

Steps for Dual-Y-Axis Homing:

1. Synchronous Drive:

First, the Y and A axes are synchronously driven via the Y-axis command (i.e., Y1 and Y2 move together).

The system then searches for the Y-axis home signal.

Once the signal is detected, the current Y-axis position is recorded as **S1**, and the system begins to back off in the opposite direction so that both Y1 and Y2 screws move to the same side of their respective home switches.

2. Search for A-Axis Home Signal:

After backing off, the system continues to move in the same direction to search for the home signal of the A axis (which corresponds to Y2).

Once the signal is found, the current Y-axis position is recorded as **S2**, followed by another back-off.

3. Position Difference Validation:

The system compares the difference between S1 and S2.

If **S1 - S2** exceeds the configured tolerance distance, an alarm is triggered, and the homing process is aborted.

4. Split Drive:

If the difference is within the allowable range, the system disables synchronization between Y1 and Y2.

At this point, the physical Y1 axis is controlled by the Y command, and Y2 by the A command.

The system then moves the Y axis by a distance of **S1 - S2 + D**, where **D** is an adjustable parameter, to bring Y1 and Y2 back into perfect alignment on the same horizontal level.

5. Restore Synchronization:

Finally, synchronization between Y1 and Y2 is re-enabled, completing the dual-Y homing process.

The specific macro program is defined in subprogram **O10101** within `slib-m-ext.nc`, corresponding to the **M101** command.

the dual-Y-axis homing procedure:

1. Copy Required Files

Copy slib-m-ext.nc to the /env directory.

Copy home.nc and home_y.nc to the /env/mach directory.

Important: Make sure to **close the software** before copying the files to avoid file conflicts or loading issues.

2. Set the HOME Program Mode

Configure the system to use the **host program** as the method for homing operations.

Program	Coordinate	Teach	DXF	Parameter	Diagnosis
Parameter Overview					
IO Parameters					
IO customization					
Machine Structure					
Motion Control Card					
Axis param.	Parameter name		value	unit	
	Linear axis unit		mm		
	start speed		50.000	unit/min	
	Maximum speed		15000.000	unit/min	
Manual parameters	G0 speed		8000	unit/min	
	Default speed		8000	unit/min	
	Machining accuracy		0.001	unit	
Automatic parameters	Number of line segments for path planning		300		
	Path capacity		30000		
	Speed Selection		G Code		
Tool Parameters	shortest motion path of rotation axis		On		
	Smoothing distance		0.000		
	G0/G1 segment transition deceleration		No deceleration		
ATC Parameters	Speed drop rate during pause		5.000		
	Speed drop rate during failure		50.000		
	Pause lift distance		5.000	unit	
External devices	Cutter shaft return to zero strategy		Return to zero		
	safe height		20.000	unit	
	approach distance		5.000	unit	
MODBUS	approach speed		200	unit/min	
	Whether to check mechanical origin before processing		No		
	Whether to return to mechanical origin after connect		No		
Environment Parameters	Home program selection		Host computer program		
	Cutter shaft strategy during RTCP resume		Null		
	Dwell position at end of machining		Current position		

3. Set Axis Mapping

Map the programming axis **Y** to two physical axes:

- Y → Y1 (main drive axis)
- A → Y2 (secondary/following axis)

This allows Y1 and Y2 to move together logically when the Y axis is commanded.

Parameter Overview | IO Parameters | IO customization | Machine Structure | Motion Control Care

Axis param.
Manual parameters
Automatic parameters
Tool Parameters
ATC Parameters
External devices

Drive parameters
Physical axis mapping parameters

Parameter name	X phy-axis	Y phy-axis	Z phy-axis	A phy-axis	B phy-axis	C phy-axis
Physical axis mapping	X-axis	Y-axis	Z-axis	Y-axis	B-axis	C-axis

4. Configure Mechanical Home Signals

Assign **mechanical home sensors** (e.g., limit switches or proximity sensors) to both physical axes Y1 and Y2.

Make sure each screw has its own home signal input.

Input | Output

On-board input IO filter time width: ms

Status	Port Name	Enable	Pin Group	Pin Number	Effective Level
	X-axis driver alarm signal	x	Onboard	0	N
	Y-axis driver alarm signal	x	Onboard	0	N
	Z-axis driver alarm signal	x	Onboard	0	N
	A-axis driver alarm signal	x	Onboard	0	N
	B-axis driver alarm signal	x	Onboard	0	N
	C-axis driver alarm signal	x	Onboard	0	N
●	X-axis home signal	√	Onboard	1	N
●	Y-axis home signal	√	Onboard	2	N
●	Z-axis home signal	√	Onboard	3	N
●	A-axis home signal	√	Onboard	4	N
	B-axis home signal	x	Onboard	0	N
	C-axis home signal	x	Onboard	0	N
	X-axis negative limit signal	x	Onboard	0	N
	Y-axis negative limit signal	x	Onboard	0	N
	Z-axis negative limit signal	x	Onboard	0	N
	A-axis negative limit signal	x	Onboard	0	N

5. Set HOME-Related Parameters

Configure the homing speed, back-off distance, and other related parameters for both Y and A axes to ensure safe and accurate homing.

Axis param.	Drive parameters																																																							
	Physical axis mapping parameters																																																							
	Software limit parameters																																																							
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6. Set Adjustable Parameter D

During step 4, the system will record the position difference between when each axis triggers its home switch (S1 – S2).

Use the adjustable parameter D to fine-tune this difference, ensuring that Y1 and Y2 align perfectly and that the gantry beam is level.

Parameter Overview	IO Parameters	IO customization	Machine Structure	Motion Control Card
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7. Execute the HOME Operation

After all settings are configured, click **HOME** or **Y-axis HOME** on the interface.

The system will now perform the **dual-Y-axis homing sequence**, moving Y1 and Y2 back to their synchronized mechanical home positions.