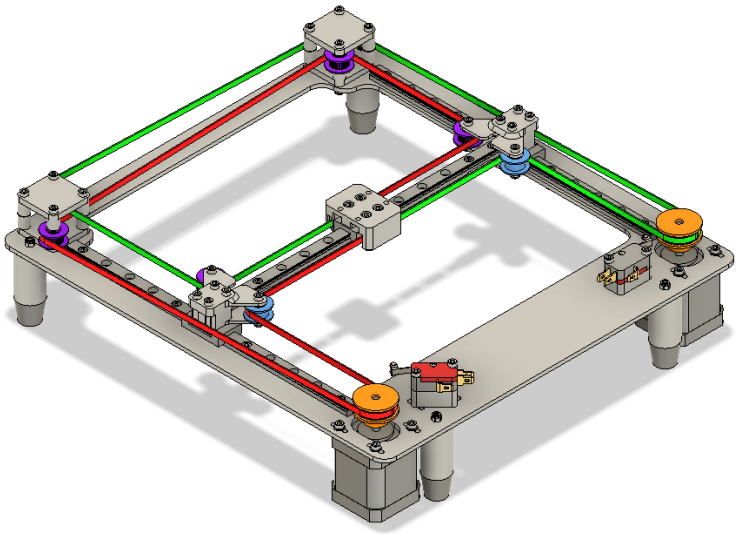
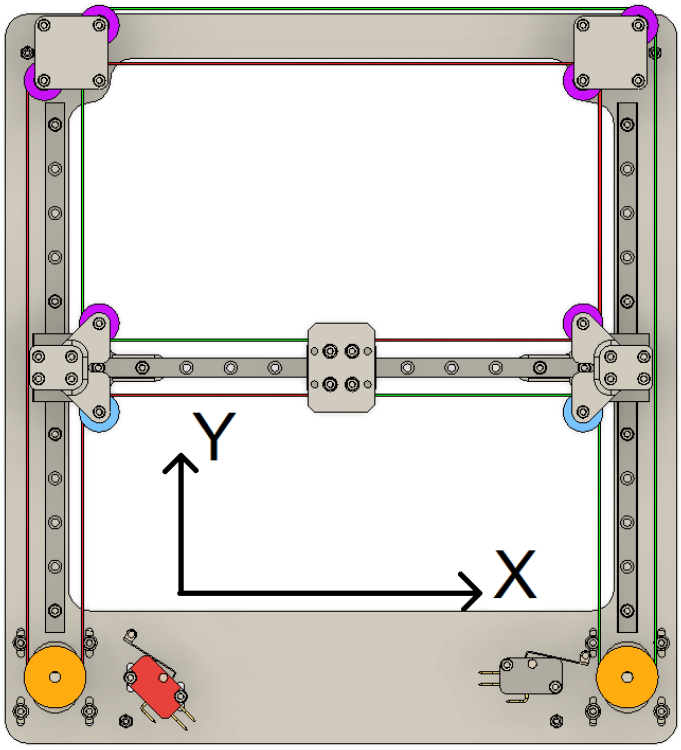
Assembly Manual

[CoreXY Robot]





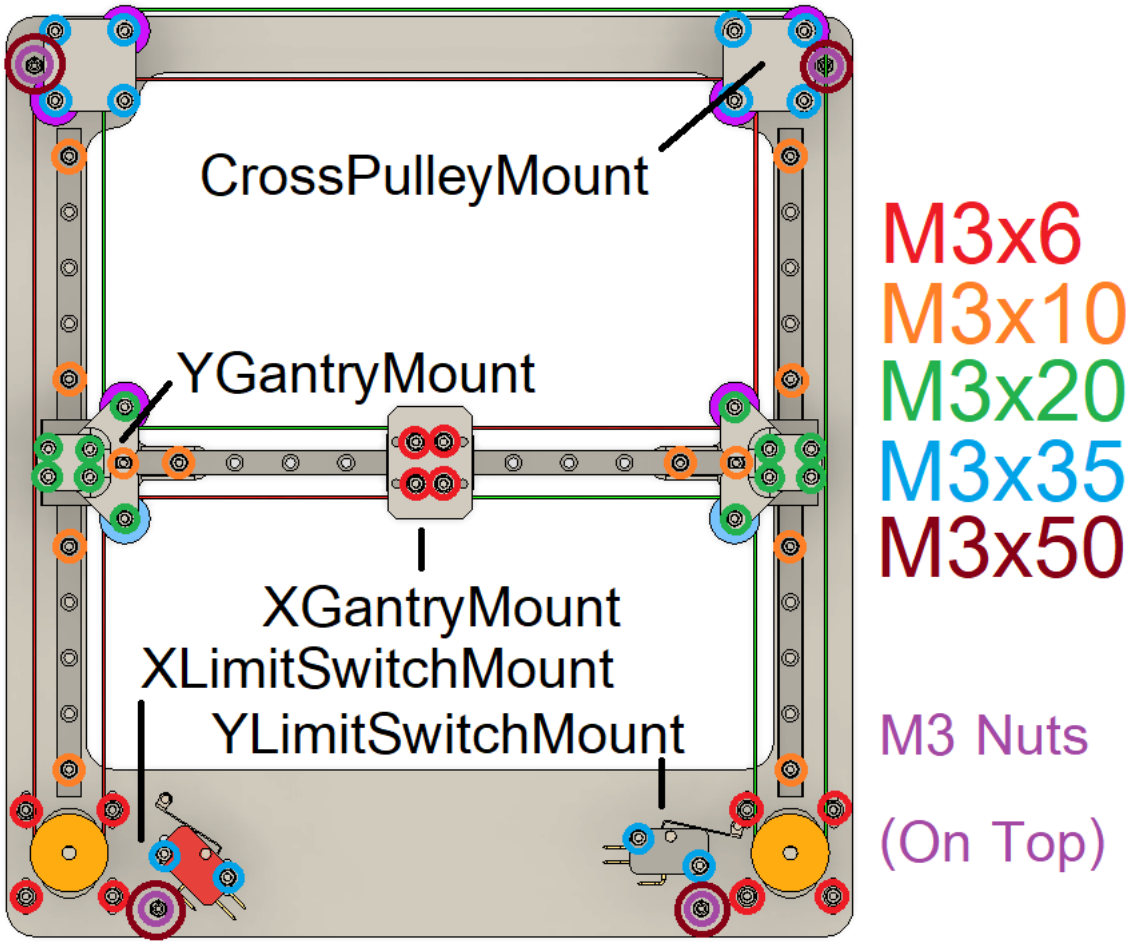
Part List

No.	Part Name	Type	Quantity Used	Quantity Provided	Check
1	3mm SUS304 Plate	Metal Sheet	1	1	
2	M3x6 Hex Socket Screw	Fastener	12	14	
3	M3x10 Hex Socket Screw	Fastener	12	14	
4	M3x20 Hex Socket Screw	Fastener	12	14	
5	M3x35 Hex Socket Screw	Fastener	12	14	
6	M3x50 Hex Socket Screw	Fastener	4	6	
7	M3 Washer	Fastener	14	16	
8	M3 Lock Nut	Fastener	32	36	
9	2GT 20T B3 Smooth Idler	Standard	2	2	
10	2GT 20T B3 Toothed Idler	Standard	6	6	
11	2GT 40T Pulley	Standard	2	2	
12	Linear Guide 240mm + 1 Block	Standard	3	3	
13	Rubber Foot	Standard	4	4	
14	Limit Switch	Standard	2	2	
15	Nema 17 Stepper Motor	Standard	2	2	
16	2GT Belt (Unit in meters)	Standard	2.5	2.75	
17	YGantryMount	3D Printed	2	2	
18	XGantryMount	3D Printed	1	1	
19	CrossPulleyMount	3D Printed	4	4	
20	RubberFootMount	3D Printed	4	4	
21	XLimitSwitchMount	3D Printed	1	1	
22	YLimitSwitchMount	3D Printed	1	1	

Assembly Note

1. The base plate is not symmetrical. Verify orientation before assembly.
2. Whenever a fastener (screw or nut) is installed in a slot (not a hole), a washer must be used.
3. Some screws are not intended to be fully tightened. For example, screws fastening the Idler Pulley must remain slightly loose.
4. Certain screws should be left loosely fastened during assembly and tightened later during the alignment process. These are all M3x10 and M3x20 screws that secure the linear guide blocks.
5. During motor installation, slide the motor along the Y-axis. After timing belts are mounted, belt tensioning can be done by adjusting motor positions.

Fastener Location (Top view only. Only top-view visible M3 Nuts are shown)



Assembly Step

1. Install the rubber foots and RubberFootMounts onto the base plate.
2. Install the motors, GT2 40T pulleys, Tooth Idler Pulleys and CrossPulleyMounts.
    a. Slide the motors toward the base center.
    b. For the left Cross Pulley Mount set: The leftmost idler pulley must be positioned below the other idler pulley.
    c. For the right Cross Pulley Mount set: The rightmost idler pulley must be positioned below the other idler pulley.
3. Install both limit switches with their respective mounts:
    a. YLimitSwitchMount (thinner) goes on the right side.
    b. XLimitSwitchMount goes on the left side. When attaching the XLimitSwitchMount to the base plate, slide it away from the base center.
4. Carefully install the linear guide blocks onto the linear guide rails, creating three linear guide assemblies.
5. Mount two linear guide assemblies onto the base plate (Y-axis guides). Do not fully tighten the fasteners.
6. Assembly X-axis by mounting the third linear guide together with 2 × YGantryMounts, the XGantryMount, and the idler pulleys. Verify the correct orientation and pulley type. M3x10 screws securing this rail must remain loose.
7. Install the X-axis assembly onto both Y linear guide blocks.
8. Adjust the position of both GT2 40T timing pulleys on the motor shafts. The pulleys must align with the smooth idlers on the YGantryMount.
9. Perform the alignment process (see below).
10. Cut the GT2 timing belt (2.5 m) into two equal lengths and install them without applying tension.
11. Tension both belts by moving the motors (see Belt Tensioning section).
12. Adjust X limit switch.
    a. Loosen both screws securing the XLimitSwitch.
    b. Slide the X-axis linear rail downward until the smooth idler pulley activates the X limit switch (until a click sound is heard).
    c. Move the XGantryMount (end-effector) to the far left.
    d. Slide the X Limit Switch upward until it activates against the XGantryMount.
    e. Move the X-axis rail up and down to verify correct operation:
        i. The X Limit Switch must always activate before the Y Limit Switch.
        ii. When the Y Limit Switch activates, the cantilever of the X Limit Switch must not press against or interfere with the switch body.

Axis aligning

1. Loosen all screws securing the YGantryMounts to the linear guide blocks.
2. Push the left YGantryMount to the right and tighten its screws to the linear block. Push the right YGantryMount to the left and tighten its screws.
3. Push the left Y linear rail along the Y-axis. While applying force, tighten the screws at both ends, then tighten all remaining rail screws.
4. Push the right Y linear rail along the Y-axis. Tighten only the top-end screw (near the CrossPulleyMount).
5. Move the X-axis to the top (CrossPulleyMount). Align the X-axis by checking the position of the rail screws and blocks. Tighten all M3x10 screws securing the X linear rail to the YGantryMounts.
6. Move the X-axis downward near the rail end and tighten the M3x10 screw at the end of the right Y linear rail.
7. Move the X-axis toward the remaining loose rail screws and tighten them.

Belt Tensioning

1. Move the XGantryMount to the base center.
2. Loosen all motor screws.
3. Simultaneously slide both motors downward, applying equal force so the X-axis remains perpendicular to the Y-axis.
4. If you have assistance, ask your helpers to tighten the motor screws while you hold alignment. If working alone, follow the next steps.
5. Lock the position of the right motor and tighten its screws, while leaving the left motor loose.
6. Slide the left motor until the X-axis is properly aligned, then tighten its screws.

Company Information

This product is designed and sold by **Digitech Fabrication Co., Ltd.**

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