

1992-1997 Subaru SVX TPS Investigation and Possible Homebrew Repair Procedure (ver prelim 12/16)

Prepared by gwynethh and friends 2016

This document discusses our investigation of SVX and other Subaru Throttle Position Sensors with an eye out to working up a replacement for the SVX ones that are No Longer Available from Subaru.

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You can skip to the end of this document for the bottom line.

Part 1 Research

We started out by purchasing a dead SVX TPS from a Face book friend and two possible donor ones.

Used 93-97 SUBARU IMPREZA OEM Throttle Body TPS Position Sensor A71-611R02



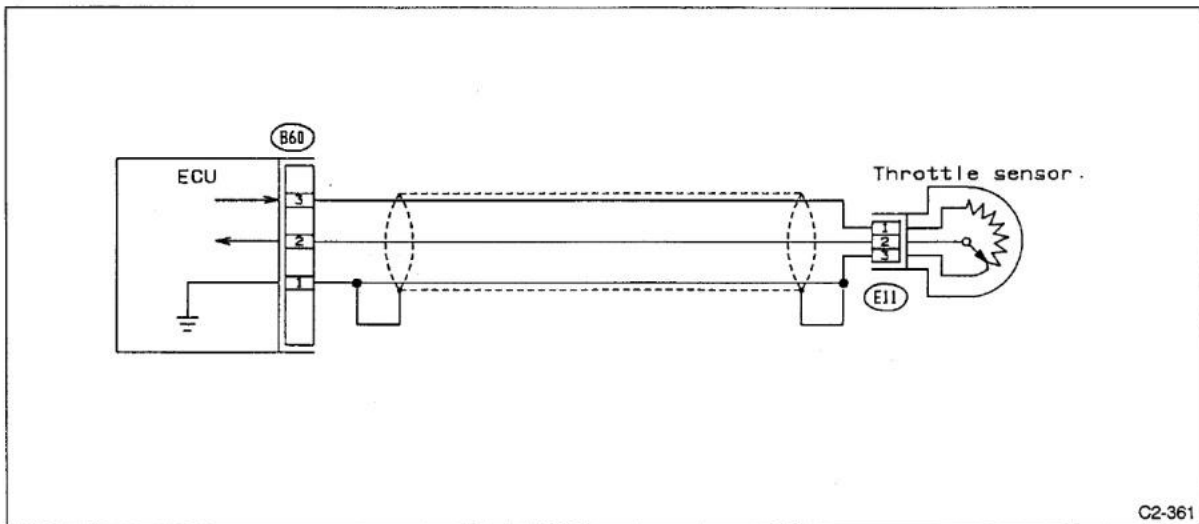
THROTTLE POSITION SENSOR SERA483-06 TPS FITS SUBARU SUZUKI 22633-AA110 TH237



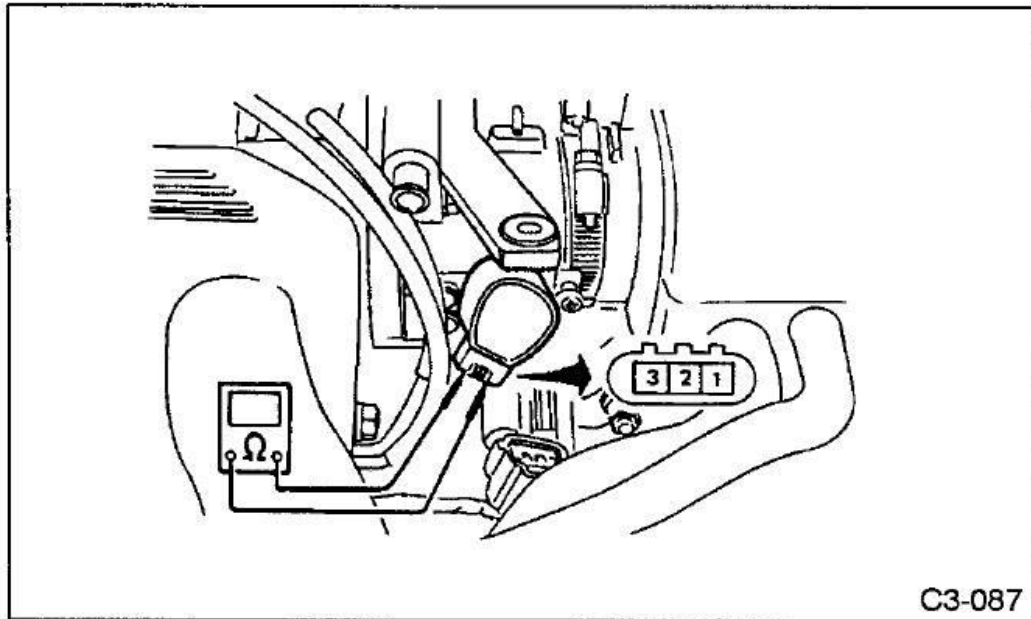
Initial investigation

1. The TPS info in the 1992 SVX service manual appears to be incorrect on the expected closed resistance of 10-12K Ω (but INCREASING as opened). Open resistance test of 5K Ω appears to be close.
2. The used SVX TPS we tested had a closed resistance of about 100 Ω and an open resistance of 5.8K Ω and a gap in the readings.
3. The used Impreza TPS has a closed resistance of 60 Ω and open resistance of 5.3K Ω . The Impreza TPS requires a different mating plug due to a lip inside the socket with no gap in the readings.
4. The new generic TPS had closed and open resistances that are way off.

Some photos of the disassembled SVX TPS and the schematic.



and the FSM page on trouble shooting that appears to be total baloney with wrong resistances. We found 5.5K Ω on pins 1 to 3 and ~200 Ω between pin 2 and 1 (or 3 depending how you interpret the Subaru manual figure).



C3-087

Fig. 83

4) Measure resistance between terminals while slowly opening throttle valve from the "close" position.

Terminal/Specified resistance

No. 2 — No. 3/10 — 12 k Ω [Fully close]

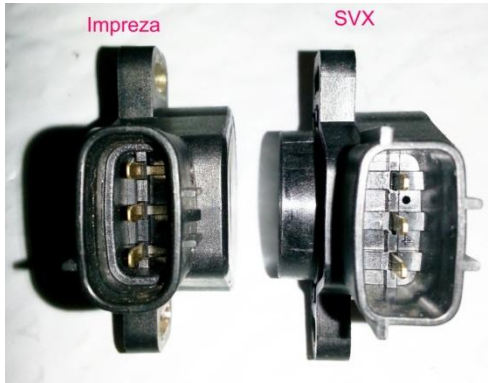
/3 — 5 k Ω [Fully open]

Ensure resistance increases in response to throttle valve opening.

Images of the SVX TPS internals and some Impreza photos



Impreza TPS photos below

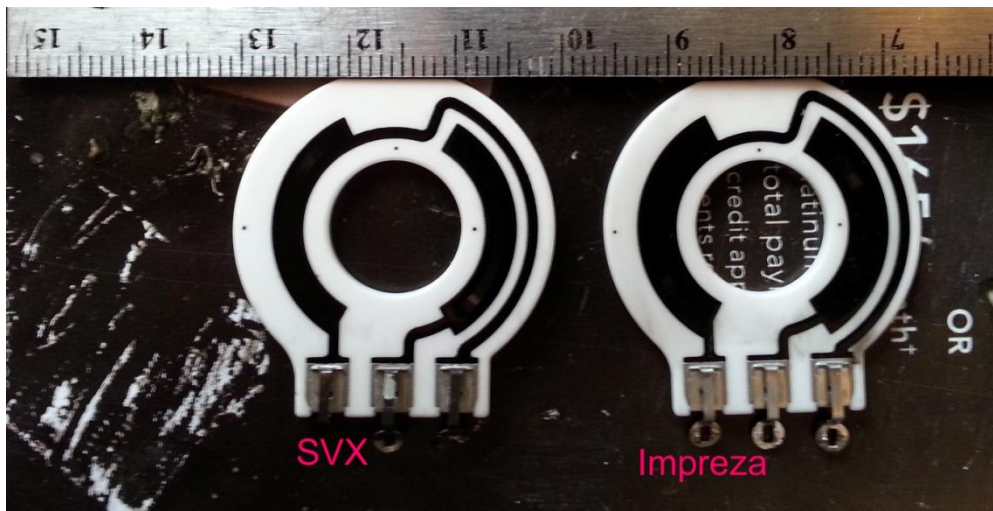




All parts. (Note the eyelet we broke on the bad SVX contact plate). The assembled view is of the Impreza TPS. On that TPS the spring hook is on the lower part of the retainer.

After doing the initial photos and resistance checks we opened the Impreza TPS by grinding out the sealing epoxy (?) between the back cover and body.

Photo of Impreza and SVX contact plates



The Impreza one appears to have wider contact traces as the SVX one. Sadly the Impreza TPS is NLA in the USA.

The cause of failure seems to be wear of the deposited carbon off of the contact plate.

We tried a generic Subaru one that looked plug end similar but the contact plate was very different and unusable. So no go on the 10\$ SERA483-06 TPS FITS SUBARU SUZUKI 22633-AA110 TH237. Internals were not photographed.



- On order is an A71-601 T00 from a Nissan 200SX Sentra 1.6L 1995-1997. www.ebay.com/itm/282200356041 and Nissan Infinity 226205E400/226206P005, A71-620 P00. They also look similar externally and have the same part no. prefix of A71 as of the SVX and Impreza one with the promising looking internals. A tentative hypothesis is that TPSii with part number prefixes of A71 will have the same internals. Waiting on delivery from China for the Sentra one and Idaho for the used Infinity one. Well the A71 hypothesis was a bust but we did find some SVX era TPSii that have compatible contact plates).

We opened a refurbished A71-000 B50 and it MAY have had a proper ceramic contact plate but we broke it getting it disassembled. If you try one of these, start by grinding off the swaged head holding the operator arm to the shaft. Pop off the arm and the return spring. After that, remove the back plate per the method above or just destructively. Carefully pull out the nylon (?) part holding the contact fingers. The ceramic plate then can be de-soldered. The contact plate in this TPS is upside down from the SVX one. The resistances on the 3 pieces of the contact plate add up to about 5.5K ohms.



Also on tap is a possibility of buying the Impreza ones from China at 80\$ for 4 plus 20\$ s/h.

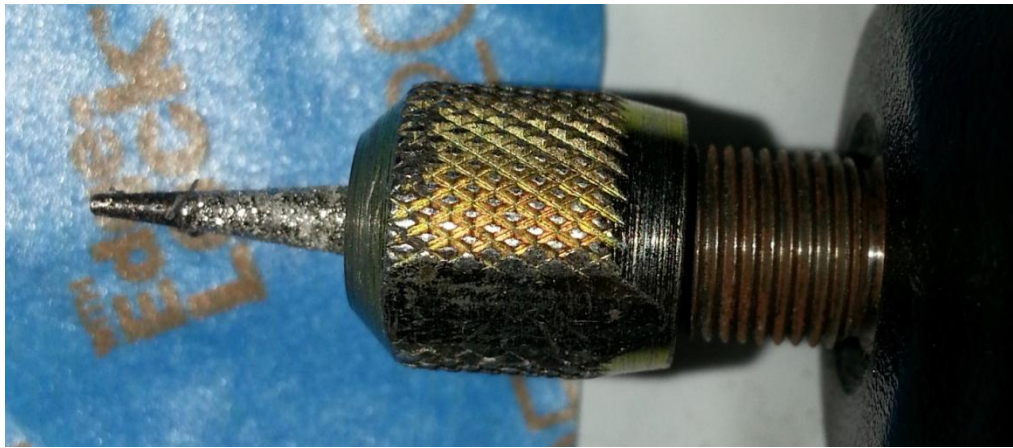
Ok no luck getting new Impreza ones but we did score some refurb SVX units from China!

Part 2 Procedure to replace the worn contact plate

If at all possible, do not use your existing SVX TPS because if you mess it up you are looking at a 350-450\$ expense to buy a non-OEM purported replacement: Beck Arnley 158-1385, Standard Motor Products Th305, and AC Delco 213-4113.

Tools needed: a Dremel or similar, cutting bits such as the below pointed bit and cutting wheels, some rubbing alcohol to clean the parts, some electrical contact cleaner, some Q-Tips and a maybe a can of compressed air used by techies for PC dust blowing. If you are really lucky and have one of those mini machine shop all in ones this work might be easier for you. Also a face mask 'cause who knows what is in that epoxy we'll be grinding out.

For reassembly some JB Weld or hot melt glue.



In any case practice operating on the TPS by first opening the new non SVX TPS as follows. This will be the hard way to get into the new TPS to practice the technique needed for the SVX.

Identify the sealing plastic/epoxy between the back cover and body of the new TPS. Shown in silver on the donor TPS.

Start by cutting the straight runs of the sealing epoxy in shallow depth cuts. If your toothed wheel is small enough you can try making some cuts in the curved portion. The cuts photo was made on the

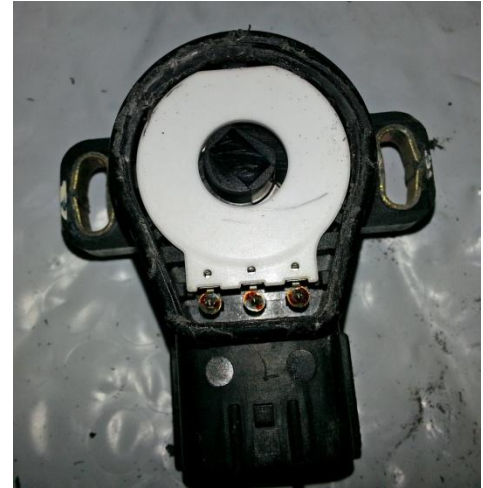


Impreza back and cut line

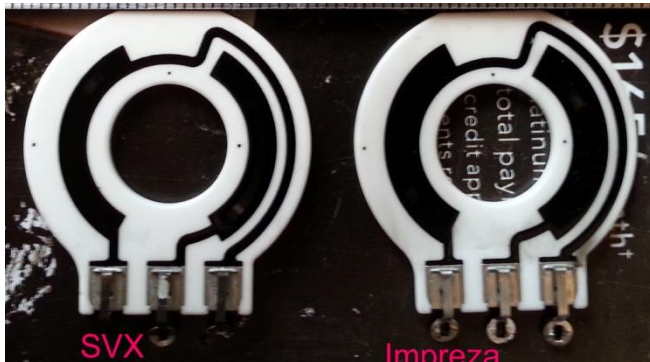


Nissan Infinity TPS we tested. Use the same method on the SVX SPARE you plan to open.

Make several shallow passes and pry out the back. This is what you should see. The contact plate you need to save from the donor TPS is that white thing. It snaps in place and is held in position by the three soldered contacts. Remove most of the solder with solder wick or a solder sucker. Be careful as the eyelets of the contact plate are fragile. If you are opening a Sentra A71-000 B50 the plate will be below the nylon plug and upside down too boot.



After removal the contact plate should look like this.

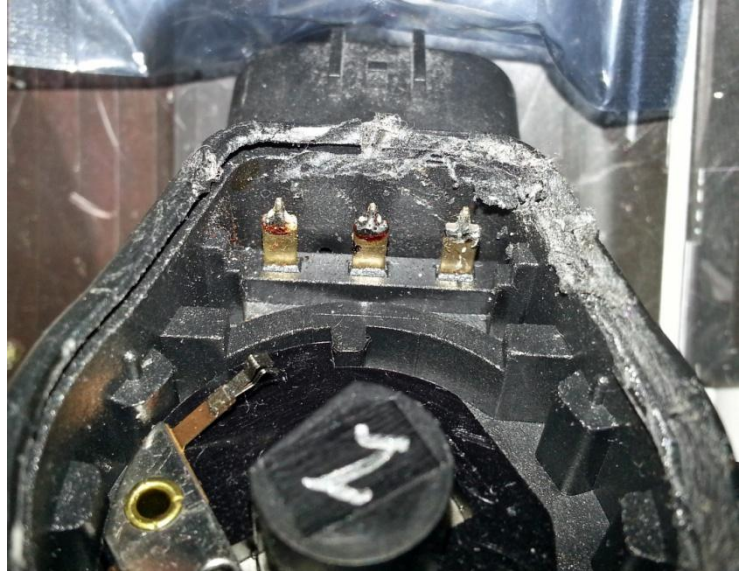


The wipers should be looked at to see if the ones in the SVX body are usable or if you should also transplant the wiper rotor.

Under the contact plate you should see this. Note the contacts/wipers to the left and right of the center post/spindle.



The solder pins will look like this before clean up.



To reuse the spindle, unhook the spring from the front plate and pop the front plate off



Front plate and spring hook of a SVX TPS.

To reseal the TPS place the oring and back plate in position. Clamp the back plate down and re-glue/reseal the JB Weld or Hot gun glue. The JB Weld may be better in the hot engine compartment.



Both of these TPSii seemed to behave properly on the bench. The all SVX parts one (left) is from the Chinese refurb one we opened to investigate. The SVX body one was reassembled from a bad SVX one with an Impreza contact plate.

Part 3: Procedure to use the 93-97 Impreza "as is". UNTESTED!

If you can obtain the car side plug that mates to the 93-97 SUBARU IMPREZA OEM Throttle Body TPS Position Sensor A71-611R02 AND the TPS it MIGHT be easier to leave the new Impreza TPS alone. Swap the Impreza plug for the SVX one mating the same color wires. Then just plug the new Impreza TPS in. This will be easy, if it works. Let us know how you made out if you try this.

Part 4: The Bottom Line

1. Buy a new aftermarket TPS at ~370\$ for a Beck Arnley 158-1385, Standard Motor Products Th305, or an AC Delco 213-4113 if you can find one.
2. Use the 93-97 SUBARU IMPREZA OEM Throttle Body TPS Position Sensor A71-611R02 and connector if you can find one.
3. Rebuild a SVX TPS using the contact plate from a SUBARU IMPREZA Sensor A71-611R02 or a Nissan A71-000 B50. Our test rebuilds seemed to have the proper resistances and no drop outs.
4. Go to Alibaba and a Chinese supplier and try to find what appears to be a refurbished OEM SVX TPS A71-610-R50.

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