



Testbench for HC-SR04



Année universitaire : 2019 - 2020

DOCUMENT HISTORY			
INDEX	DATE	MODIFICATIONS	VISA
A	2020/03/04	Document creation	
B	2020/03/08	First edition	
C			

2020/03/08	ASSEMBLY PROCEDURE
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Necessary tools

Wrench of 4



Phillips screwdriver



Wrench of 5.5



Allen Wrench of 1.5



Wrench of 13



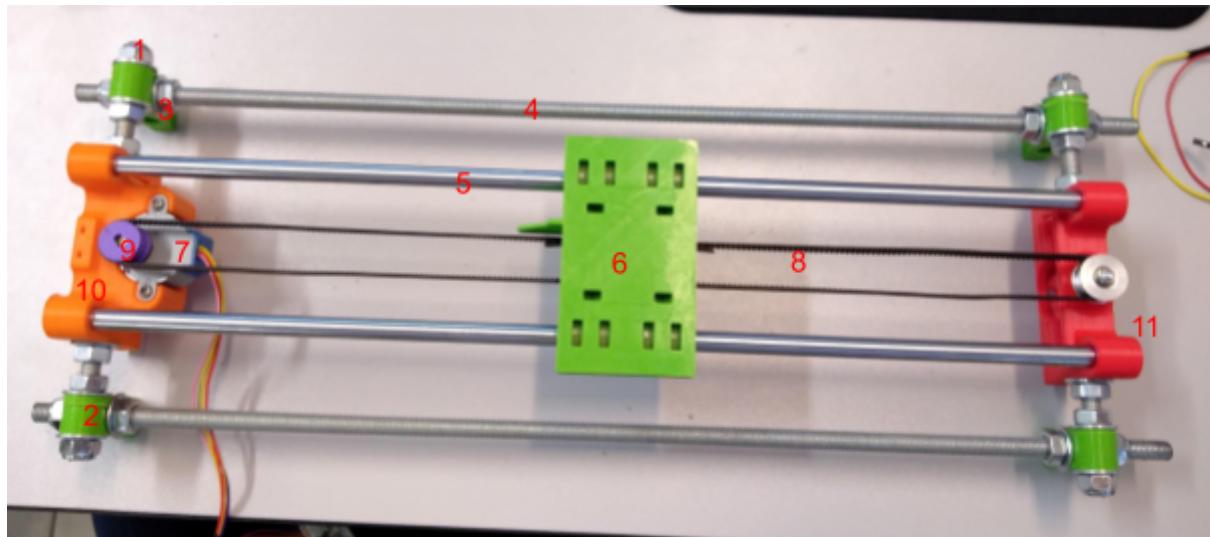
Time to realize every part :

- Time to realise the Assembly : 3 hours
- Time to realise the Cabling : 30 minutes
- Time to realise one test of the sensor : 10 minutes

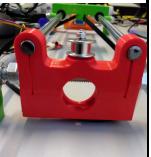
Assembly parts

Time to realise the Assembly : 3 hours

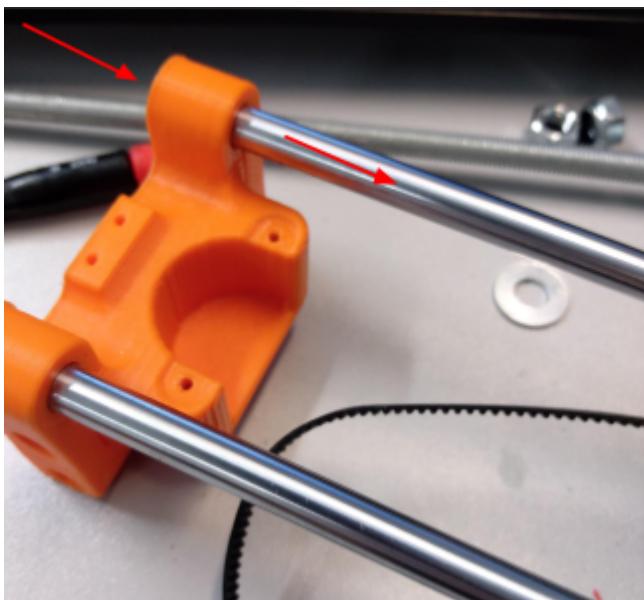
Necessary material



1	2	3	4	5	6
Nut (x12 + 8 auto lock)	Feet (x4)	Washer (x20)	Threaded metal bar (x2 short + x2 long)	Smooth metal bar (x2)	tray support

7	8	9	10	11	12
					
DC step motor	Timing Belt	Notched pulley	3D Support motor(1)	3D Support (2)	Rislant necklace x10

How to assemble?

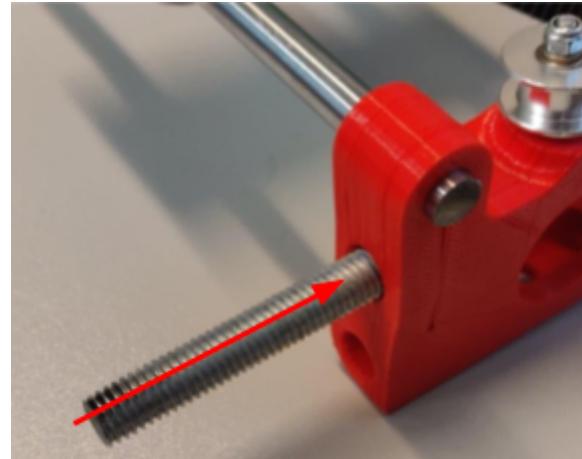


(1).At first, you need to put the both smooth bar in the 1st 3D support here :

And you have to do exactly the same to the other 3D support.

(2) After that, you have to put another Threaded bar (short) through the booth 3D support again :

And you need again, to do the same as the both 3D Support.



(3) Next, you have to put 2 Washer and 2 Nut in this order :
Washer -> Nut -> Nut -> Washer

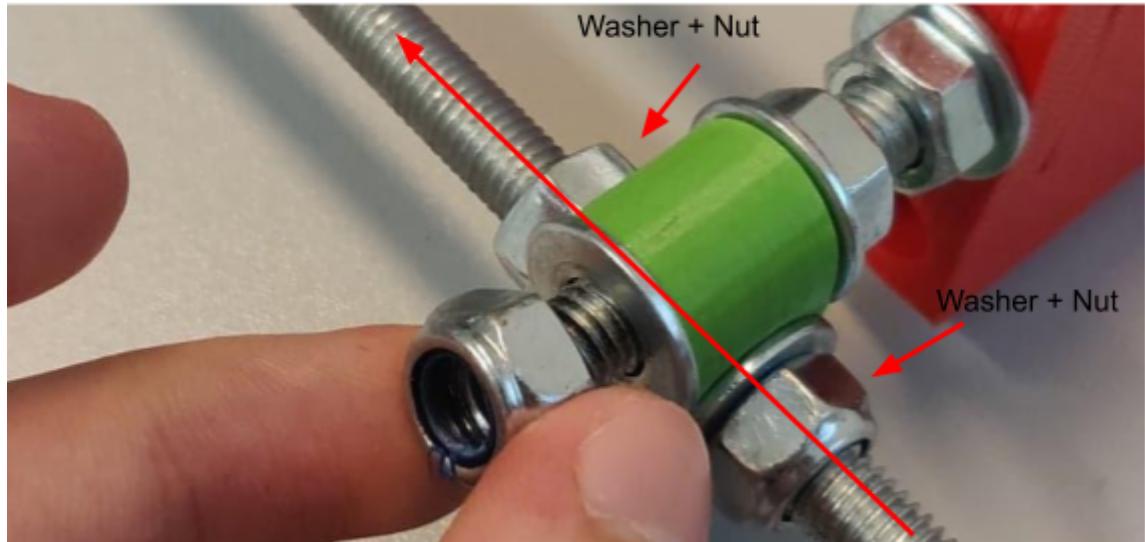
And you need to do the same to both side of both 3D support

(4) Next, you just have to put the feet here, after the step 3.

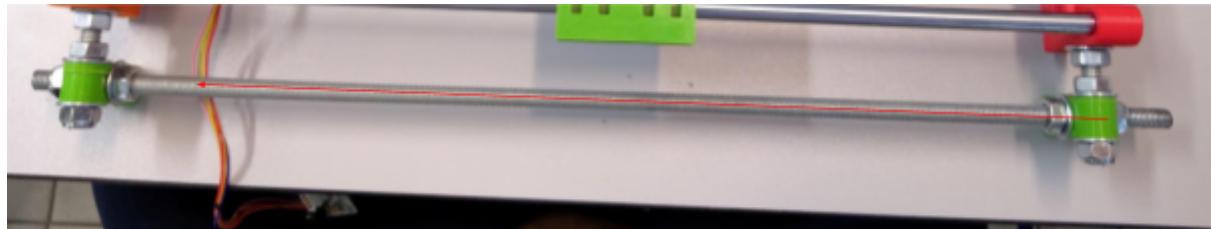
After, you just have to put 1 washer and 1 nut after the feet like this :



(5) And, like the step, you have to put a long thread bar in the feet and fixe it with two washer into two Nuts :

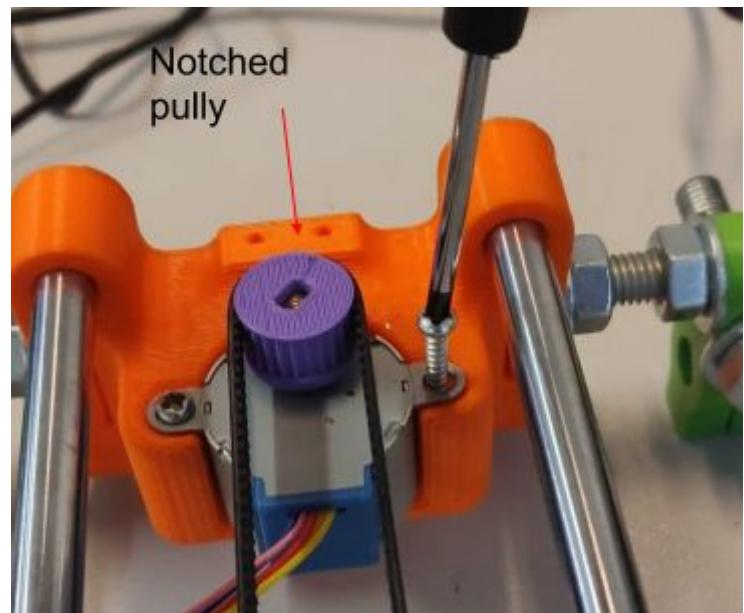


(6) Next, you need to do the same thing to the other side like this :

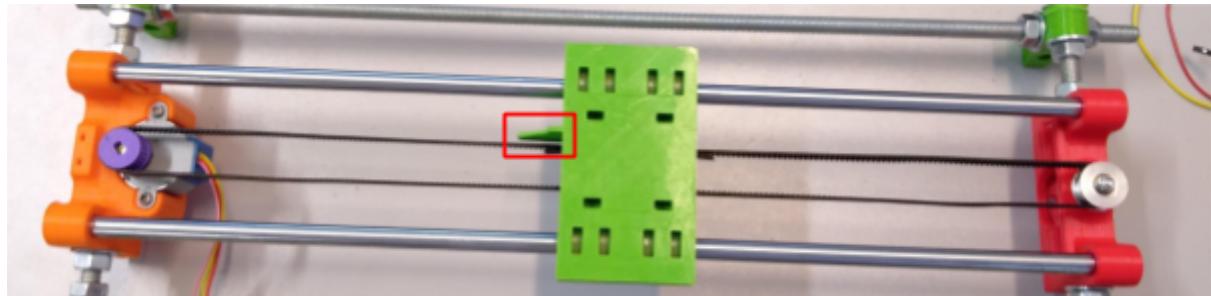


(7) The next step, it's to put the motor on the 1st 3D Support.

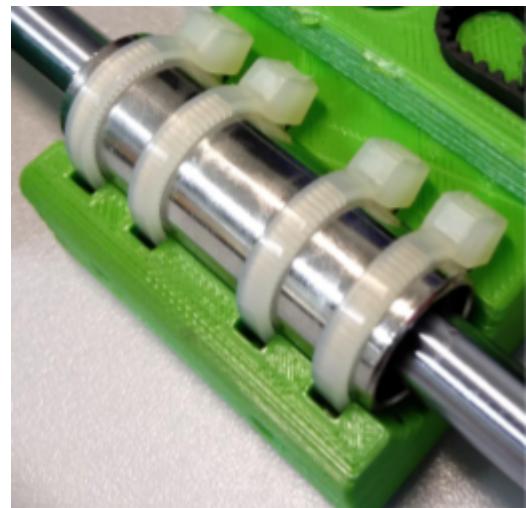
You can put the Notched pulley on the motor too like this :



(8) Next, you have to place the tray support on the two smooth metal bar with the little point in front of the motor like this :



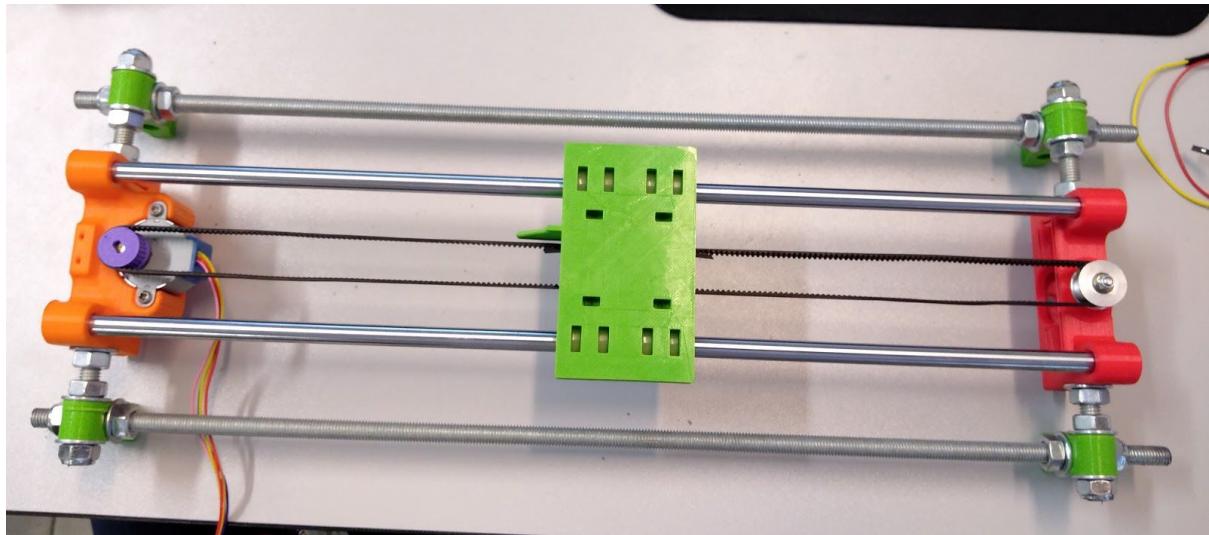
When the Tray is in place, you have to fix it on the bar with 8 rislant neck like this :



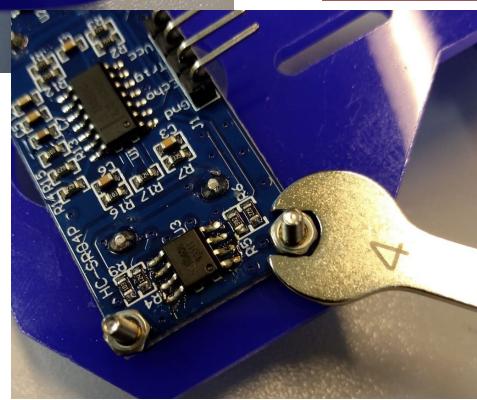
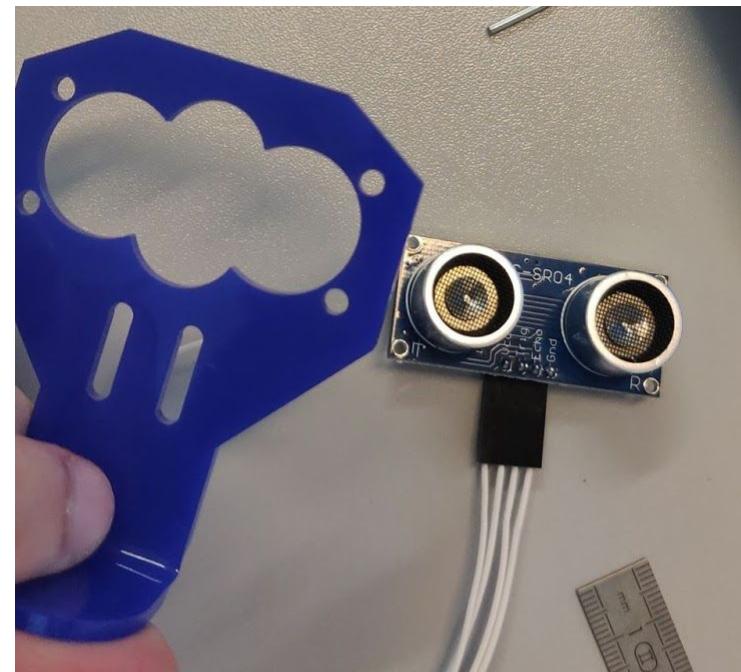
(9) And, you have to follow the lead of the timing belt like this :



You need to have a thing like this when you have ended all step :



(10) The last step is to put the sensor on the support like this :



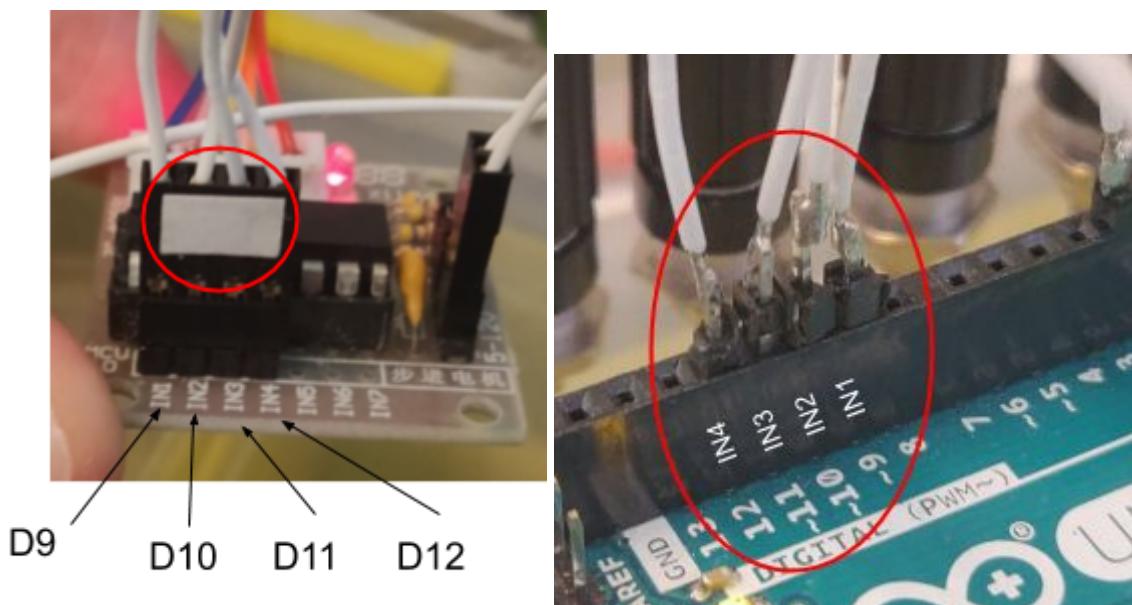
2020/03/08	ASSEMBLY PROCEDURE
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Cabling Part

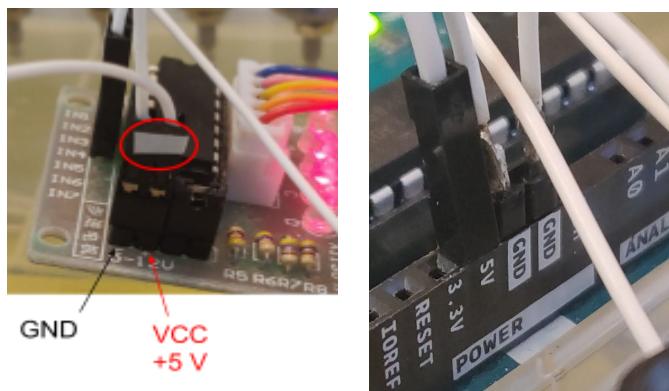
Time to realise the Cabling : 30 minutes

Cabling the DC step motor to the arduino card :

- Connect the connector of 4 pins on the pin IN1, IN2, IN3, IN4 with the white label oriented toward the registrations.
- Connect the other extremity of the connector on the arduino card on the D9, D10, D11, D12 pin

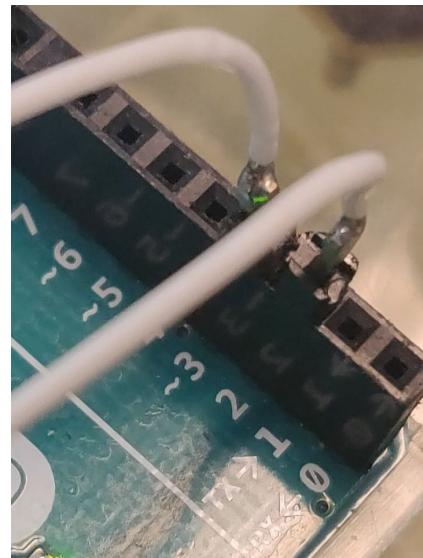
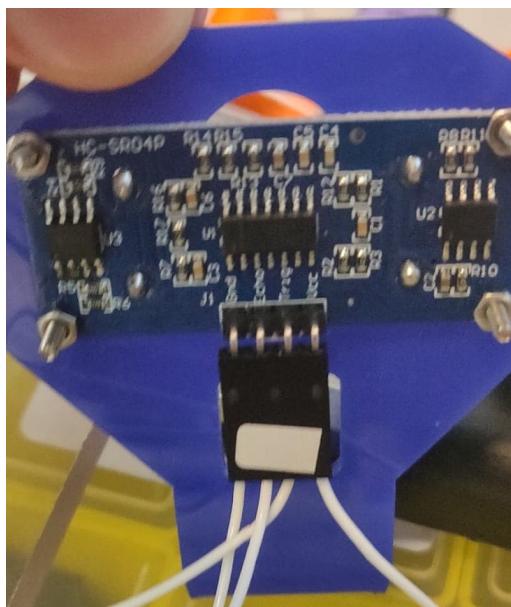


- Connect the connector of 2 pins on the power supply pin like the picture under. Don't forget the white label need to be oriented toward the registrations.
- Connect the other extremity on the power supply on the arduino card like the picture under



Cabling the HC-SR04 sensor :

- Connect the 4 pins connector to the HC-SR04 pins with the white label facing you. Like the left picture below.
 - Connect the other extremity on the arduino card like the right picture below.
 - To connect the VCC of the HC-SR04 and the DC step motor at the same time you need to connect them on a banana connector (On the third picture). Then connect the VCC connector on the arduino pin (5V).



2020/03/08 ASSEMBLY PROCEDURE

Testing parts

Time to realise one test of the sensor : 10 minutes

When you have finished the Assembly and Cabling part

Test the HC-SR04 you need to :

- Download our testing programme “sketch_mar04d” on our website www.ourimaginarywebsite.com/HC-SR04/programme.com
- When the programme is download, run it with the arduino app.
- Connect the arduino card to your PC with an USB cable.
- Check if you use the good port number (Tools -> ports -> COM4 for exemple).
- Upload the programme in the card with the upload button like the screen below



- The DC step motor will start working, you will see the measures of the sensor if you open the window with the button on the picture below



- The sensor will take measures every 10.5cm. On the screen for 1 test you will see :
10cm -> 21cm -> 31cm -> 31cm -> 22cm -> 11cm
- If you don't see these results the HC-SR04 don't work correctly so put it in a “not working case” else the sensor is valid.