TEC | Tecnológico de Costa Rica

Academic Area of Mechatronic Engineering

MT-8003 Manufacturing Systems

Professor: Eng. Jaime Mora Meléndez M.Sc.

Final Project: Assembly Instructions

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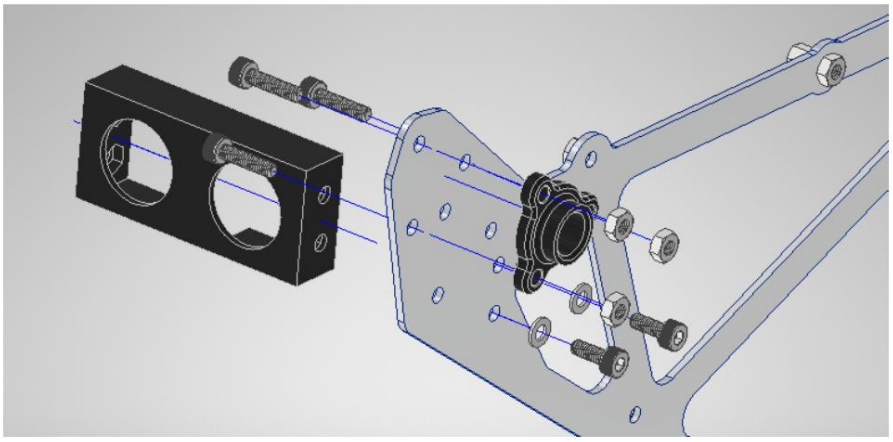
Assembly process:

1. Ultrasonic sensor

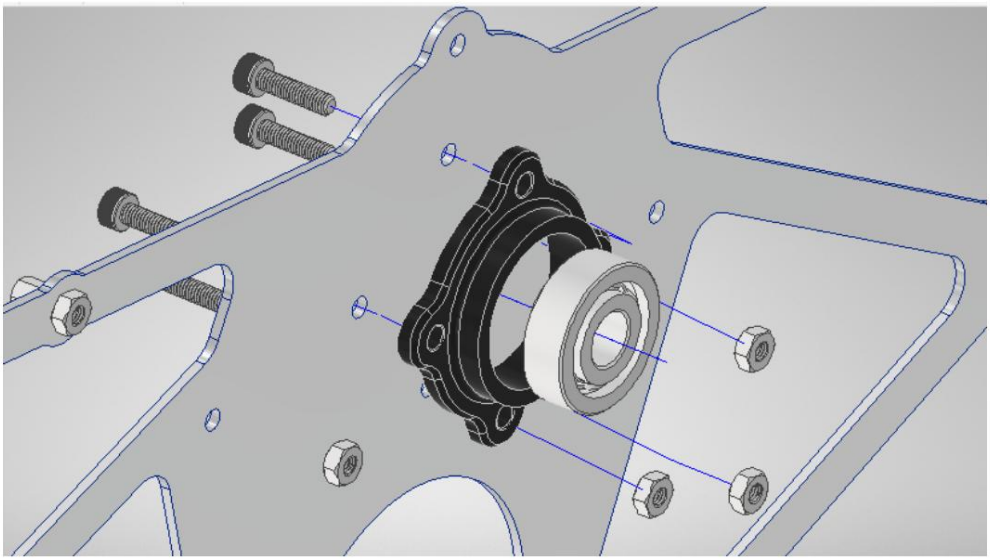
First, the ultrasonic sensor support is assembled, 2 screws are used.
M3x6, washers and nuts. Then the axle support is placed with 3 screws
M3x12 and its nuts. The same operation is repeated on the other part of the same structure.



It should be assembled as follows:

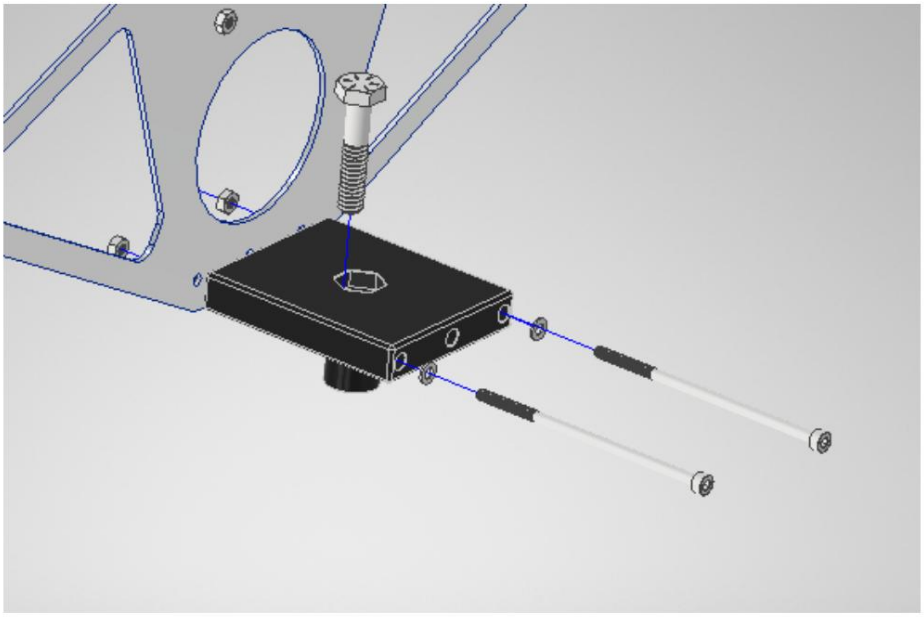
2. Bearing support

Next, the bearing support is assembled, in this case they must
4 M3x12 screws with their respective nuts must be used. This process must be repeated in the other of the frame plates.



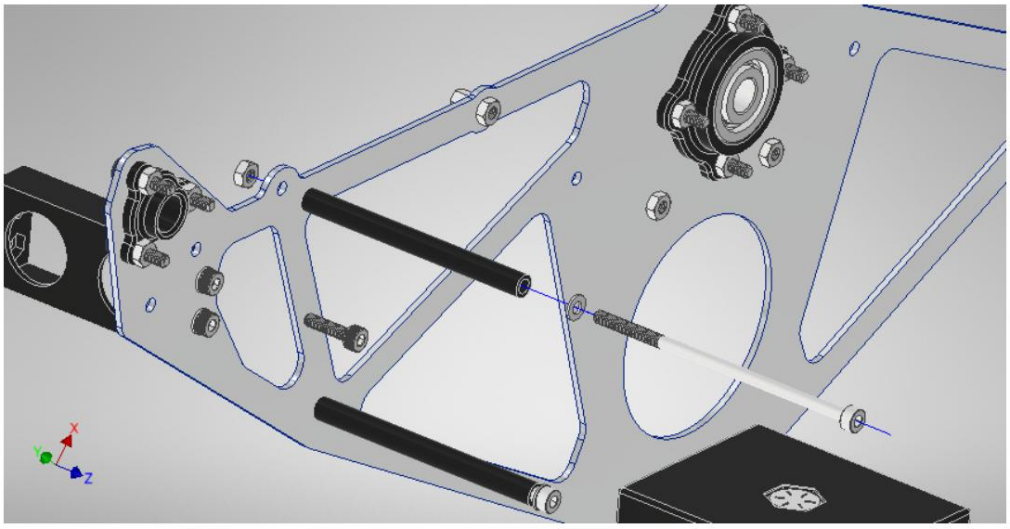
3. Camera support

Now the camera support is going to be assembled, for this 2 screws are used
M3x70, with washers and nuts and the 1¼-inch screw.
Note: The screw head is inserted all the way into the printed support.



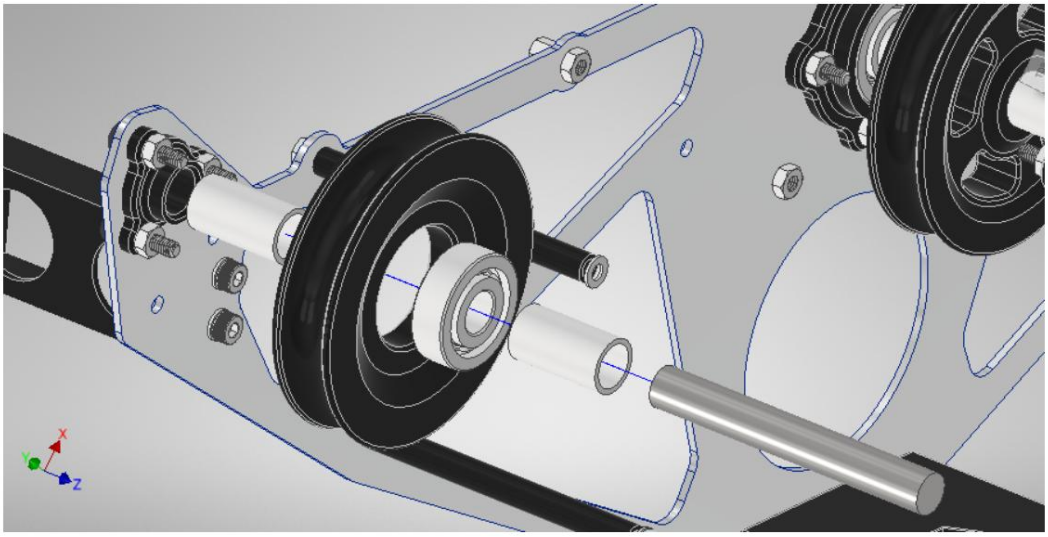
4. Spreader bars

The spreader bars are then placed on the structure, these provide it greater rigidity. To do this, use 4 M3x70 screws with their respective nuts and washers.



5. Support pulleys

Now the support pulleys will be placed, these use sleeves as spacers, use 2 of these sleeves, the pulley, 1 bearing and a steel shaft for this part of the assembly. This step is repeated on the other side of the structure.

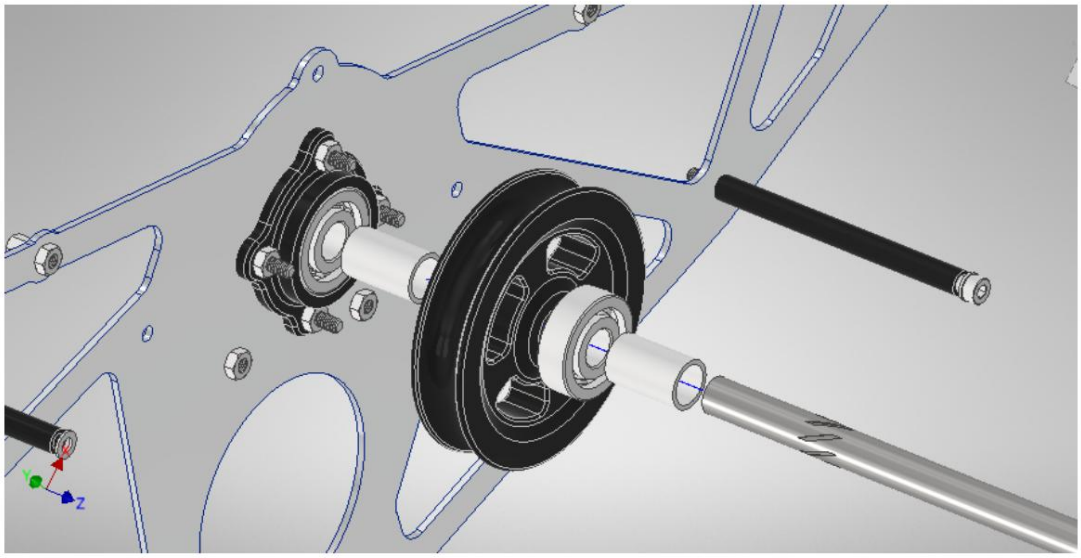


6. Center pulley

To mount the central pulley, the remaining 2 sleeves, the pulley and the shaft are used.

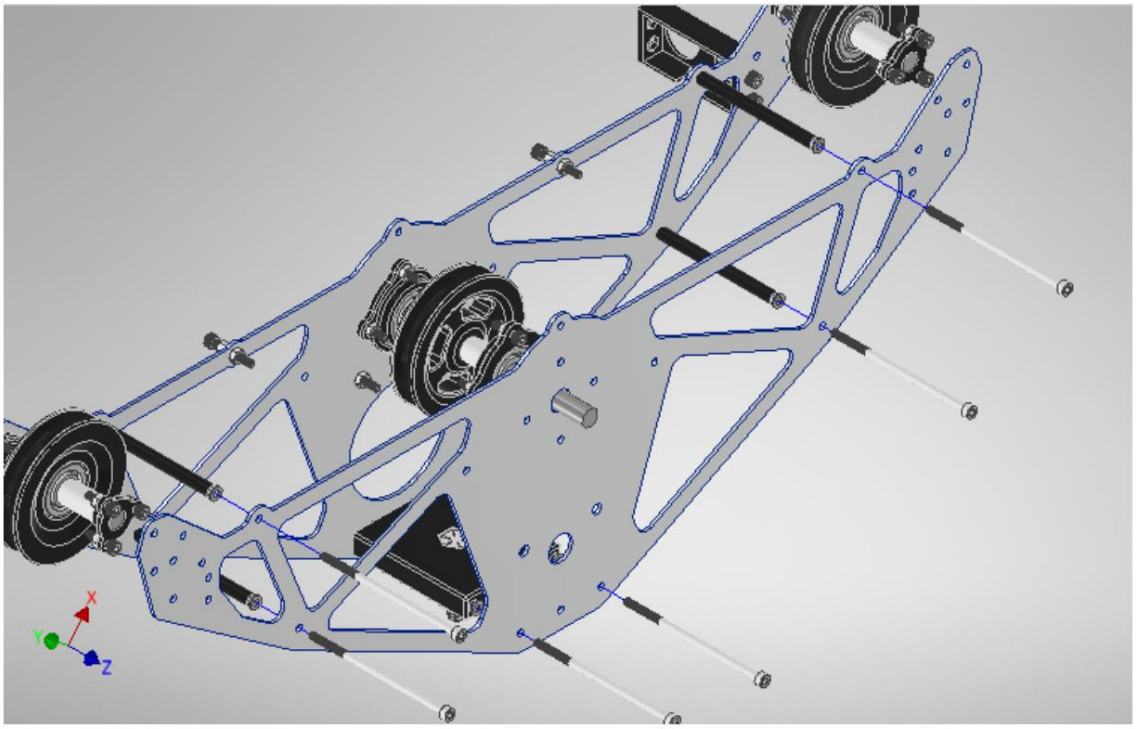
Note: When attaching the pulley, an epoxy resin glue or glue must be used.

of plastic welding between the pulley and the shaft notches for optimal performance.



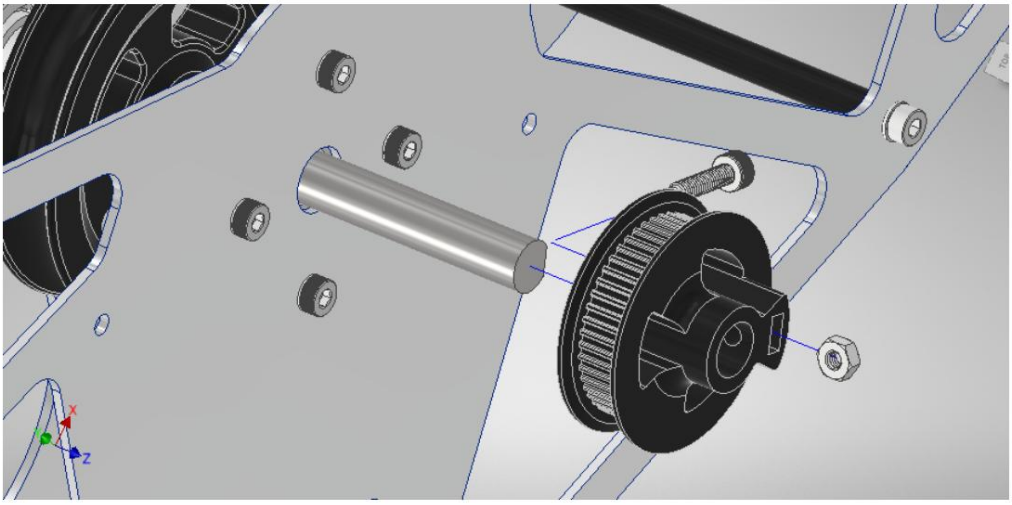
7. Second part of the frame Next, the

second part of the frame is assembled.



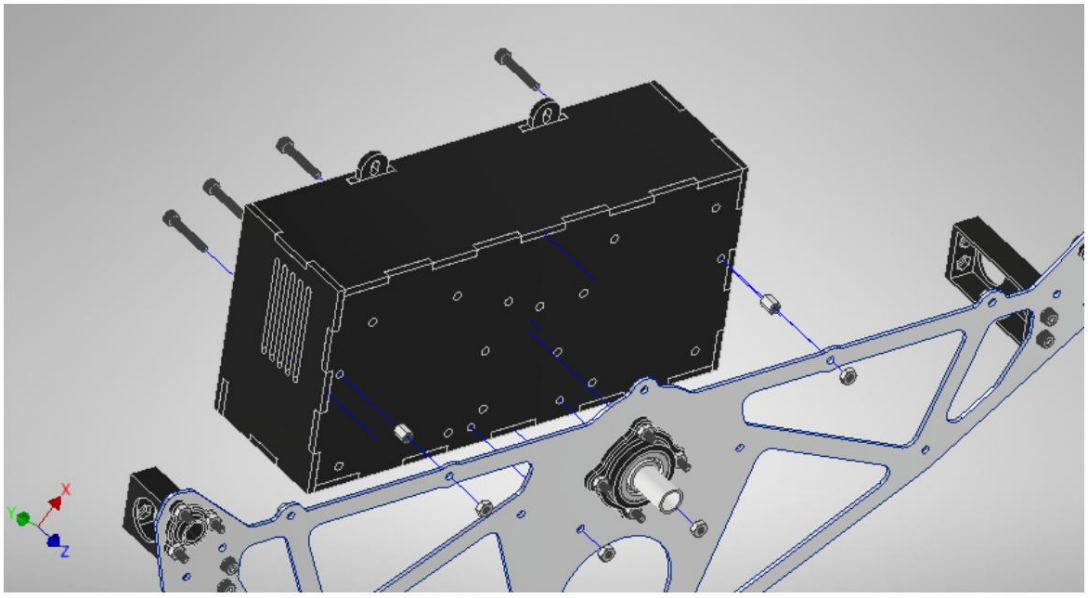
8. Toothed pulley

In this step you will place the toothed pulley, for this use an M3x12 screw and a nut that must be inserted into the pulley slot.



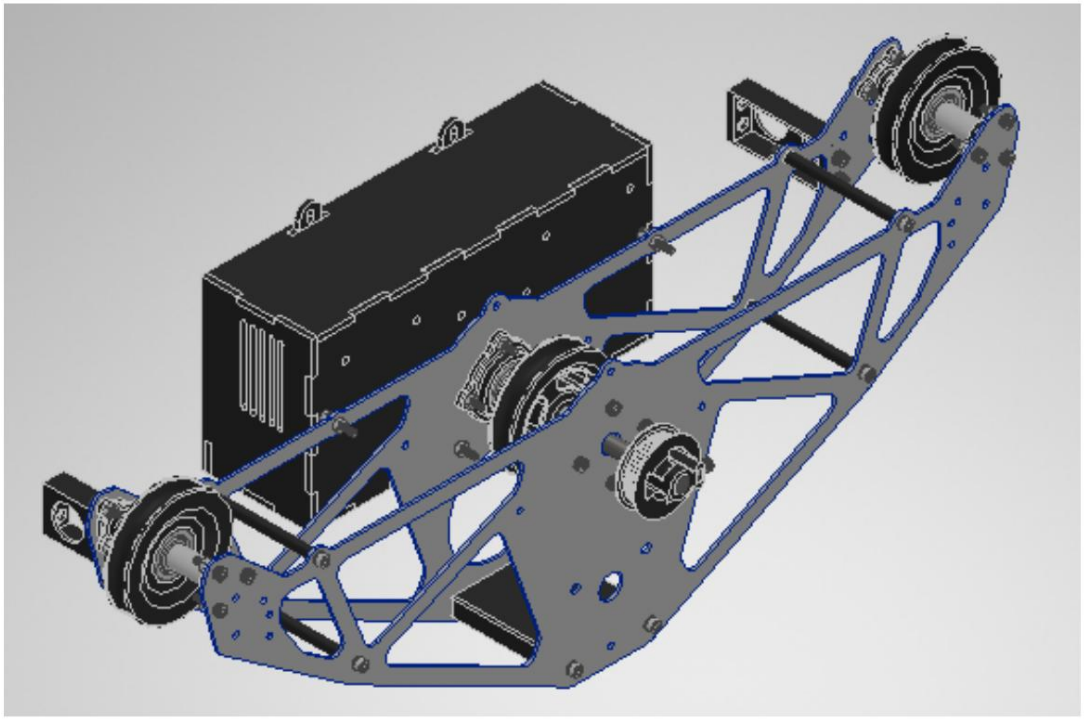
9. Cabinet

The last step is to place the electronic part cabinet. To do this use the 4 M3x20 screws, together with the spacers and nuts as shown in the figure.



10. Final assembly

This is what the final assembly should look like.



After this step the engine must be placed, the 20T-2GT toothed pulley together with its timing band.

Parts List

LISTADO DE PARTES			
ITEM	CANTIDAD	NOMBRE PARTE	DESCRIPCIÓN
1	2	Soporte para cojinetes	Impresión 3D
2	4	Soporte para eje de apoyo	Impresión 3D
3	2	Soporte Sensor 2	Impresión 3D
4	1	Frame2	Router CNC
5	1	Frame1	Router CNC
6	2	Polea apoyo	Impresión 3D
7	1	Polea de transmisión	Impresión 3D
8	1	Polea dentada	Impresión 3D
9	4	2349K701_Permanently Lubricated Ball Bearing	Componente estándar
10	31	90592A085_Steel Hex Nut	Componente estándar
11	4	91290A113_Alloy Steel Socket Head Screw	Componente estándar
12	21	91290A117_Alloy Steel Socket Head Screw	Componente estándar
13	6	91290A297_Black-Oxide Alloy Steel Socket Head Screw	Componente estándar
14	16	98689A112_General Purpose 18-8 Stainless Steel Washer	Componente estándar
15	2	Eje de apoyo	Componente estándar
16	1	Eje de transmisión	Componente estándar
17	1	Soporte para camara	Impresión 3D
18	4	Manguito espaciador	Impresión 3D
19	1	Ensamble Electrónica	Router CNC
20	4	Manguito2	Impresión 3D
21	2	Manguito1	Impresión 3D
22	4	95947A002_Aluminum Female Threaded Hex Standoff	Componente estándar
23	1	91268A504_High-Strength Grade 8 Steel Hex Head Screw	Componente estándar