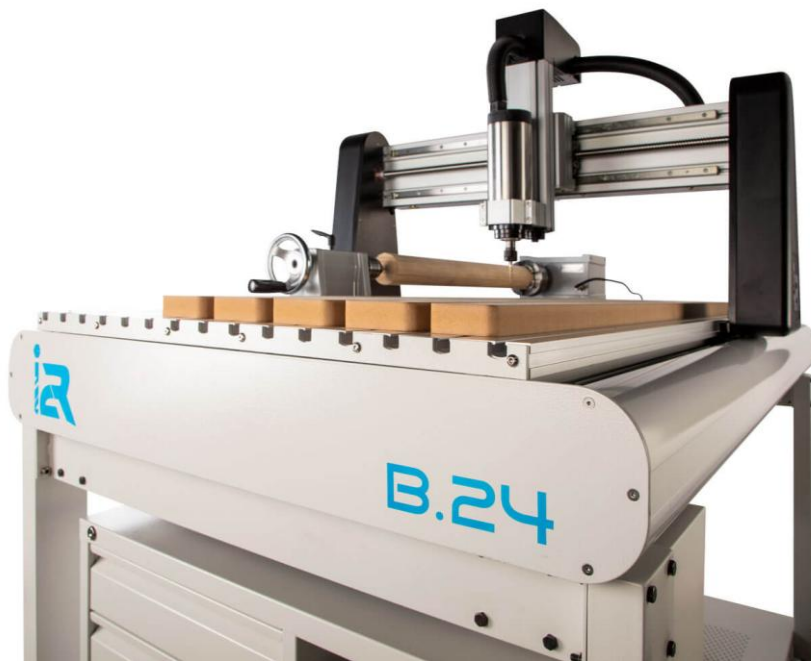# i2R B Series Assembly

B.24

Agent and Appointed Reseller for Australia and New Zealand

BG Precision PTY LTD

Unit 1/82 Brunel Road

SEAFORD

3198 VIC
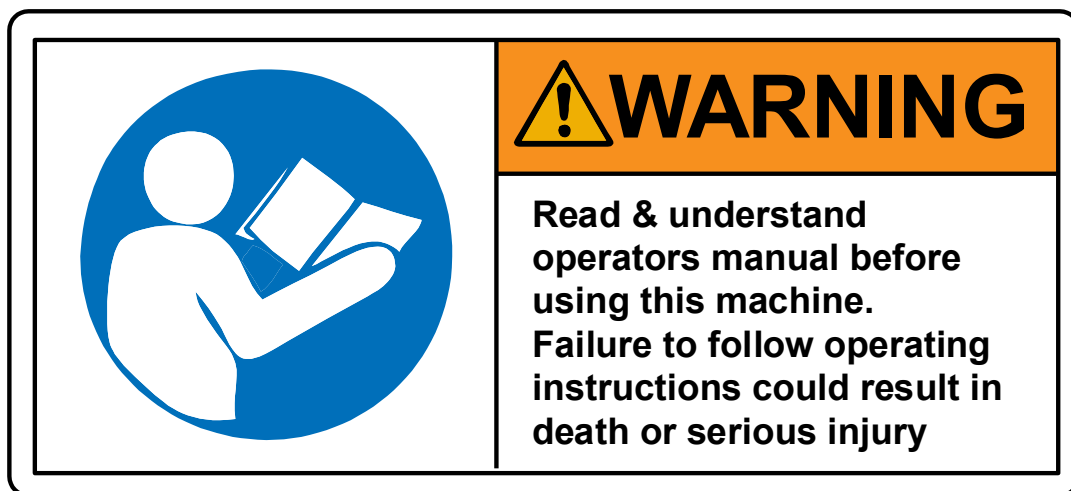
Australia

Mob: +61 (0)405685515

Email: info@i2rcnc.com.au   info@bgprecision.com.au

Website: www.i2rcnc.com.au   www.bgprecision.com.au

WARNING

Read & understand operators manual before using this machine. Failure to follow operating instructions could result in death or serious injury

Before using/powering on the machine, the device should be carefully checked to make sure all connections are secure, and the device is technically sound as highlighted in this user manual.

![Warning triangle] **Ensure You understand the safety considerations of a machine provided in the open configuration without a safety enclosure**

![Warning triangle] **Do NOT Interfere with the machine when under CNC control**

![Warning triangle] **NEVER LEAVE THE MACHINE WORKING UNATTENDED**

TABLE OF CONTENTS

1 INTRODUCTION

Thank you for purchasing your CNC system from i2R CNC AUSTRALIA / BG Precision PTY LTD. This manual is a general introduction to CNC and specifically how to use the i2R CNC with UCCNC.

Firstly, please inspect the machine and all components after delivery has been received. Please check and ensure all aspects of the machine and associated extra items are in good condition and there is no evidence of damage or wear to any components due to the shipping process.

Please ensure you read all the operational manuals for this CNC machine prior to attempting to use the system. Throughout this manual there are references to "A Trained Operator" or "Trained and Experienced personnel". These are defined as follows:

All persons that use, or comes into contact with the CNC system MUST:

- understand what a CNC router/mill/laser is and can do
- read and understood the content of this user manual prior to using the system
- be able to always exercise control of the CNC system
- follow all the guidelines presented including the use of appropriate PPE
- seek further instruction if anything is unclear
- be sure that you have understood these instructions completely

Responsibility of use or misuse belongs to the end user. I2R CNC AUSTRALIA / BG Precision PTY LTD and its affiliates accept no responsibility for use or misuse by the user. If you may not be able to use this product properly, we recommend that you do not begin use or must cease use immediately.

This manual was not intended to cover every facet of machine operation. This manual serves to provide the information needed to safely operate and maintain the CNC system. This manual has been designed to be used as an instruction tool as well as a reference tool for everyday work. Step by step instructions are provided where possible to help all levels of users understand the machine.

NOTE: Important aspects of machine use and best practice are highlighted and should be adopted where possible to maximise the machine tool life and performance. It is VERY IMPORTANT that all personnel read and understand the safety chapter BEFORE operating the machine. All Warning and Caution notices must be noted before interacting with the machine.

If there are any further questions after reading and understanding the manual, or if anything is not clear, please contact us via email, at info@i2rcnc.com.au

2   RECEIVING THE MACHINE

In the case where a machine is delivered by a third party then EXTRA care is needed to ensure the machine is handled correctly.

The machines are crated in cardboard covering.

Please handle the machines with extreme caution and only use forklifts to move the crated machines on their pallets. Figure 1 shows what a B-Series packaging. Figure 1 shows inside the i2R packaging. The steel stand and the toolbox are an optional extra with the machine and will only be packaged together if purchased.

Figure 1: Scope of crated machine delivery

Figure 2: i2R Series-B CNC with box cover
removed and ready for lifting

3 MACHINE ASSEMBLY ONCE DELIVERED

Failure to read and understand all the assembly and setup instructions before attempting assembly may result in serious injury.

Once you have verified the machine and their contents are 100% okay and damage free after transport then you can begin the setup process.

i2R-CNC

Instructions for assembly

Model Number:

B22 / B23 / B24

Please note the machine stand, Toolbox and laptop stand are optional accessories and are not included as standard in your purchase.

Packaging contents for the i2R CNC

Remove all contents from shipping boxes. Do not discard carton or packing material until assembly is complete. Accessories commonly ship inside machine or stand packaging and can be easily overlooked.

The steel machine stand, Toolbox and laptop stands are an optional accessories with the machine.
If you have purchased this part, then please proceed through the assembly steps if not ignore items marked with red star and skip to section 3.5

IMAGINATION TO REALITY i2R

Parts List

1	**2**	**3**	**4**	**5**
Shoulder Bolts M8 **x2pcs**	M5x25 **x8pcs**	M3x20 **x10pcs**	M5x10 **x6pcs**	M3x6 **x2pcs**

1	**2**	**3**	**4**	**5**
M6x50 **x30pcs**	M6x55 **x10pcs**	M6x16 **x16pcs**	M10x20 **x1pcs**	M10x45 **x4pcs**
6	**7**	**8**	**9**	**10**
M10 NUT **x2pcs**	M6 NUT **x24pcs**	M6 **x24pcs**	M10 **x4pcs**	M10 **x6pcs**

Tools needed

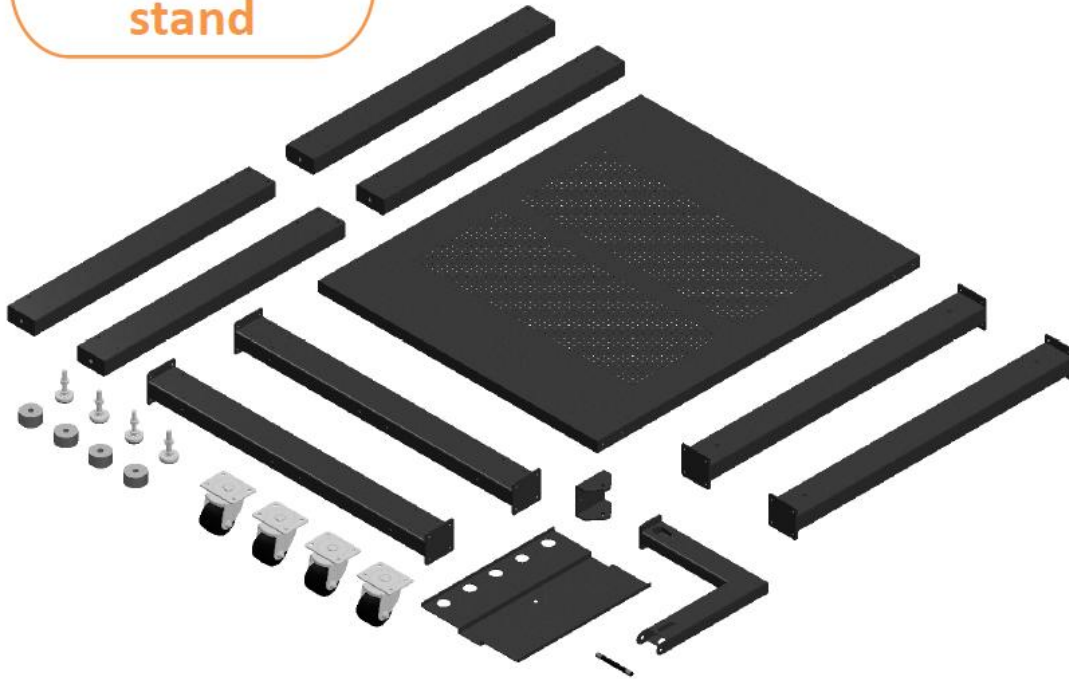**Hex key**

1～2 friends

Tools required for assembly:

#2 Philips-Screwdriver

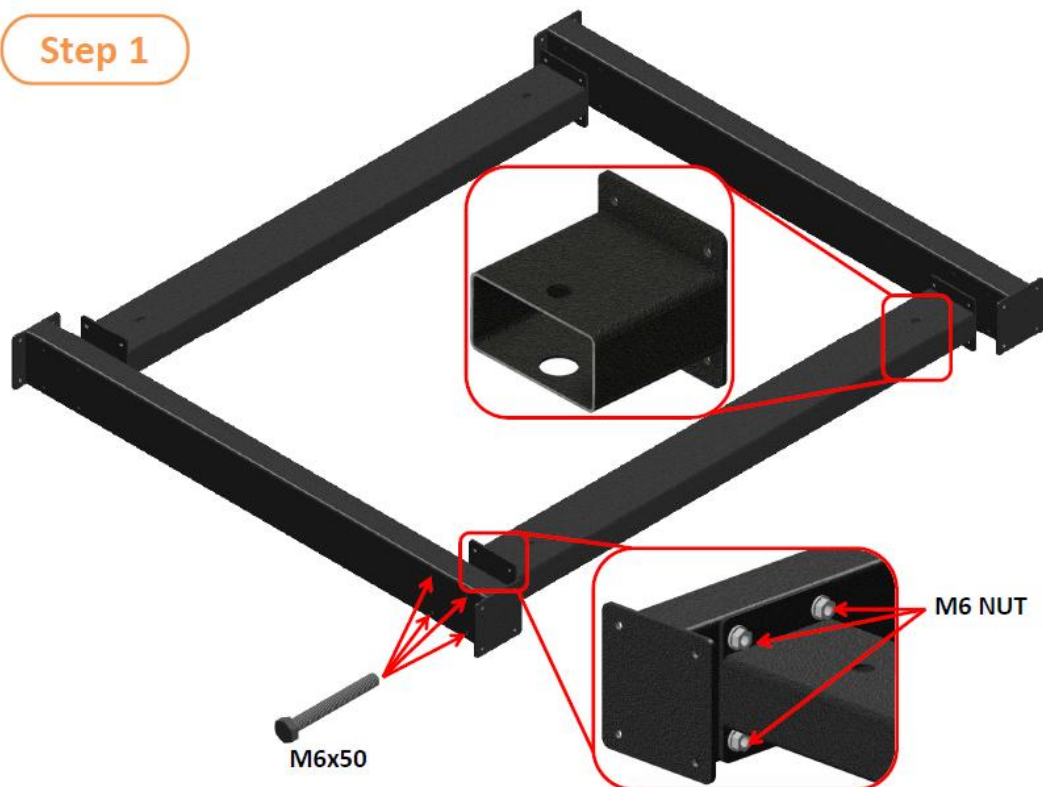2.5mm, 4mm and 5mm Allen key

Spirit Level

3.1 SETTING UP I2R B-SERIES MACHINE STAND ⭐

Installing the stand

Step 1

M6x50

M6 NUT

Step 2

Step 3

M6 NUT

M6x50

M6 NUT
x24pcs

M6x50

Step 4

M6x16
M6 Washer
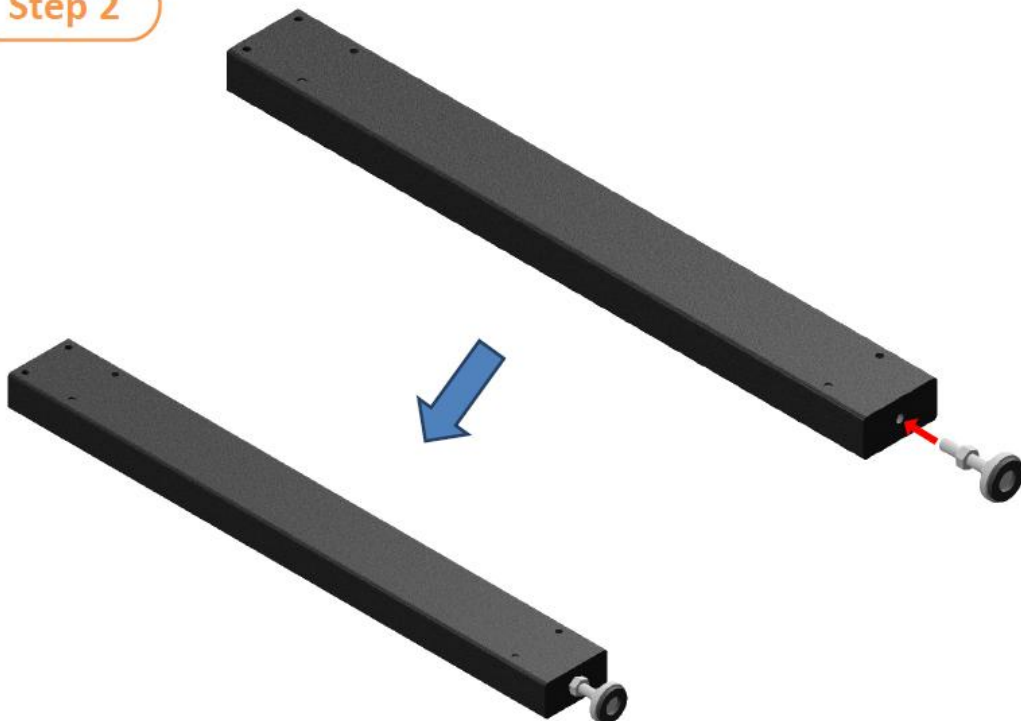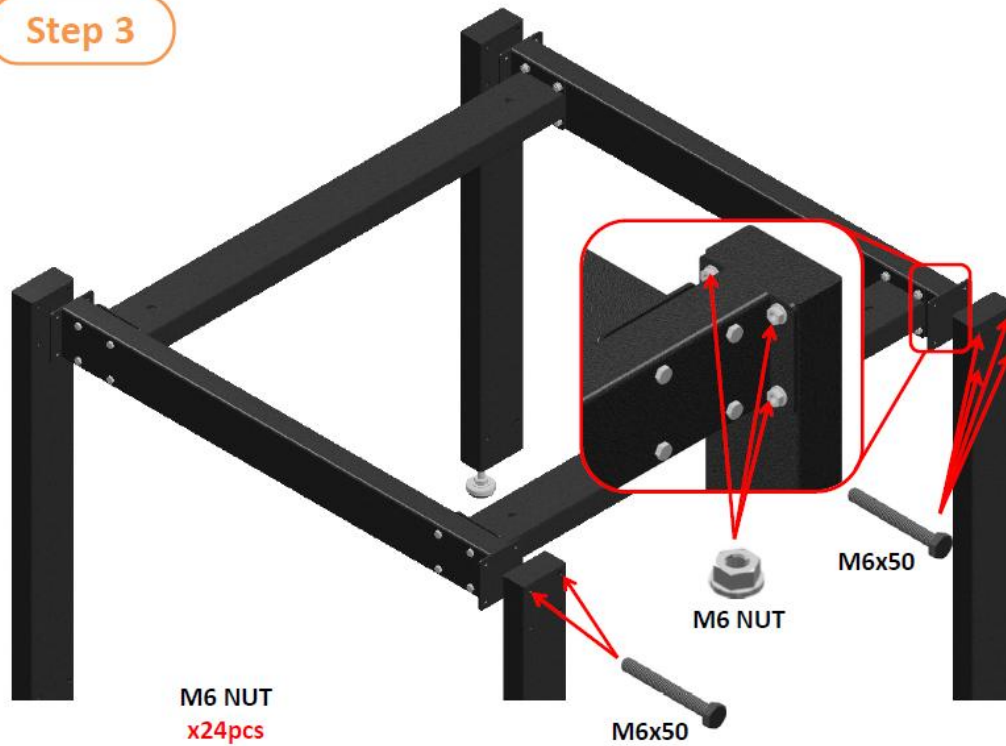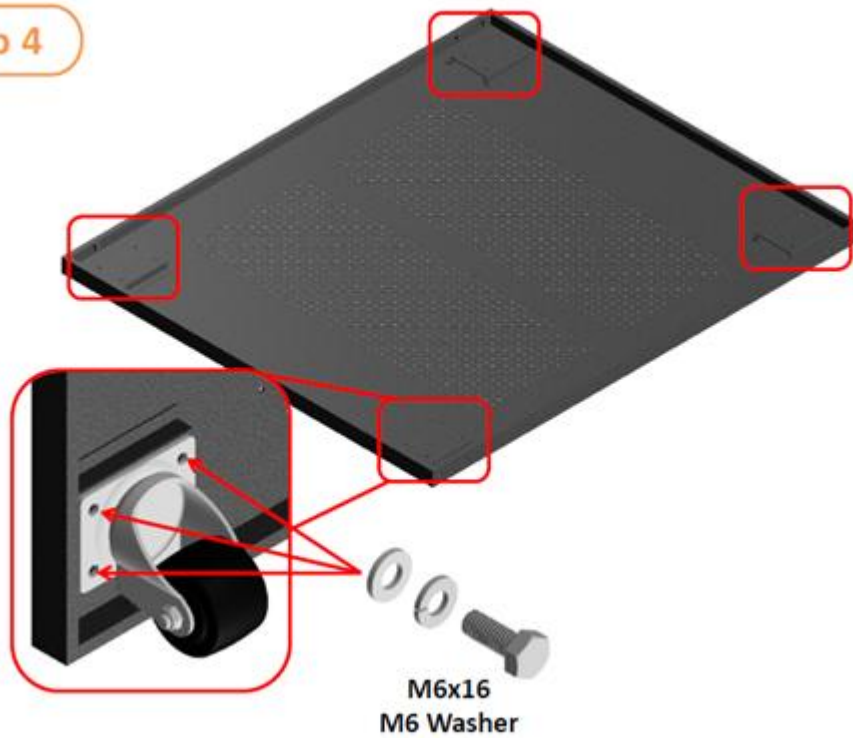
Step 5
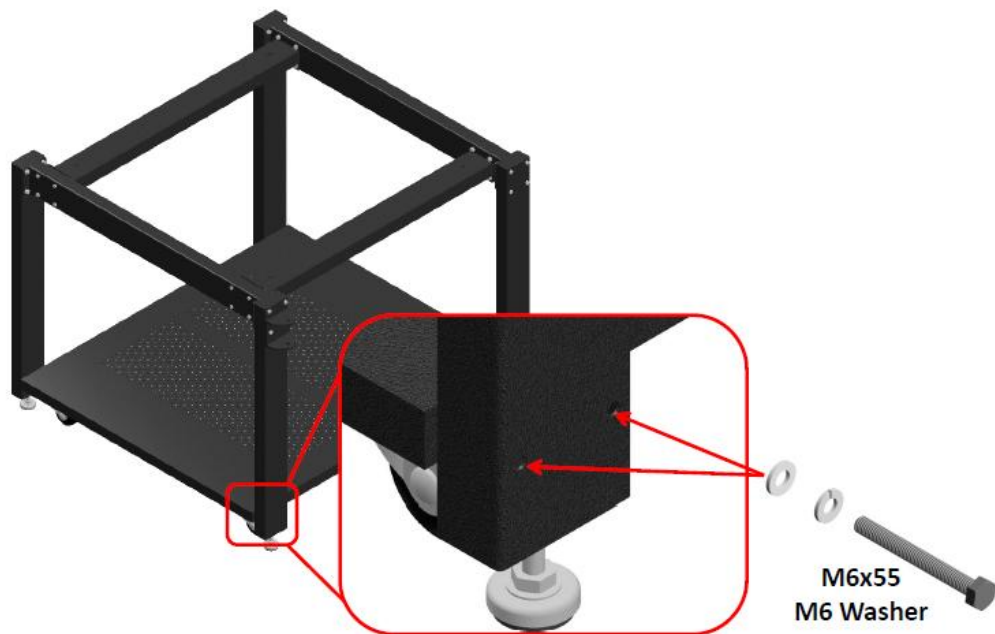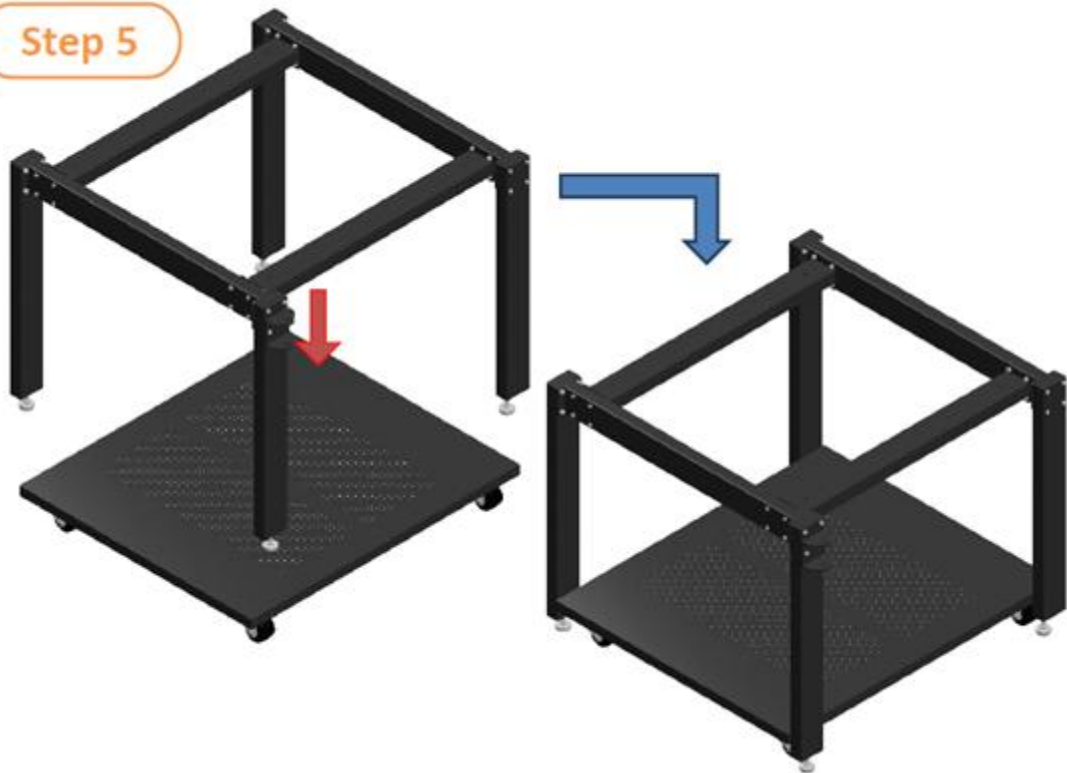
M6x55
M6 Washer

3.2 SETTING UP I2R B-SERIES LAPTOP STAND ⭐

Step 6

M6x55

Step 7

M10 Washer

M10
Domed Nut

Step 8

M10x20
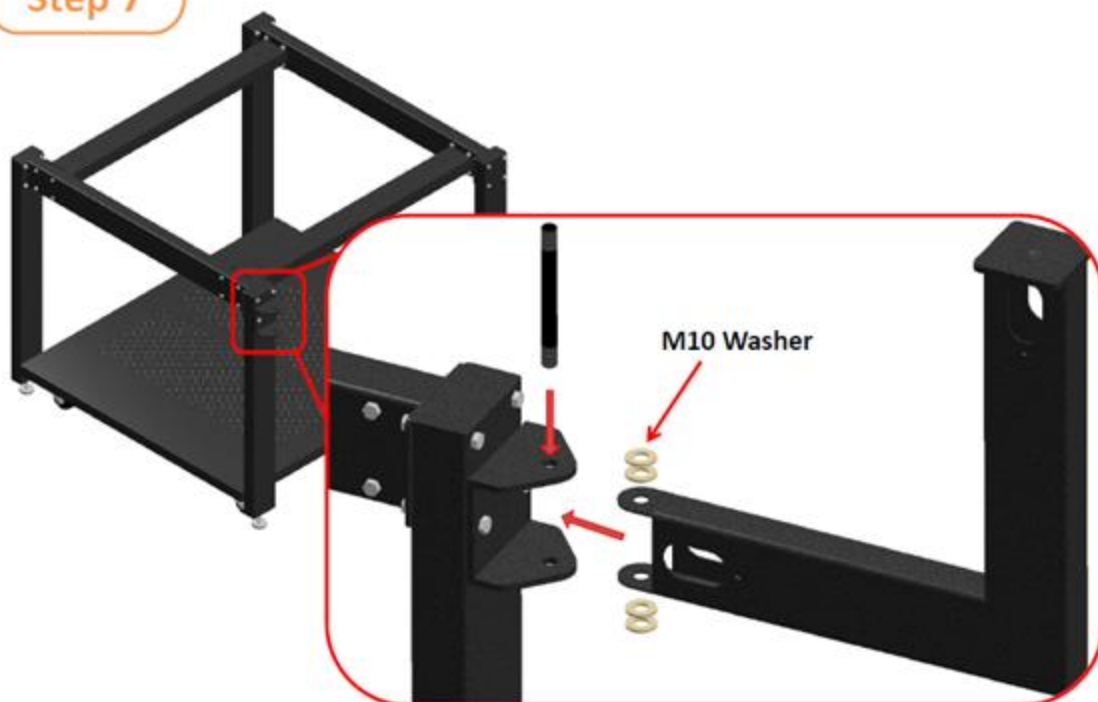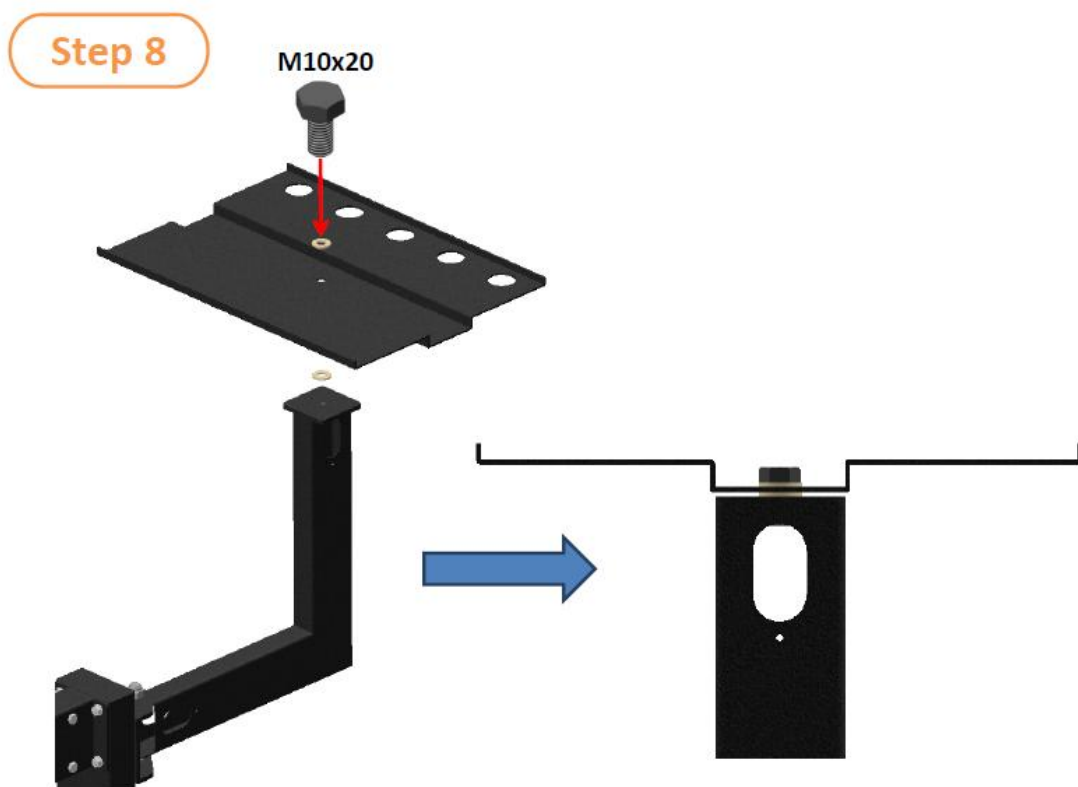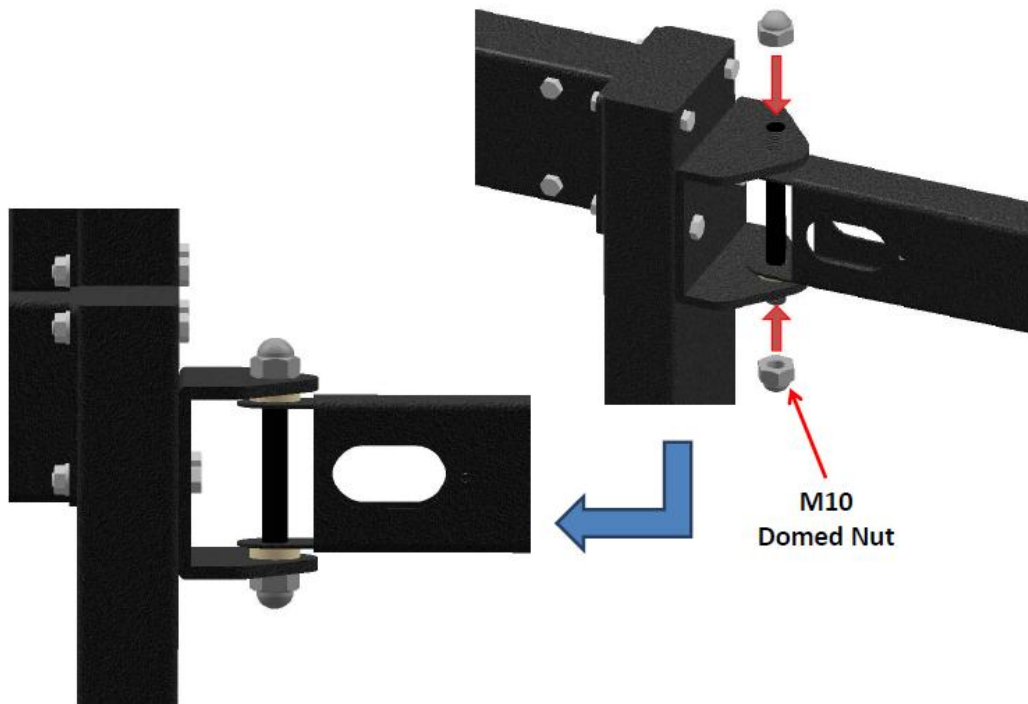
Step 9
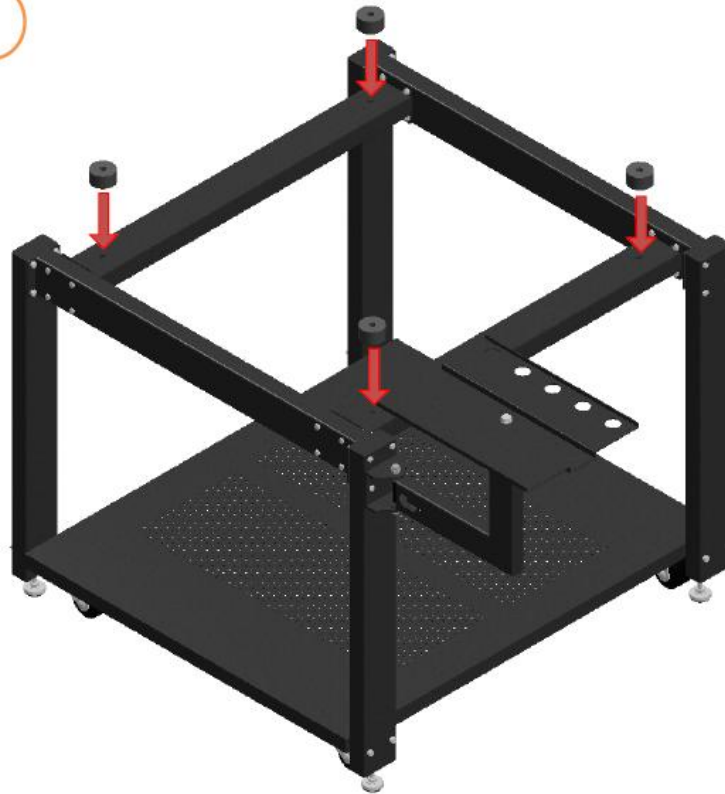
3.3 COMBINING THE TOOLBOX AND STAND ⭐

Installing the accessories

ATB004

Step 1
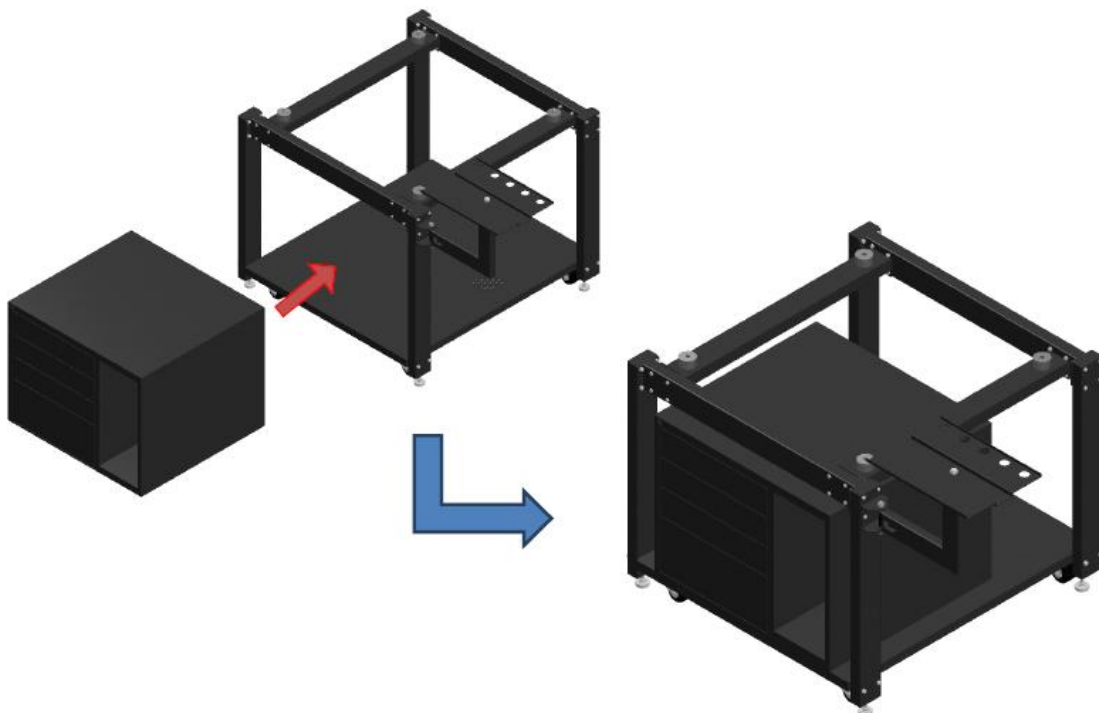
Step 2
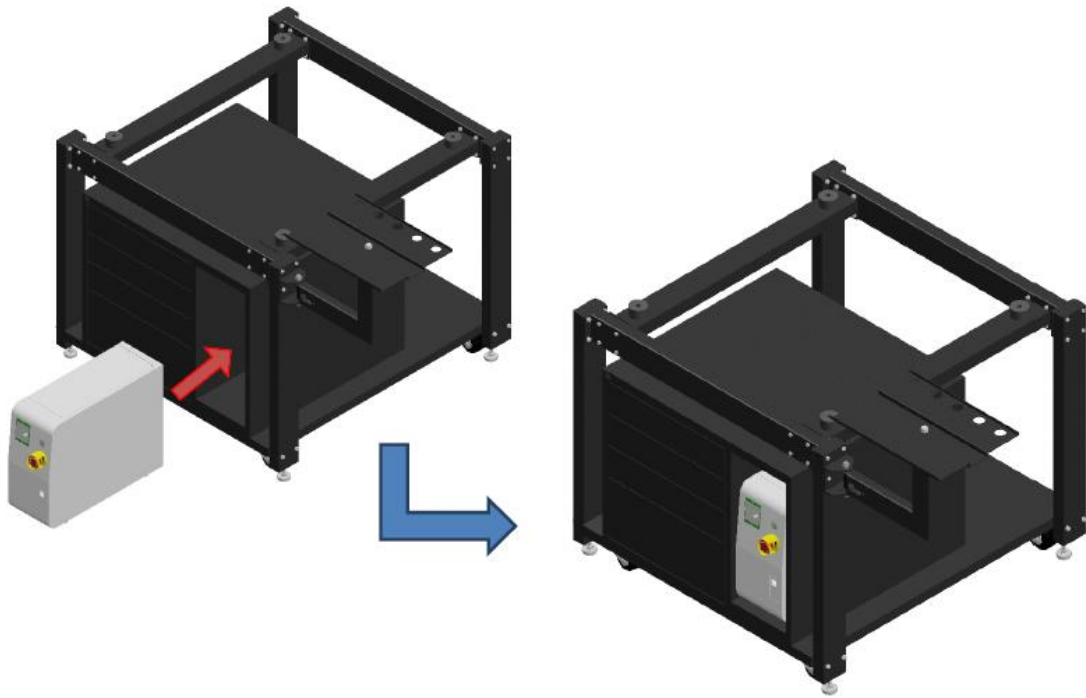
3.4   COMBINE THE MACHINE AND STAND ASSEMBLY

Installing the router table on the Stand:

The CNC router table assembly is heavy. Please use a secure means and use caution when lifting onto the stand. At least 3-4 able bodies persons are needed to lift the machine onto the stand.

To avoid damage, be careful to never lift the router by the gantry. Always lift the router under the T-slot table or under the steel frame.

1- If using a forklift, keep forks under the steel frame to avoid damaging the wiring and mechanics of the machine.

    a. Place a scrap piece of lumber beneath the router assembly and carefully slide forks beneath the steel base.

Combine the machine assembly and stand

Step 1

Step 2

M10

M10x45
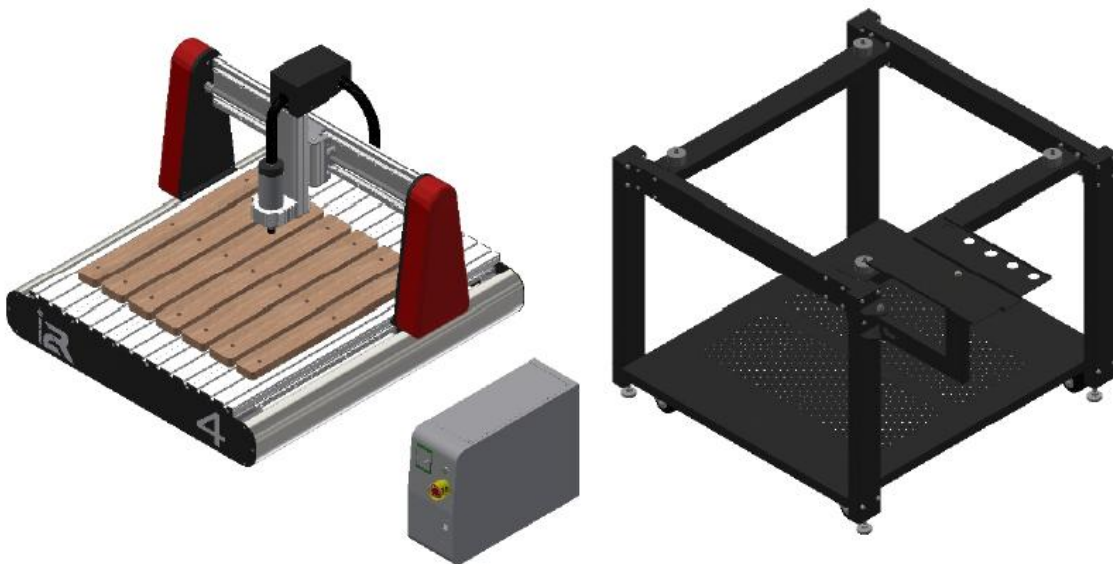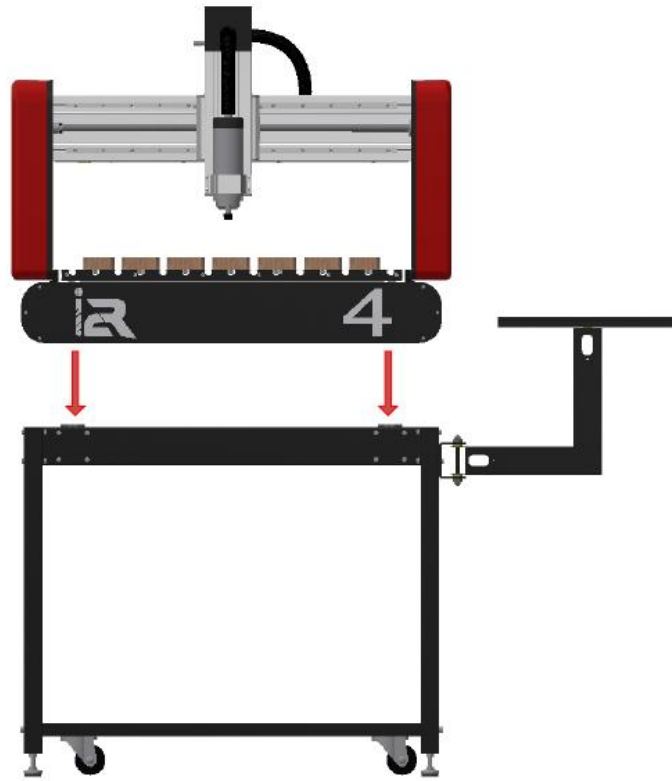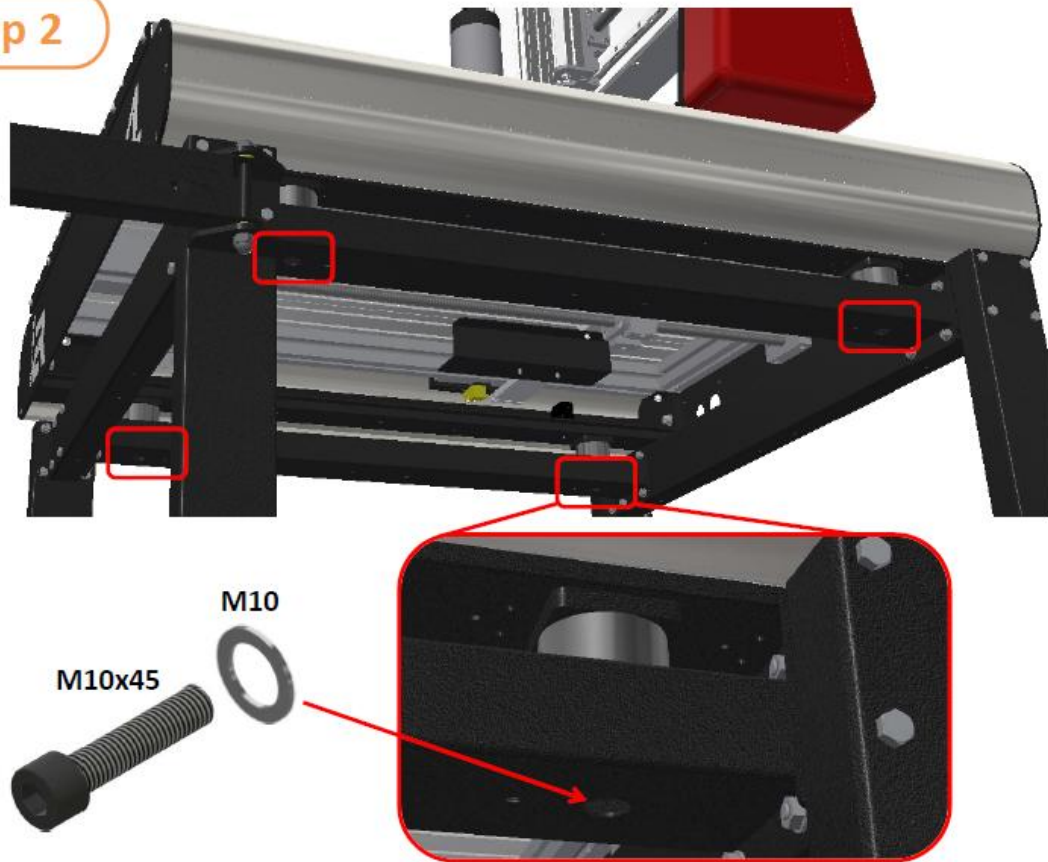
Step 3

Move your CNC to the desired location, Place level on the router table, then level the assembled machine by adjusting the levelling feet. Be sure to level the machine in all directions.

3.5   SETTING UP THE I2R MACHINE

Step 1

1 insert to A
2 insert to B

Step 2

M5x10

M5x10

Step 3

Step 4

Shoulder Bolts-M8

M5x25

Step 5

M3x6

Step 6

Step 7

M3x20
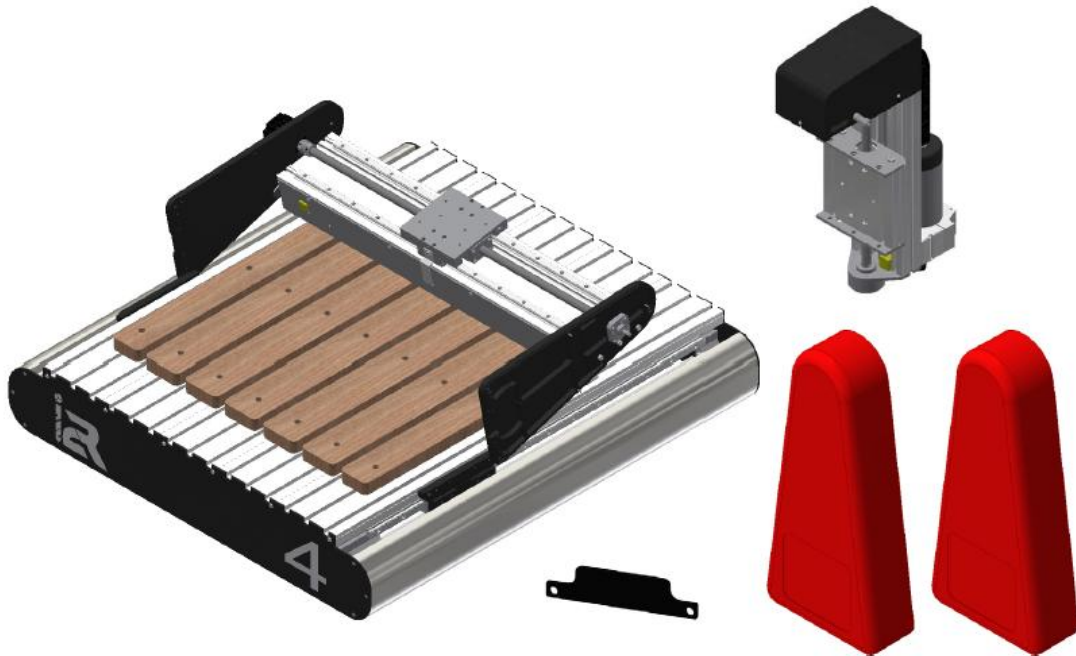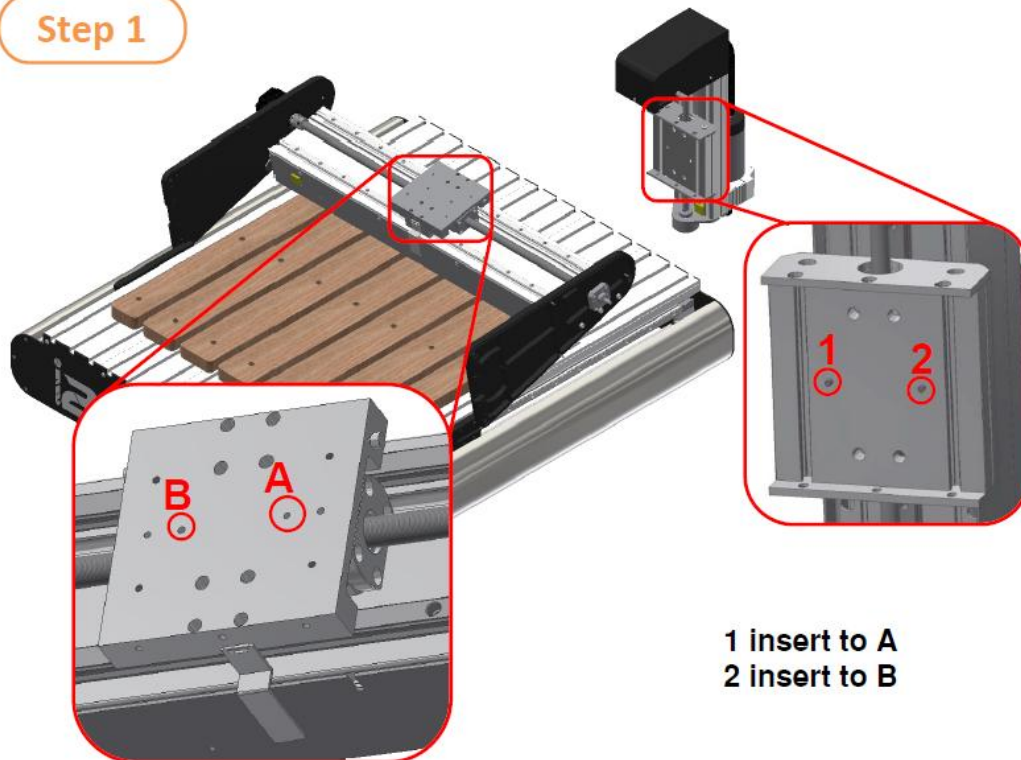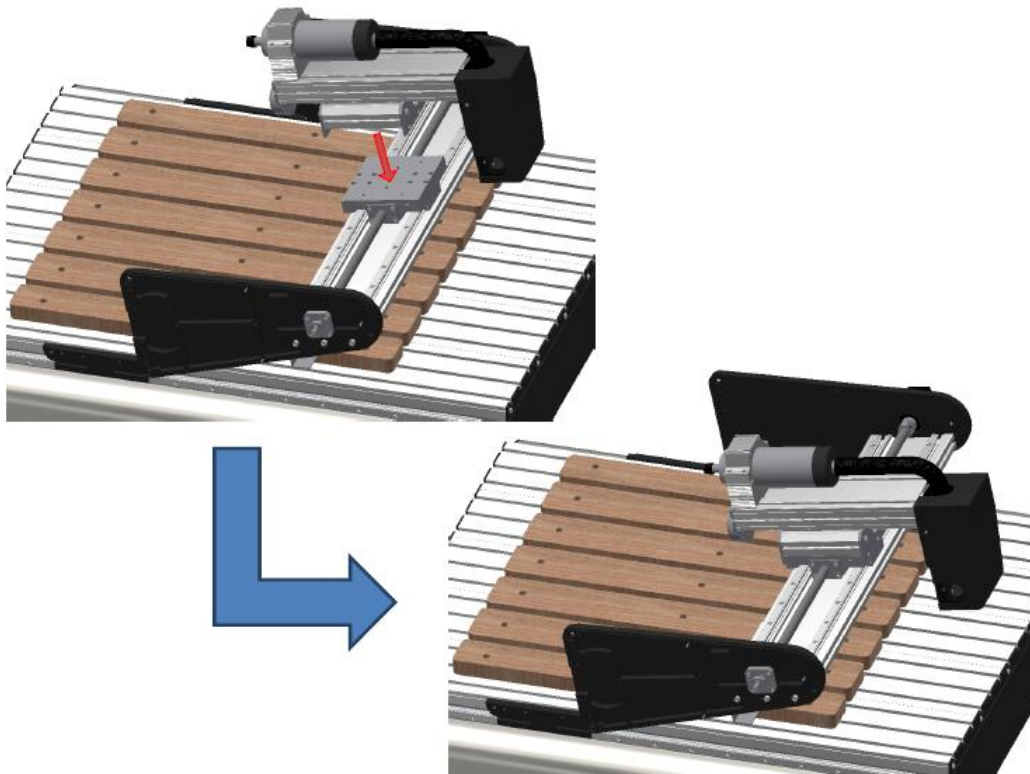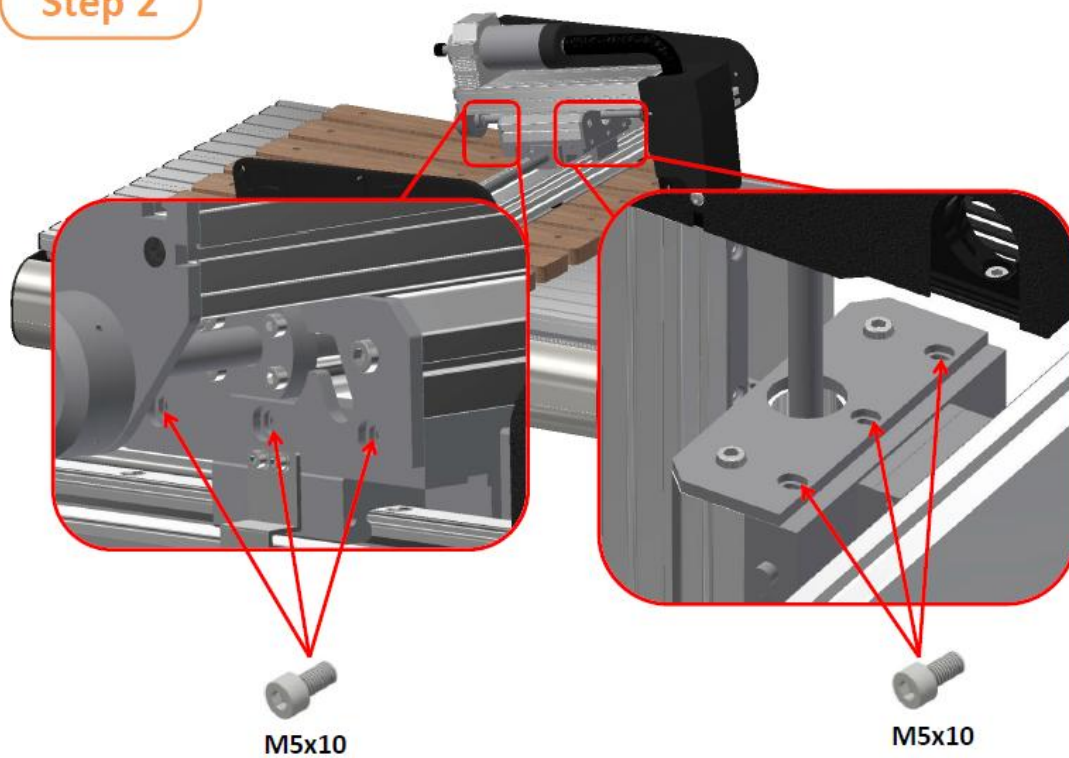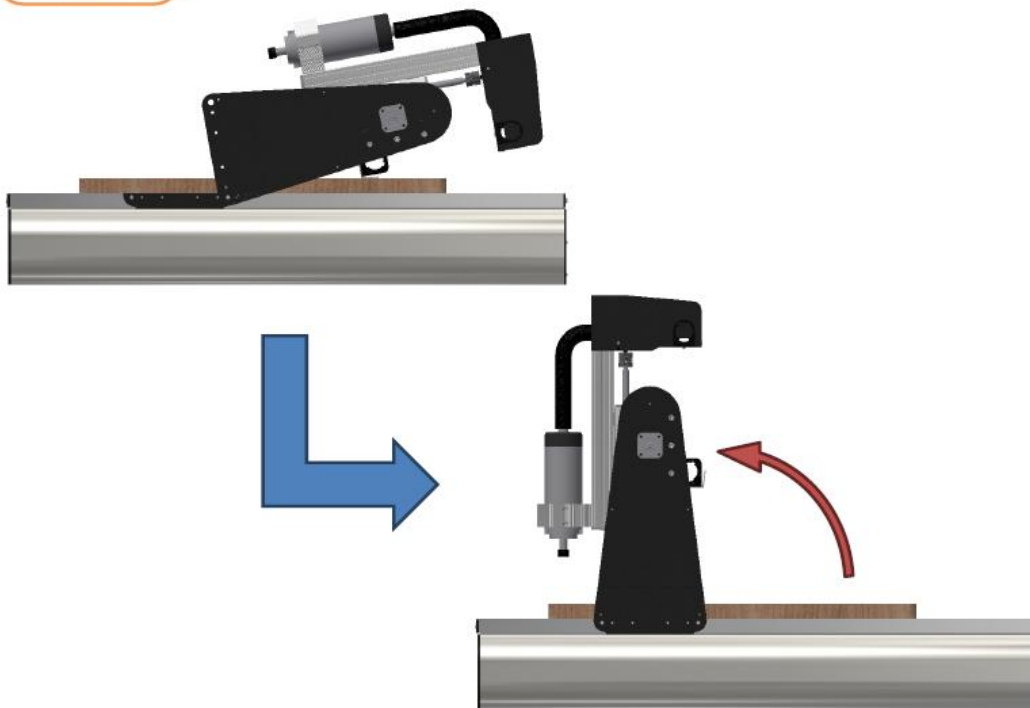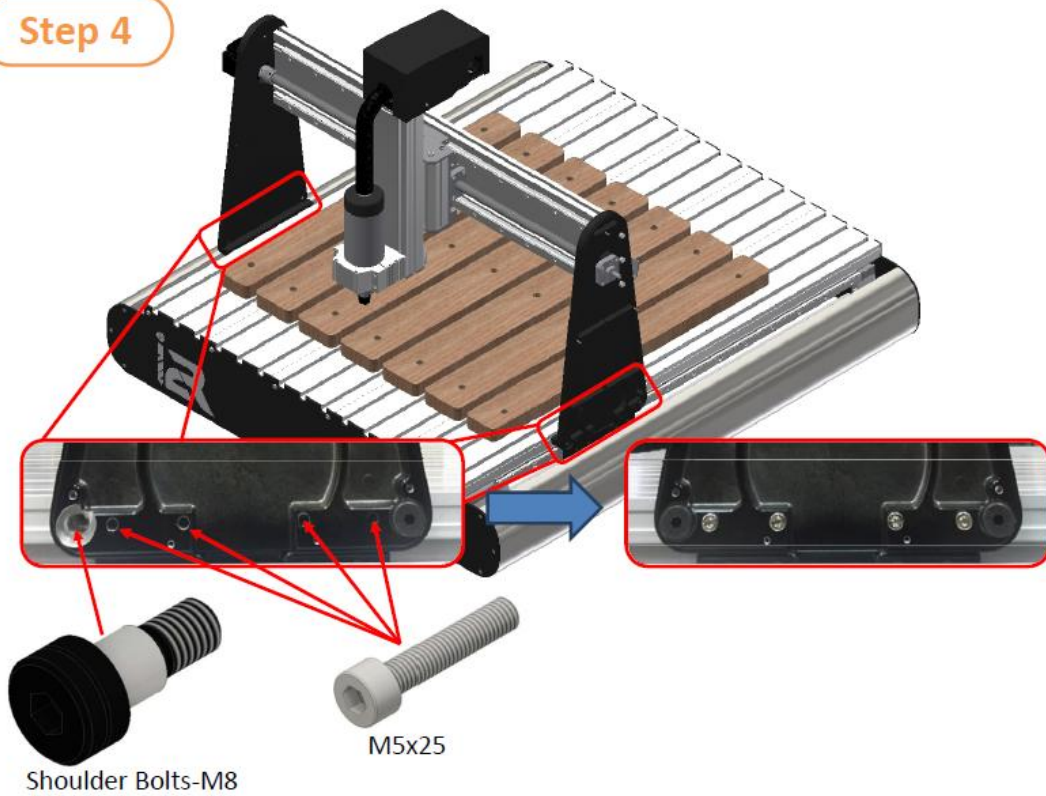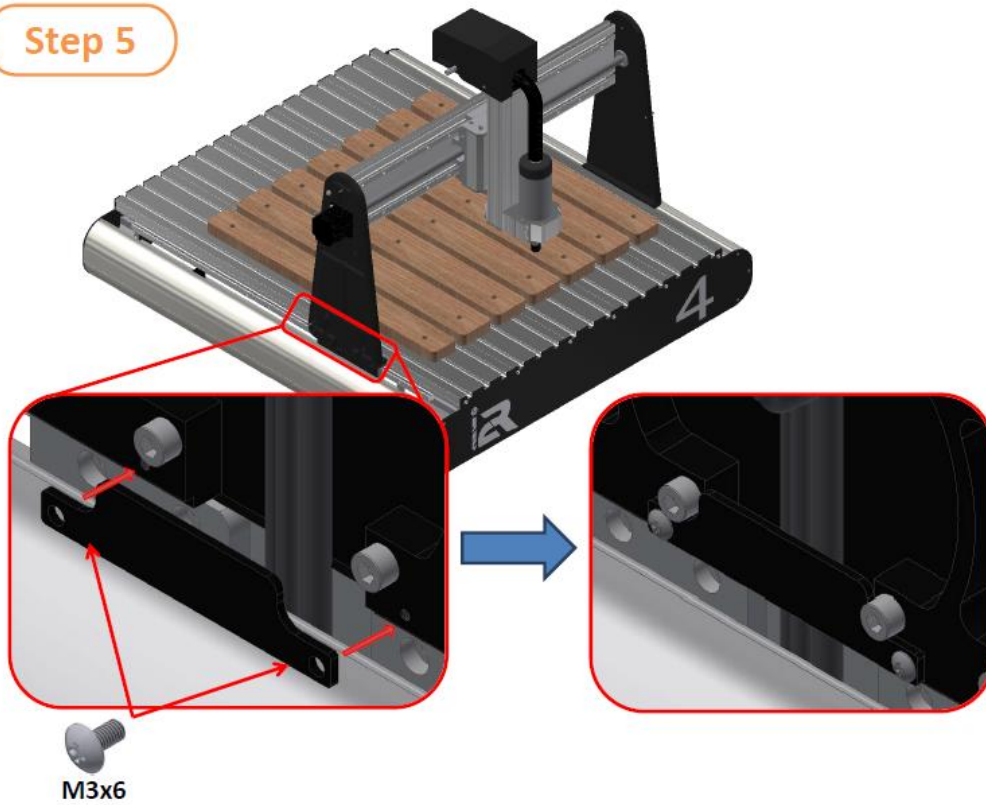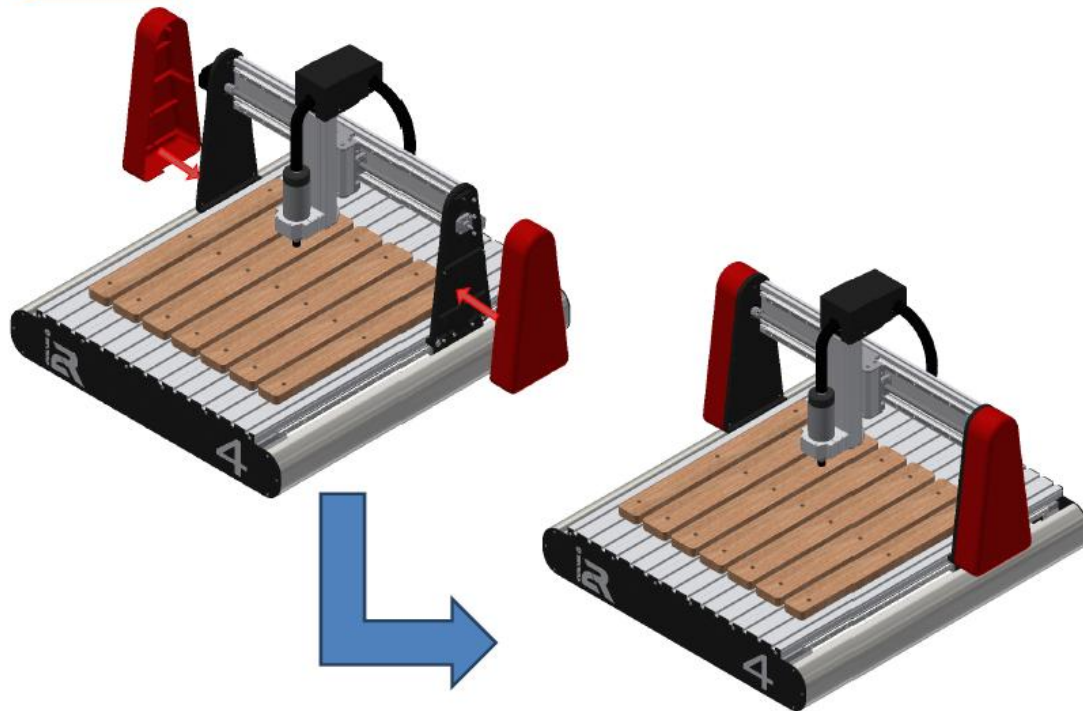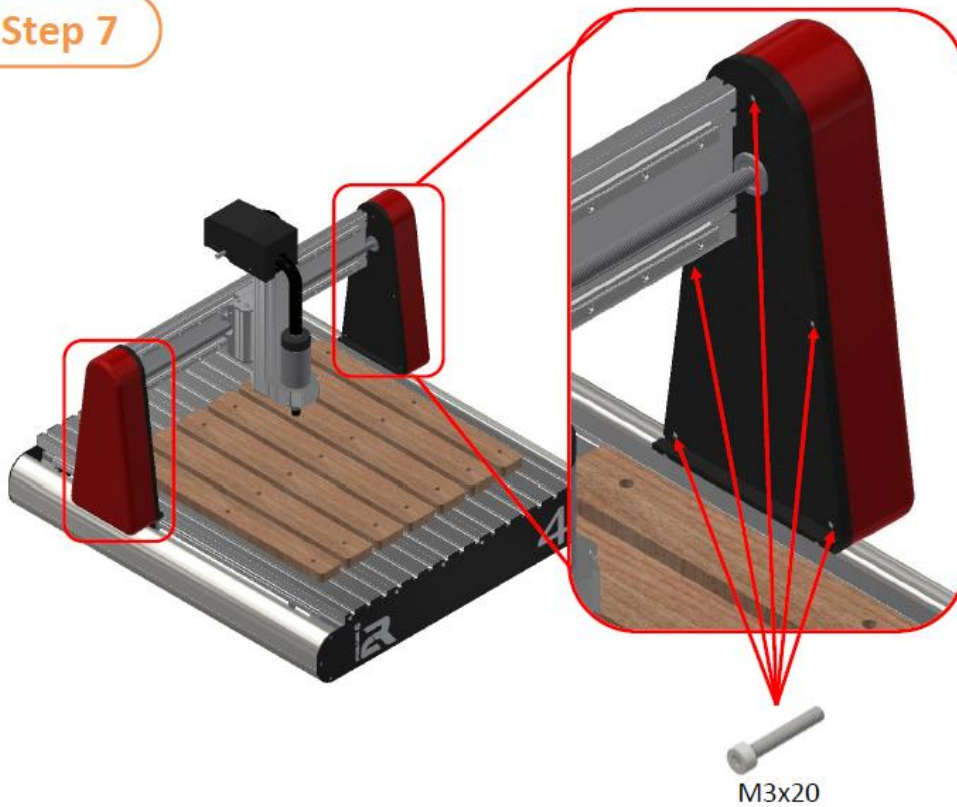
3.6   FINAL MECHANICAL SETUP PREPARATION

Once you have unpackaged your i2R CNC router and located it on a bench you have chosen or the i2R stand as per the above steps, it is time to connect the machine and control system together in preparation for first steps.

1) Locate it on a stable bench (as per the above steps)
2) Put the controller near the machine on the same bench (or under machine on i2R stand)
3) Locate and turn on laptop / PC to control machine next to the controller (see Figure 3)
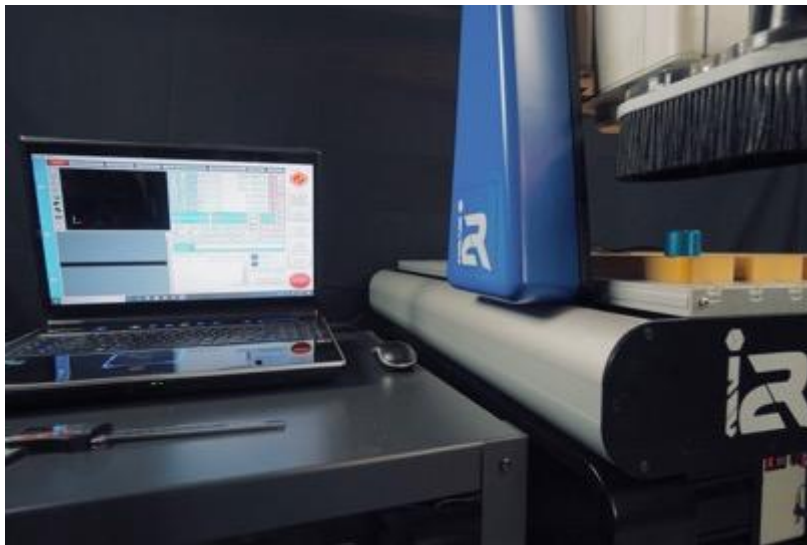
Figure 3: Locate control PC near to machine and control box

3.7   FIRST CONNECTION STEPS

The following steps should be carried out to ensure safe setup and operation of the machine. At all times inspect all connectors and anything you are handling for damage or any sign of mishandling. For more information on Electrical Connections refer to the main i2R CNC Manual.

Be sure to position the electrical cord through the back of the stand safely, so it will not be run over by the castors and to prevent tripping hazards.

Figure 4: Cable summary out of control box

1) There will be 3 cables coming out of the control box (control box is identified in Figure 4).

- 2 cables will connect to the machine as shown in Figure 5

- Carefully seat these cables (there is only one correct way to seat connectors)

- Carefully tighten the connectors and careful not to cross thread the locking part of the connectors.

WARNING: NEVER CONNECT OR DISCONNECT THESE CABLES WHEN THE CONTROL BOX IS POWERED ON

Figure 5: Connections to the back of the machine

2) Check the power button (shown in Figure 6) on the front of the controller box

- The power switch should be to the left with no light indicating it is powered OFF!

- NOTE Figure 6 shows switch in the OFF position

- Switch OFF before plugging into mains supply

Figure 6: Power button and estop on the controller

3) Plug in the 3-pin plug powering the control box into the AC wall socket outlet.

- Ensure the connection has RCD and standard domestic electrical protection installed

- Inspect the plug for any sign of damage

- Do not plug into a live socket

- Turn on AC power at the plug

4) Turn on the mains controller switch

- Figure 7 shows the Power button illuminated and on

- The switch should light up (you might hear a small clunk from motors engaging)

- You should see the Ethernet connector on the front of the white control box blink green.

- Connect the Ethernet port to the control PC (connection sequence not important)

- You are now ready to setup the UCCNC controller and run your i2R CNC router!

Figure 7:Turn on the power button and plug in Ethernet connector into PC and controller

4 TECHNICAL SPECIFICATIONS

I2R: Imagination to Reality B-Series CNC		B22	B23	B24
X Axis Travel	610mm	•	•	•
Y Axis Travel	610mm	•		
	915mm		•	
	1220mm			•
Z Axis Travel	100mm	•	•	•
Table Work Area	947mm x 720mm	•		
	1247mm x 720mm		•	
	1547mm x 720mm			•
Spindle Collet size	ER16	•	•	•
Collet included	3.175mm and 6mm	•	•	•
High Speed Spindle	2HP 1.5kW Electro Spindle	•	•	•
Spindle Speed	0~24000 RPM	•	•	•
Rapid Feed Rate	3500 mm/min	•	•	•
Precision Linear Guide Rails	X/Y/Z Axis	•	•	•
Precision Ball Screw	X/Y/Z Axis	•	•	•
Power Requirements	220V, 50~60 Hz, 10A Single Phase	•	•	•
Working Table	High Rigidity Interlocking Aluminium Extrusion	•	•	•
	Integrated MDF Spoil Board	•	•	•
Gantry Bridge	High Rigidity Aluminium Extrusion	•	•	•
Gantry Support	Gravity Cast Aluminium Alloy	•	•	•
Gantry Clearance	224mm	•	•	•
Machine Base	Aluminium Frame	•	•	•
Machine Footprint	690mm x 670mm	•		
	990mm x 770mm		•	
	1197mm x 770mm			•
Required Floor Space	690mm x 930mm	•		
	1295mm x 949mm		•	
	1595mm x 949mm			•
Max. Machine Height	797mm	•	•	•
Machine Weight	60kg	•		
	70kg		•	
	80kg			•
Tool Touch Off Puck	Standard Accessory	•	•	•
Integrated Air Cooled System	Standard Accessory	•	•	•
Controller Box and Software	UCCNC controller as standard	•	•	•

5 DOCUMENTATION
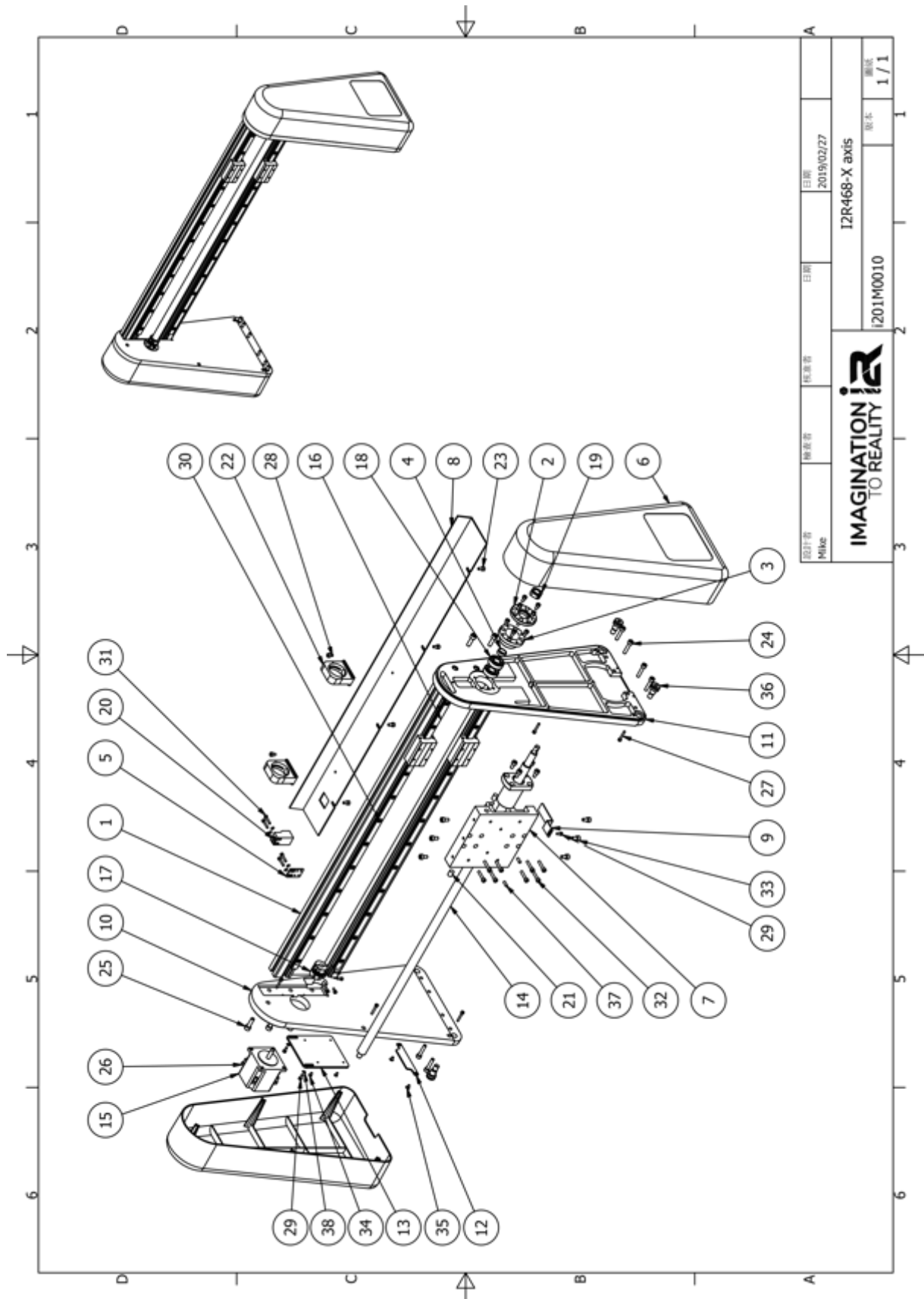
Material	Part number	Item name	Quantity	category
	I2R4 X axis			
	i201M0010	X-axis combination - i2R468		
1	AX0100042	X-axis aluminum extrusion	1	Components
2	AX0100131	Bearing cap	1	Components
3	AX0100151	Bearing housing	1	Components
4	AX0100191	Spacer	1	Components
5	AX0100222	Sensor matte	1	Components
6	i20101130	Vertical left and right shields (long version)	2	Components
7	i20101201	X-axis skateboard	1	Components
8	i20101221	Protective chain lower bracket	1	Components
9	i20101231	Sensor fixing plate	1	Components
10	i20101320	Left side panel	1	Components
11	i20101330	Right vertical board	1	Components
12	i20101750	Complete line plate	1	Components
13	i20101790	PCB fixing board	1	Components
14	AX0100070	X-axis screw	1	Components
	i201MH010	X-axis commercially available - i2R468		
15	TK266D-02A51	2-phase stepper motor 7.2w-2A 1.8 ohm	1	Components
16	STAF-BGXS15BN-1-700-NZ0-20-20	X-axis rail	2	Components
17	SQR20C	Coupling	1	Components
18	TPI-7001AHTP5	Oblique ball bearing	2	Components
19	BNR12	Anti-loose bearing nut - four angle type	1	Components
20	DA-1805NO	Square proximity switch	1	Components
21	CXHK8-10	Excellent glue	2	Components
22	N-TH-34B	Round tube holder (black)	2	Components
	i201S0010	X-axis screw package - i2R468		
23	M4 x8	Hexagon socket head cap screws	12	Screw package
24	M5 x 25	Hexagon socket head cap screws	8	Screw package
25	M6 x 20	Hexagon socket head cap screws	6	Screw package
26	M4 x 10	Hexagon socket head cap screws	4	Screw package
27	M3 x 20	Hexagon socket head cap screws	10	Screw package
28	M4 x 6	Hexagon socket head cap screws	2	Screw package
29	M3 x 8	Hexagon socket head cap screws	3	Screw package
30	M4 x 16	Hexagon socket head cap screws	24	Screw package
31	M3 x 16	Hexagon socket head cap screws	4	Screw package
32	M4 x 20	Hexagon socket head cap screws	8	Screw package
33	M5 x 10	Hexagon socket head cap screws	10	Screw package
34	M3 x 6	Semicircular head socket head cap screws	4	Screw package
35	M3x6	Round head Phillips	2	Screw package
36	MSBH10-10	Contour screw M8	4	Screw package
37	Pin4x10	Pin	2	Screw package
38	M3-flat washer	washer	6	Screw package
39	M4-20 type	Nut M4-20	4	Screw package
40	P4-M4	Nut P4M4	24	Screw package

I2R4-Y axis

i201M0020

2019/02/27

1 / 1
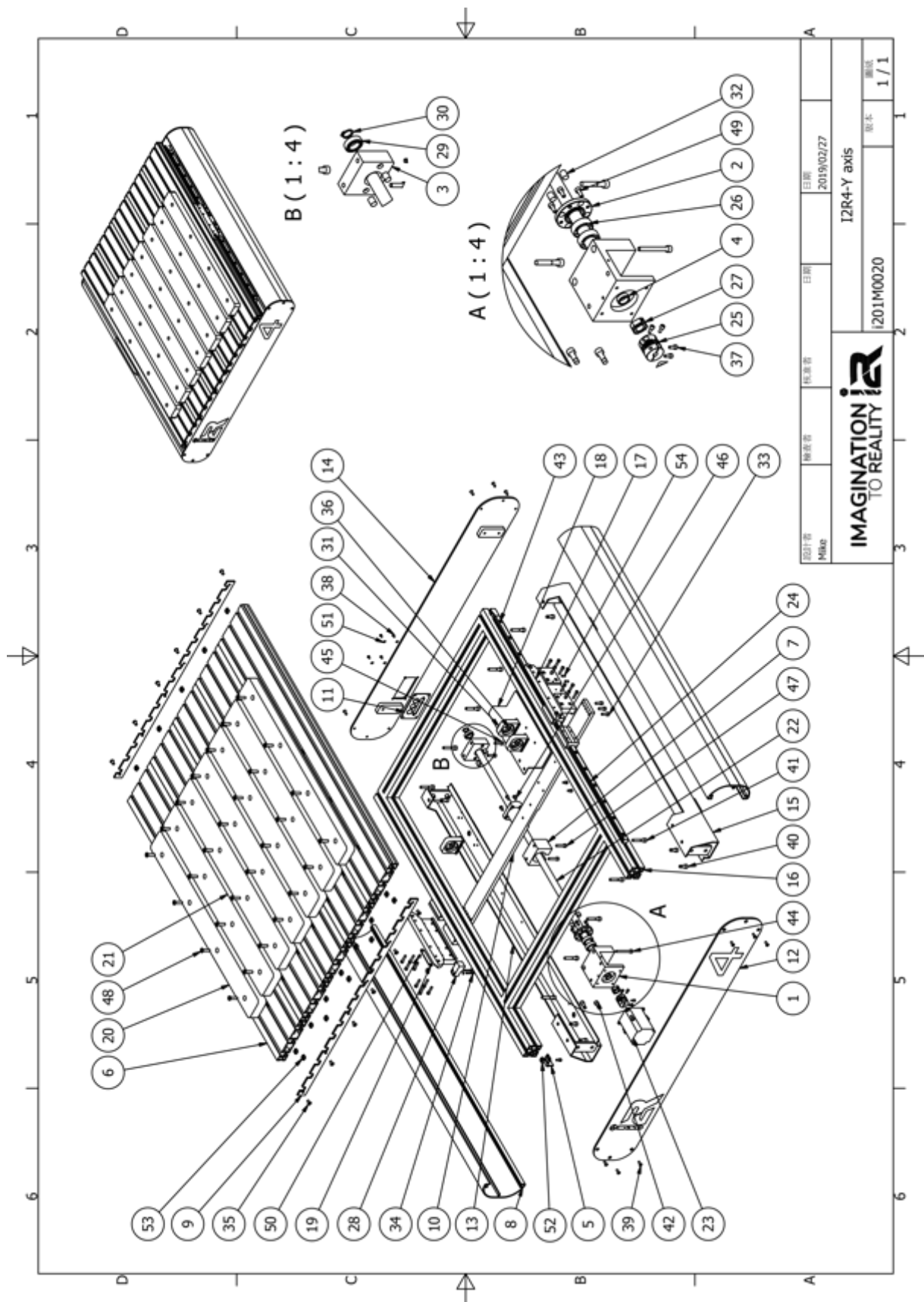
	I2R4 Y 軸			
	i201M0020	Y-axis combination - i2R4		
1	AX0100124	Motor seat	1	Components
2	AX0100131	Bearing cap	1	Components
3	AX0100171	Y-axis bearing housing	1	Components
4	AX0100191	Spacer	1	Components
5	AX0100260	Sensor matte_B	1	Components
6	i20100141	Y-axis aluminum extrusion	5	Components
7	i20100160	Y-axis nut seat	1	Components
8	i20100181	Y-axis aluminum extrusion side cover	2	Components
9	i20101091	Y-axis aluminum extrusion side cover	2	Components
10	i20101151	Y-axis skateboard	1	Components
11	i20101211	Interface back cover	1	Components
12	i20101261	Y-axis aluminum extrusion front cover	1	Components
13	i20101272	Structural board (left)	1	Components
14	i20101281	Y-axis aluminum extrusion back cover	1	Components
15	i20101292	Structural board (right)	1	Components
16	i20101301	4040 aluminum extrusion frame	1	Components
17	i20101350	Skate fixing block	2	Components
18	i20101490	Y-axis bracketing fixed plate	1	Components
19	i20101760	Complete line plate	1	Components
20	AX0100540	24x24-MDF(EDGE)	2	Components
21	AX0100562	24x24-MDF	5	Components
22	AX0100200	Y-axis screw	1	Components
	i201MH020	Y-axis commercially available product - i2R4		
23	TROY_TK268D-02A51	2-phase stepper motor 9w-2A2.25 ohm	1	Components
24	STAF-BGXS15BN-2-820-NZ0-20-20_2x2	Y axis rail	2	Components
25	SQR20C(6.35.8)	Coupling	1	Components
26	TPI-7001AHTP5	Oblique ball bearing	2	Components
27	BNR12	Anti-loose bearing nut - four angle type	1	Components
28	DA-1805NO	Square proximity switch	1	Components
29	6901ZZ	Deep groove ball bearing	1	Components
30	STWN12	C buckle	1	Components
31	N-TH-34B	Round tube holder (black)	3	Components
32	CXHK8-10	Excellent glue	4	Components
	i201S0020	Y-axis screw package -i2R4		
33	M5 x 16	Hexagon socket head cap screws	6	Screw package
34	M3 x 20	Hexagon socket head cap screws	2	Screw package
35	M5 x 10	Hexagon socket head cap screws	12	Screw package
36	M4 x 6	Hexagon socket head cap screws	3	Screw package
37	M3 x 8	Hexagon socket head cap screws	4	Screw package
38	M3 x 6	Semicircular head socket head cap screws	4	Screw package
39	M4 x 12	Hexagon socket head cap screws	12	Screw package
40	M6 x 16	Hexagon socket head cap screws	6	Screw package
41	M6 x 35	Hexagon socket head cap screws	10	Screw package
42	M6 x 12	Hexagon socket head cap screws	8	Screw package
43	M4 x 20	Hexagon socket head cap screws	44	Screw package
44	M5 x 45	Hexagon socket head cap screws	2	Screw package
45	M5 x 20	Hexagon socket head cap screws	2	Screw package
46	M4 x8	Hexagon socket head cap screws	6	Screw package
47	M5 x 25	Hexagon socket head cap screws	2	Screw package
48	M6 x 25	Hexagon socket head cap screws	28	Screw package
49	M4 x 10	Hexagon socket head cap screws	9	Screw package
50	TRSS3-6	Round head Phillips	2	Screw package
51	M3-flat washer	washer	6	Screw package
52	P4-M4	Nut P4M4	29	Screw package
53	B4-M6	Nut P4M6	44	Screw package
54	Pin4x10	Pin	4	Screw package
55	M8 x 25	Hexagon socket head cap screws	4	Screw package

56	P4-M5	Nut P4M5	4	Screw package
57	Stop M4x4	Stop screw	1	Screw package
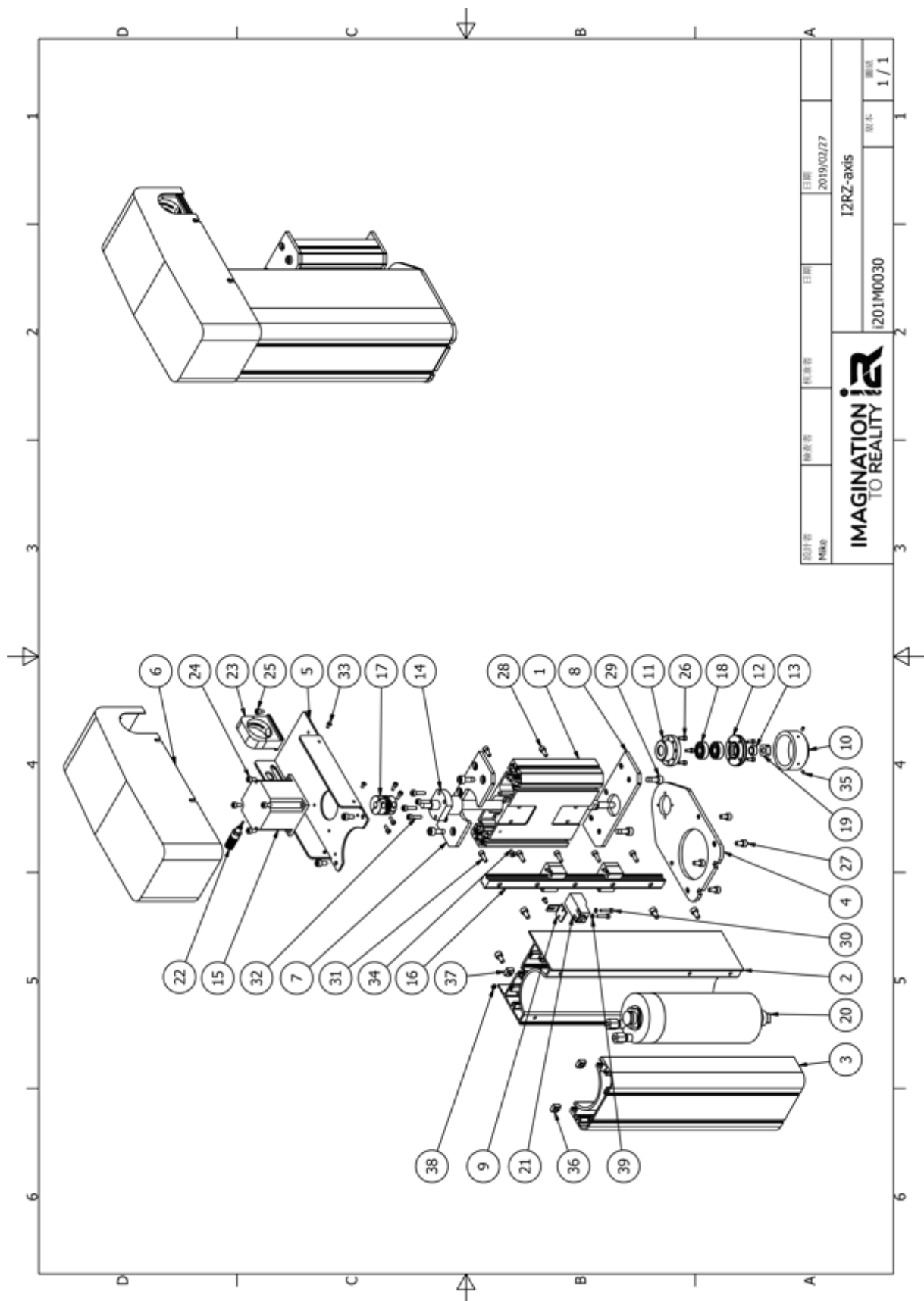
	I2R4 Z axis			
	i201M0030	Z axis combination - i2R468		
1	i20101021	Z-axis slide	1	Components
2	i20101171	Spindle holder-B	1	Components
3	i20101181	Spindle holder-A	1	Components
4	i20101032	Z-axis lower cover	1	Components
5	i20101191	Motor plate gold seat	1	Components
6	i20101102	X-axis linkage chain	1	Components
7	i20101050	Sliding block connection block - under	1	Components
8	i20101061	Sliding block connection block - on	1	Components
9	i20101070	Sensor fixing plate	1	Components
10	AX0300161	Bearing cover	1	Components
11	AX0300080	Bearing housing	1	Components
12	AX0300091	Bearing gland	1	Components
13	AX0300070	Spacer	1	Components
14	i20101040	Z axis_screw_304L	1	Components
	i201MH030	Z-axis commercially available - i2R468		
15	TK266D-02A51	2-phase stepper motor 9w-2A2.25 ohm	1	Components
16	OME-BGXS15BS-2-L280-20-20	Z axis rail _L280	1	Components
17	SQR20C(6.35.8)	Coupling SQR20C (6.35, 8)	1	Components
18	708A	Angled ball bearing (8x22x7t)	2	Components
19	BNR8	Anti-loose bearing nut - four angle type	1	Components
20	i20101780	Spindle _Ø65-V220/800W (Air cooled, 0.8KW 2.5A 220V)	1	Components
21	DA-1805NO	Square proximity switch	1	Components
22	N1535	Dr. Terminal Black (9404B)	1	Components
23	N-TH-34B	Round tube holder (black)	1	Components
	i201S0030	Z-axis screw package - i2R468		
24	M4 x8	Hexagon socket head cap screws	4	Screw package
25	M4 x 6	Hexagon socket head cap screws	1	Screw package
26	M3 x 8	Hexagon socket head cap screws	12	Screw package
27	M5 x 10	Hexagon socket head cap screws	12	Screw package
28	M4 x 10	Hexagon socket head cap screws	4	Screw package
29	M6 x 12	Hexagon socket head cap screws	4	Screw package
30	M3 x 16	Hexagon socket head cap screws	2	Screw package
31	M4 x 14	Hexagon socket head cap screws	5	Screw package
32	M4 x 16	Hexagon socket head cap screws	4	Screw package
33	M3 x 6	Hexagon socket head cap screws	5	Screw package
34	M4 x 8	Hexagon socket head cap screws	1	Screw package
35	Stop paying flat M3x4	Stop screw	2	Screw package
36	M3 (W5.5x2.4t)	Nut (W5.5)	1	Screw package
37	M3-flat washer	washer	2	Screw package
38	P4-M5	Nut P4M5	6	Screw package
39	P4-M4	Nut P4M4	5	Screw package
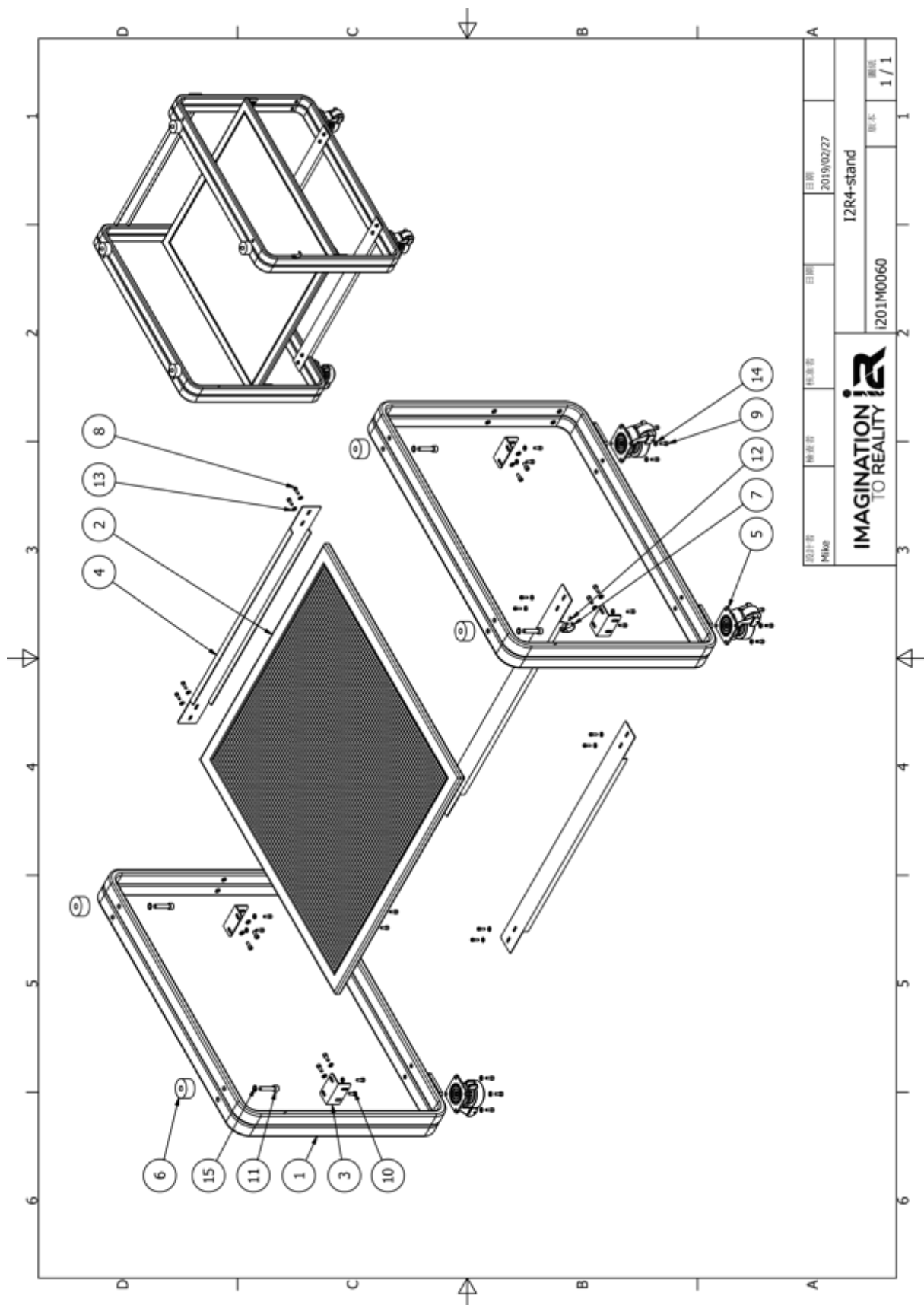
	I2R4 Stand			
	i201M0060	i2R4-Stand combination		
1	i20101243	Base STAND	2	Components
2	i20101252	Carrier board	1	Components
3	i20101740	Support plate	4	Components
4	i20101840	Base bracket	3	Components
5	FG-50F	Korean casters	4	Components
6	AX01C00044	Rubber shock pad -50Xd13X25t	4	Components
7	SDK-3016	3016 white iron hook	1	Components
	i201S0060	i2R468-Stand Screw Pack		
8	M5 x 16	Hexagon socket head cap screws	12	Screw package
9	M6 x 12	Hexagon socket head cap screws	16	Screw package
10	M6 x 16	Hexagon socket head cap screws	16	Screw package
11	M10 x 55	Hexagon socket head cap screws	4	Screw package
12	M4 x10	Hexagon socket head cap screws	2	Screw package
13	M5 washer	washer	12	Screw package
14	M6 washer	washer	24	Screw package
15	M10 small flat washer	washer	4	Screw package