and it turned out to be easier than I had thought.

You need to lay down beside the car, reach up underneath in front of the passenger side wheel, and feel for the lower cable end.

This is attached to the shift lever at the gearbox, and normally sits in the middle position just like the gear-lever inside the car. So just push it as far as it will go towards the center of the car, and this should put it into 3rd gear.

Then of course don't forget to hold the clutch in before you start the car!!

**Cable differences**

Shown above are two different SW20 gearshift cable sets showing the gearstick end.
The ones on the left that have green and white bands are used on NA models, while the ones on the right that have blue and red bands are used on Turbo models.
Apart from the markings, the difference between the two sets would appear to be in the cable length.

Also, if buying a new cable, make sure you get the correct one for your model/year, because according to the Toyodiy website, http://www.toyodiy.com/parts/ there are different cable part numbers for early and later models, for both for NA's and turbos.

I am not sure of the incidence of broken cables with the turbo models because they use a different gearbox, but in recent months I have seen many forum posts about broken gearshift cables on NA cars that have the S54 transmission.

It appears the cable that often breaks is the one related to the forward and back movement of the gear-stick inside the car.
On the NA cable this is the shift control cable that is the one with the green band, and if viewed under the car it is the lower one connected to the gearbox.

Although I have heard that the cables can also break at the gearstick end, apparently they are more likely break inside the cable housing at the gearbox end as can be seen in the picture.

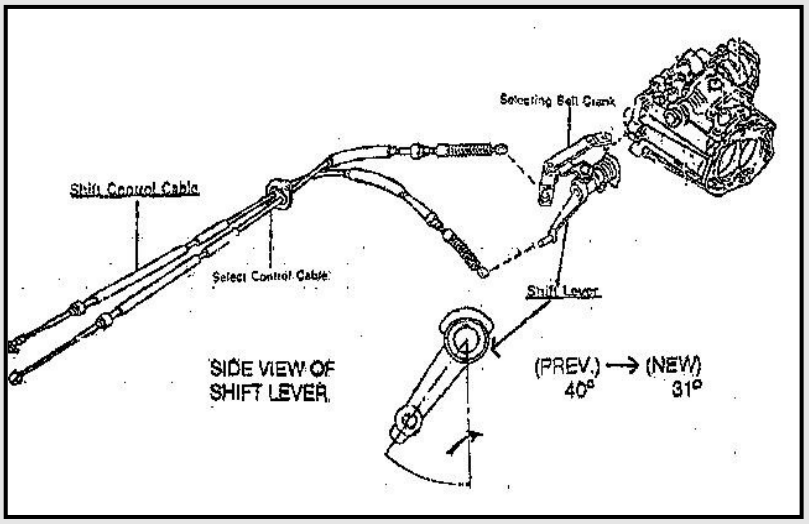
The design of the lower cable geometry at the gearbox end means that the shift control cable has to flex sideways when selecting gears (especially fifth) as the selector shaft moves in and out.
The upper cable (the select control cable) does not have to flex sideways, so it should not be as prone to breaking as the lower one.
This also means that the bush in the lower cable at the gearbox end seems to wear out a lot quicker than the bush in the upper cable

**Cable end bushings**

People often replace the OEM rubber mounted ones with either solid brass, or skateboard bearings to give a firmer feel to the shift action. However this type of bearing only allows movement in the one plane unlike the OEM one, causing the critical lower cable end at the gearbox to flex even more, making it more likely to break.
There are better design rose joint type replacements available that may be OK and put less stress on the cable, but I personally still prefer the OEM rubber mounted ones, especially for the lower cable at the gearbox end because I believe they will survive better when subjected to mud and splash under the car.
At one stage I fitted skateboard bearings to both cable ends in my own car but I later discovered the lower one had frozen up with rust, and I have now gone back to using a stock one for the lower cable.

**Updated selector shaft shift lever**.

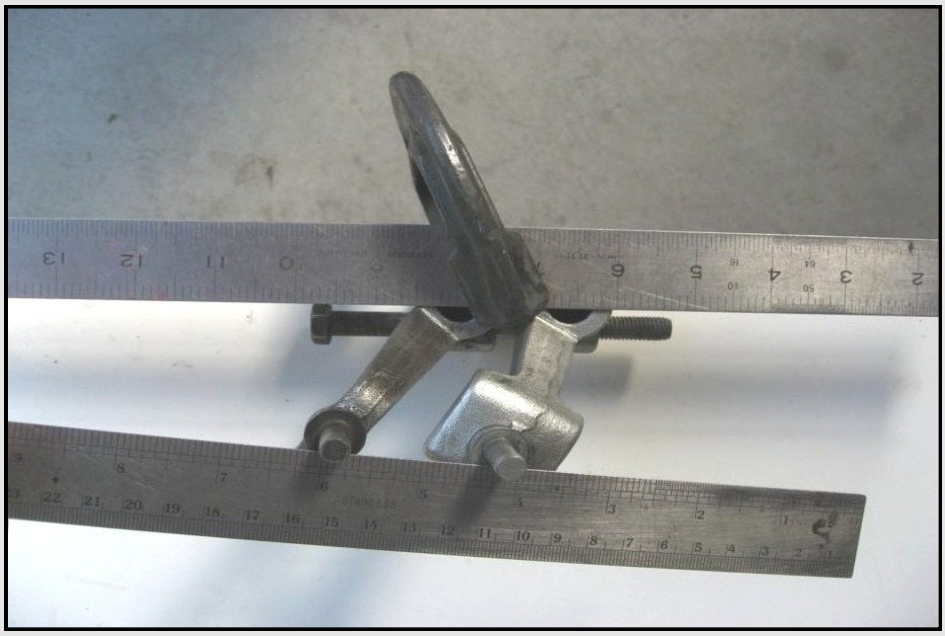
Shortly after SW20's were first released, I have been told that many early ADM models had to have broken cables replaced under warranty.
As well as replacing the cable they also fitted an improved design shift lever to the gearbox selector shaft to give less cable flexing at the gearbox end to help eliminate breaking. In my case when I checked my own '90 model AUS del NA I found that I did have the updated lever fitted.




According to the Toyota service bulletin diagram shown right, the updated lever has a 9 degree angle difference when mounted on the selector shaft that changes the geometry slightly causing less flexing of the shift control cable.

In production Toyota fitted that same updated lever to all SW20's including the turbo models after '92.

I have a spare S54 gearbox that happened to have an original ’90 model shift lever on it, so I put it alongside the later updated lever from my car for comparison in the next pic .

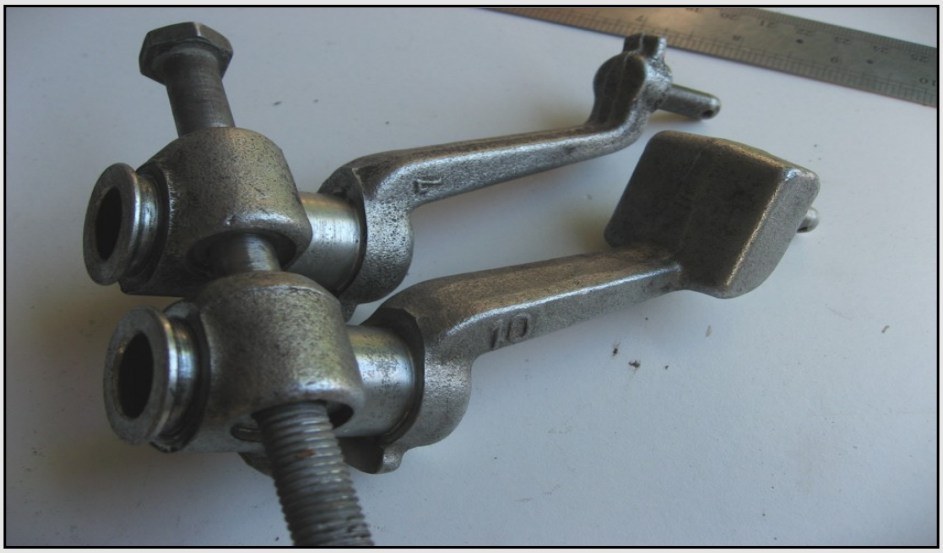


I placed a tight fitting 10 mm bolt through the cotter pin holes, thus aligning them both the same way as they are fitted to the selector shaft, and clamped a ruler parallel to the 10 mm bolt to help see the bolt’s orientation.

Although the updated lever on the right has a different casting shape, the angle difference between the two rulers shows that the cable mounting pin on the updated lever is rotated slightly clockwise compared to that of the early model lever on the left.

The angle difference means that with the updated lever, the cable bush sits about 10 mm further back at the gearbox end so that a slightly longer cable is needed if the gear-stick is to sit vertical in neutral. That could explain the different cable part numbers catalogued for early and later models.

In the next pic, although I don’t know what the numbers mean, you can see a 7 and a 10 cast into the two levers that I have. I assume the heavier casting behind the cable mounting pin on the updated lever is to give the end more mass to aid in smoother shifting.



**Sourcing a new gearshift cable**

The Toyota part number for the shift control cable for the NA gearbox to use with the updated shift lever is 33821-17061, and considering how long the one in my car would have been in use, possibly 20 years or so, I decided to replace it anyway even though it was not broken.
So I recently purchased a new one for $206 USD (+ shipping) from **http://www.lithiatoyotaparts.com**

That was the cheapest supplier I could find, and if you think that's expensive, compare it to the price of the cable quoted in Kevin's article ($330 AUD) written in the early 1990's and apply the CPI to that.
The new cable assembly also came with a new rubber mounted bush for the gearbox end, along with a new rose joint for the gear-stick end, so that could partly explain the price.

**Selector shaft shift levers**

For anyone interested, the Toyota part number for the updated shift lever is 33527-17100.
($45 USD from Lithia )
Although many ADM NA's would have had it fitted when the cables were replaced under warranty, there would still be many SW20's around that would still have the old shift lever fitted, especially JDM imports.

In fact, during a recent maintenance check of Vic MR2 Owners Club members cars, we found one JDM NA and one JDM turbo that still had the old lever installed, and perhaps not surprisingly they both had badly worn lower cable end bushes while the upper cable end bushes were fine.
With regards the condition of the cables inside the housing, I suppose time will tell.

Obviously for anyone considering fitting an updated shift lever, it would best be done at the same time as a new shift control cable is fitted, because you would need to buy the correct length later model cable to suit.

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