

## "Do it yourself" electric power steering in Volvo Amazon

Checked around a bit on the Internet and finally got stuck for steering wheel axle with electric servo from Toyota Prius 2004-2008, and it turned out that the local car wreck here had one in stock

Have a Volvo Amazon station wagon that is under renovation and is in a body spin so it is easy to access it, it's even open to the pedal stand as the torpedo side is not welded yet

Explanatory texts under the pictures



Here, the steering axle is fitted and is not yet modified, suspended with nail tape





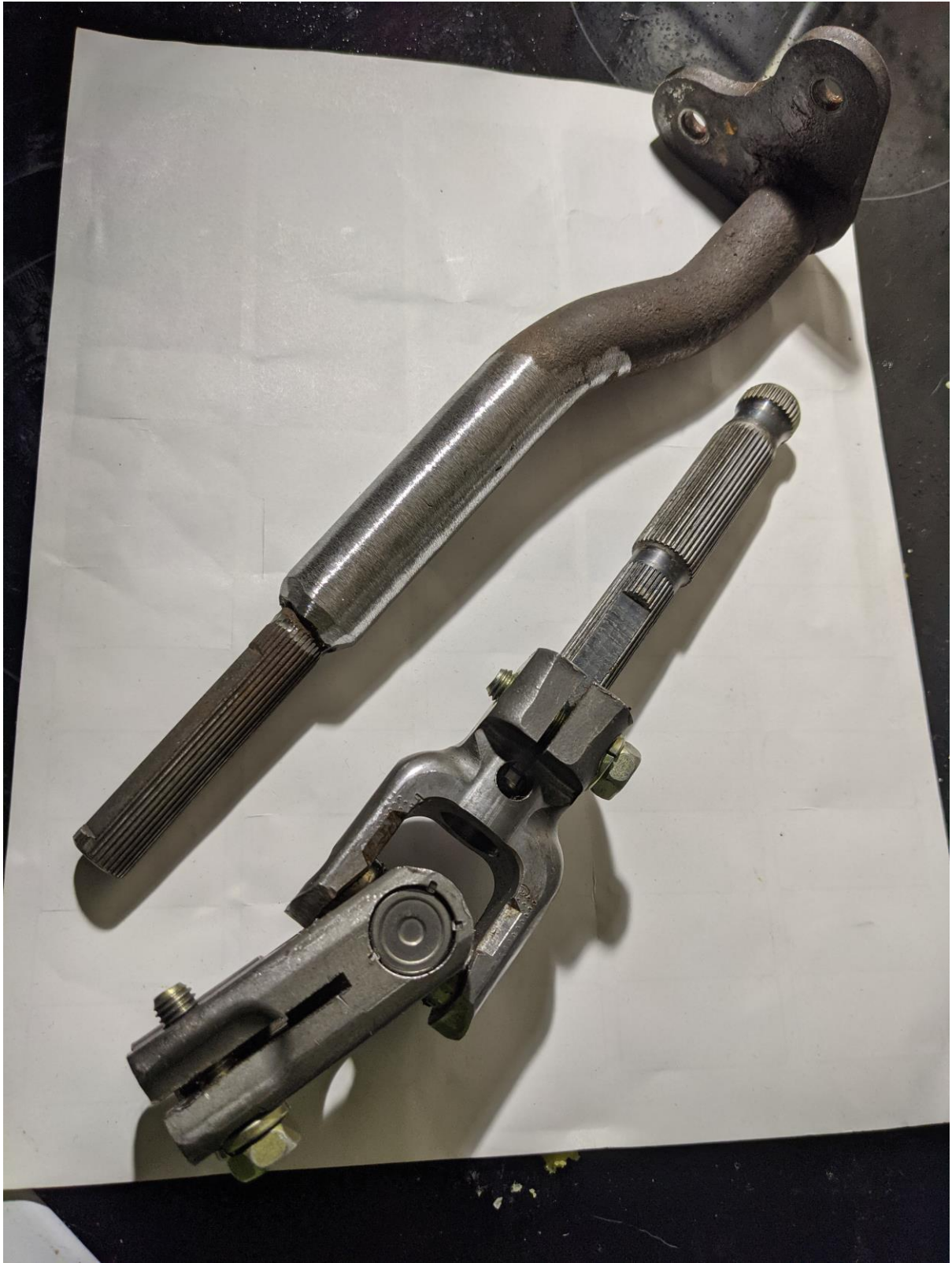
As there was no front bracket for steering axle on the 68, one was made and screwed in place after I took measurements on the 69





Axle from Toyota with splines turned down to fit inside the lower part of the cut top steering axle from Amazon

The total length of these pieces assembled and welded is 250mm



Toyota original at the bottom and finished modified at the top, but without the knot



On the upper part, you remove a locking ring from the inner shaft, then it is easier to hit the outer tube with a hammer "upwards" towards where the steering wheel was, after that, you can also pull out the shaft.

Cut off the outer brackets of the outer tube, cut it off before it became narrower in the upper part towards the ball bearing.

At the cut end, I drilled holes and welded nuts and the pipe is now "upside down" to center Toyota against Amazon's outer steering tube.



Upper axle from Toyota cut at the top of the bulge on the way up to the steering wheel.

130mm long now





Upper axle from Toyota, cut and turned upper steering axle from Amazon  
Total length of these pieces assembled and welded is 330mm



Amazon upper outer steering tube cut, now 165mm long



Assembled on a test in the car that is being renovated  
Test driven with control box and battery connected, looks very promising







The parts removed from the car that is being renovated, assembled before mounting it in my ready-to-drive station wagon

This picture is probably best to look at to see how it fits together



Prototype of the mounting bracket for screwing it into the electric servo in the lower holes and screwing the upper holes into the front bracket for steering axle (which seems / may have been added in 1969 and I had to manufacture it as there wasn't any the 68)



With the bracket I had to make as it was missing





From another angle

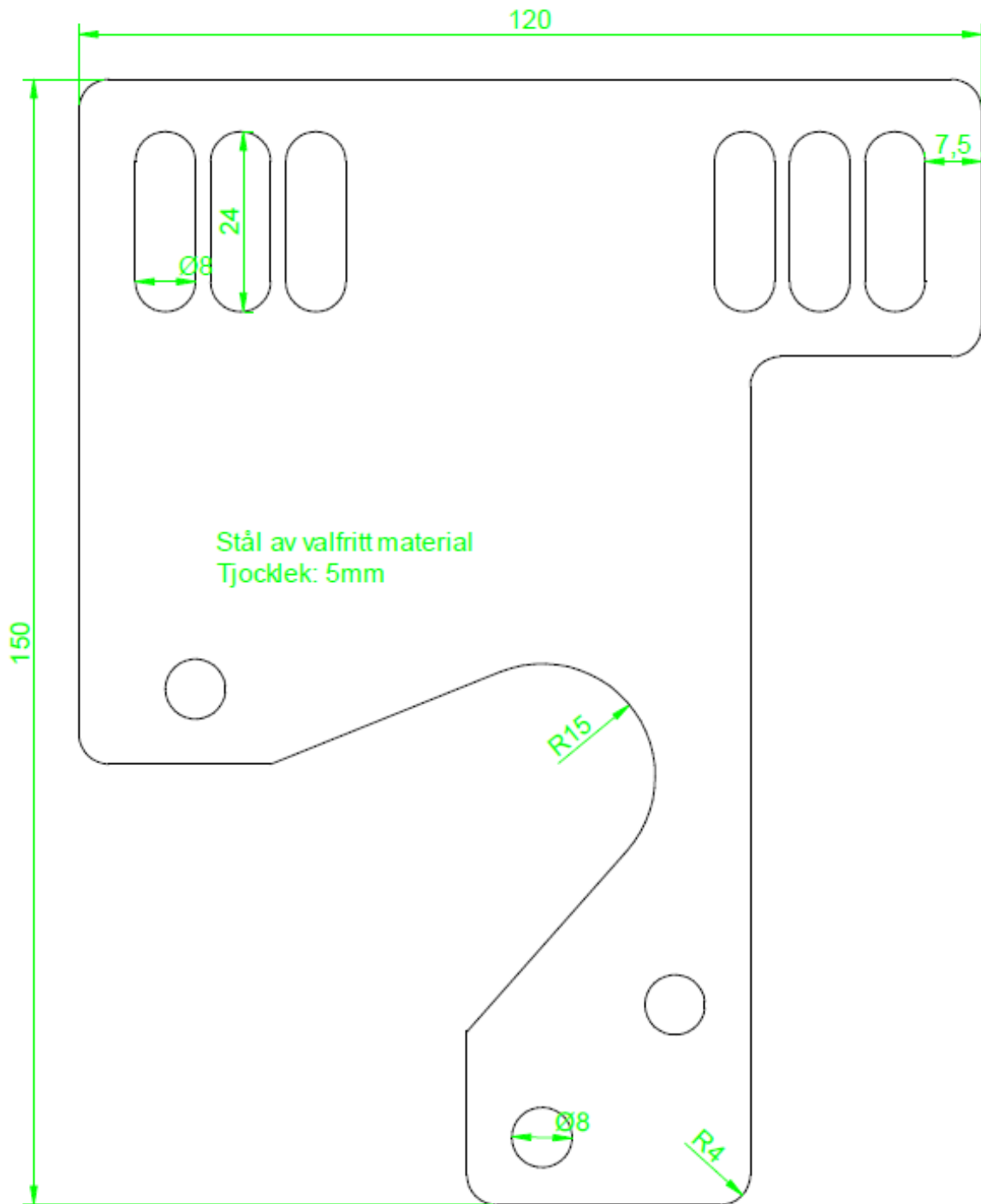


The next version of the mounting bracket, still under development

I have been driving this since it was mounted

Above it is the drawing, which now corresponds better with reality

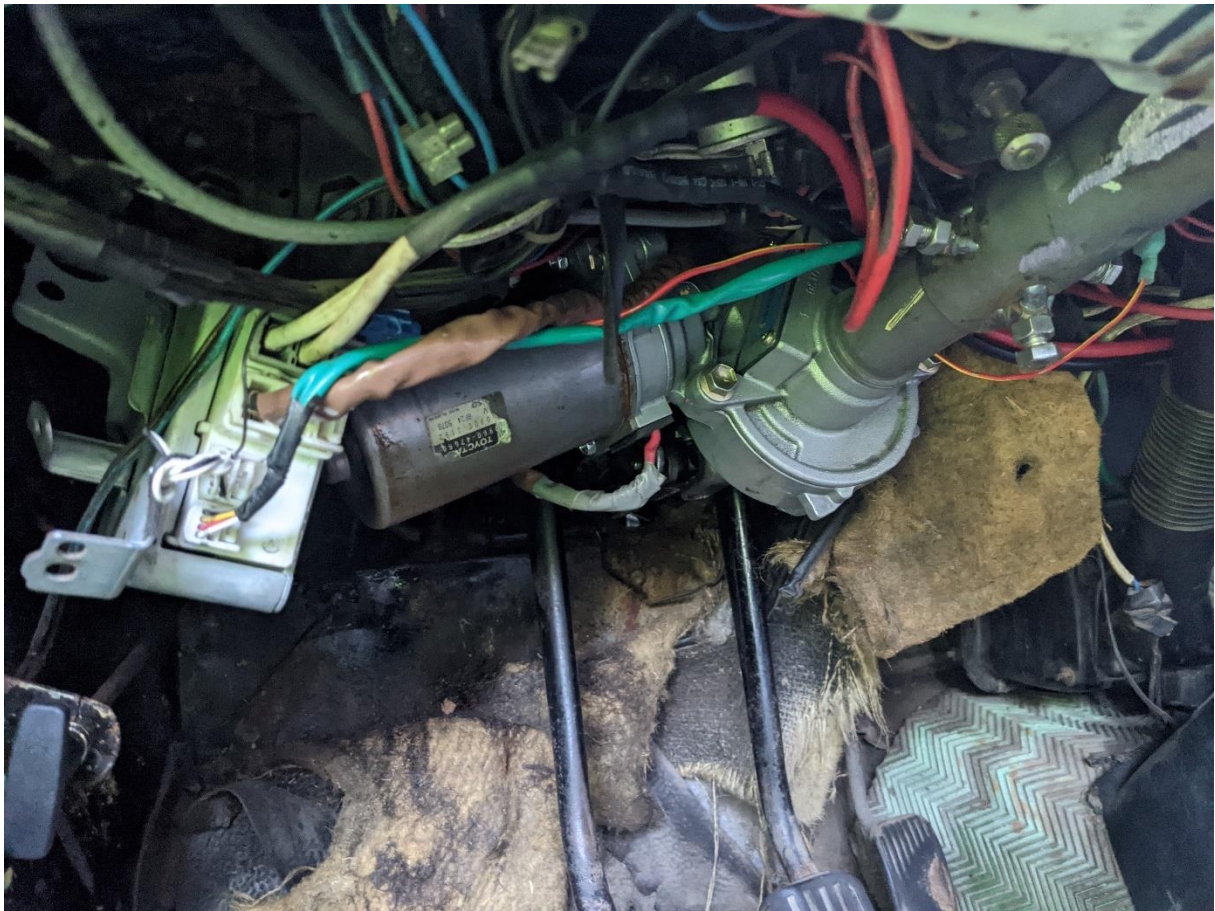
Will see if I can get the mounting bracket water cut for my two cars



The drawing with some dimension

If anyone wants more dimensions or the file in DWG / DXF, contact me

But I would probably like to get the cut out for myself first to see that it is correct and do not need to change the drawing anymore



This is what it looks like mounted under the dashboard, you have to squat down to see there is something there that is not original

Excuse the mess with cables and other things

Had the car about 1 month when I took this picture, and there seems to be a lot of connections made with the electricity over the years

Cleaned out 3-4 relays and a few meters of cable in the engine compartment, not started cleaning under the dashboard yet





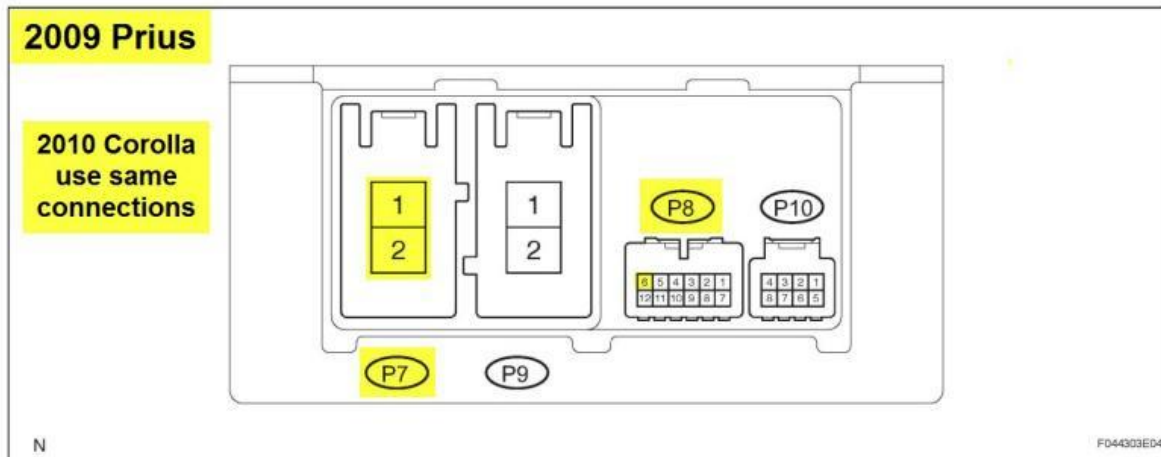
Has changed the original steering wheel to a smaller steering wheel and it works great

Cable connection that is needed, marked in yellow

P7-1 Connected via 50A fuse directly to battery +

P7-2 Connected directly to battery -

P8-6 Ignition on, connected to ignition lock or ignition coil +



(a) Measure the voltage and resistance of the connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
PIG (P7-1) - PGND (P7-2)	W - W-B	Power source	Always	10 to 16 V
PGND (P7-2) - Body ground	W-B - Body ground	Power ground	Always	Below 1 Ω
M1 (P9-1) - PGND (P7-2)	R - W-B	Power steering motor signal	With power switch ON (IG), turn the steering wheel to left	Below 1 V
			With power switch ON (IG), turn the steering wheel to right	10 to 16 V
M2 (P9-2) - PGND (P7-2)	B - W-B	Power steering motor signal	With power switch ON (IG), turn the steering wheel to left	10 to 16 V
			With power switch ON (IG), turn the steering wheel to right	Below 1 V
CANH (P8-1) - CANL (P8-7)	B - W	CAN communication line	Power switch is OFF	54 to 69 Ω
SIL (P8-2) - PGND (P7-2)	W - W-B	Diagnosis communication signal	Communication is established by connecting the intelligent tester (with CAN VIM) to the DLC3	Pulse generation (see waveform 1)
IG (P8-6) - PGND (P7-2)	B - W-B	IG power source	Power switch is ON (IG)	10 to 16 V
TRQ1 (P10-5) - PGND (P7-2)	B - W-B	Torque sensor signal	With power switch ON (IG), turn the steering wheel to left and right	0.3 to 4.7 V
TRQV (P10-6) - PGND (P7-2)	Y - W-B	Torque sensor voltage source	Power switch ON (IG)	7.5 to 8.5 V
TRQ2 (P10-7) - PGND (P7-2)	R - W-B	Torque sensor signal	With power switch ON (IG), turn the steering wheel to left and right	0.3 to 4.7 V
TRQG (P10-8) - PGND (P7-2)	W - W-B	Torque sensor ground	Always	Below 1 Ω

I chose the Toyota Prius 2004-2008 because I found the most videos on Youtube that were about it and no extra electronics are required (3 wire only connection)

What is required electrically is ground connected directly to the battery - and + 12V directly from the battery secured with 50A, and then a connection from + on the ignition coil (or from the ignition switch)

When you switch on the ignition, the data box searches for a Toyota Prius on a CAN bus, when it is not found, the data box goes into safe mode after 5-10 seconds and then provides servo assistance that is more than sufficient

Think I read that in fail-safe position it "believes" that the car goes at 40-50 km/h

The following should also work, but I cannot guarantee it

2009-2022 Toyota Prius

2009-2013 Toyota Corolla

2006-2011 Toyota Yaris – (With ABS)

2007-2009 Nissan Versa

2009-2012 Nissan Cube

2012-2014 Kia Soul

It works so well that I checked the local car scrap and they had a few more Prius of the right year models that was not yet been torn down.

I could buy another set, to put in the station wagon renovated

Had previously acquired a rack with hydraulic servo from 240/740 for it, but I scrap that idea, much easier with electric servo

/Janne

Svenska Volvo AmazonKlubben

Member: 14835

2 years ago, I had a relapse with Amazon, and has since then bought a ready-to-drive 2 door 1969, a renovation object station wagon 1968 and a ready-to-drive station wagon 1967.

35-40 years ago I owned some old Volvo's P1800, 142, P210/Duett, 2 door and station wagon Amazon

Unfortunately they was not appreciated at that time, as they do now, should have kept several of them...