


R0002913E Install and Align Rotary head Subframe

Correct alignment protocol for subframe alignment

 Difficulty **Very Hard**

 Duration **7.5 hour(s)**

Contents

Introduction

Step 1 - Unless otherwise stated

Step 2 - Fit Levelling bolts

Step 3 - Level Frame

Step 4 - Instal Upper beam mount

Step 5 - Level upper beam mount

Step 6 - Install Z axis shafts

Step 7 - Assemble centre platform

Step 8 - Fit Centre platform

Step 9 - Fit lower beam mounts

Step 10 - Level lower beam mounts

Step 11 - Align lower beam mounts

Step 12 - Check shaft pitching

Step 13 - Attach bottom plate

Step 14 - Quality check

Step 15 - Quality check

Step 16 - continue to part 2 of dokit

Comments

Introduction

Tools Required

300mm engineers level
2 meter straight edge
1 meter straight edge
Standard hex key set
Standard spanner set
Z support jigs

Parts Required

D0000095 Bottom Plate x 2
D0006484 Front Tiebeam x 1
D0006485 Rear Tiebeam x 1
D0007681 Shaft Adjust Plate x 2
D0007683 Lower Beam Mount x 1
D0007684 Lower Beam Mount - Mirror x 1
D0007695 Platform (D8714) x 1

D0007787 Upper Beam Mount x 1
D0007835 Hard Stop x 2
D0008087 Z Servo Housing x 2
H0006025 Shaft 40mm: 939mm Flowline Y-axis x 2
H0007711 Shaft 40mm: 1350mm Microline Z (c/w M16 x 45 bolts) x 2
R0015296 Bench Assemble bearings Assemblies

Step 1 - Unless otherwise stated

Use loctite 243 on all fasteners
Use Loctite 572 on all threaded pneumatic connections
Pen mark all bolts to show finalised



Step 2 - Fit Levelling bolts

Fit 4 off M16 x 120 set bolts with M16 nuts to 4 off foot positions. Use copper slip n threads of bolts

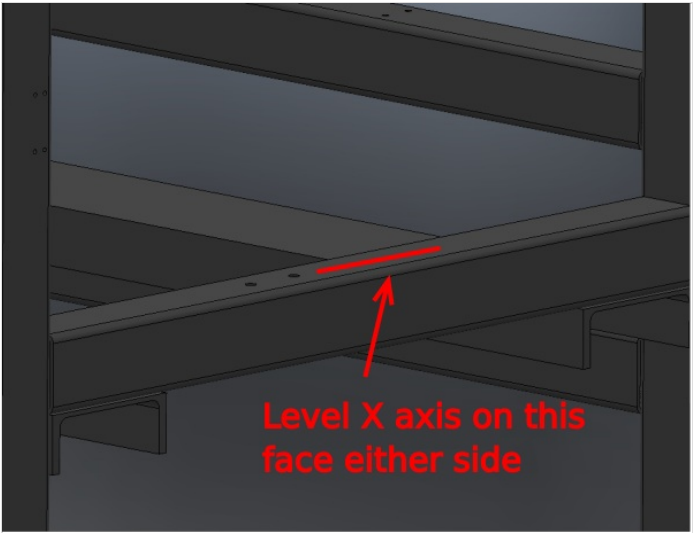
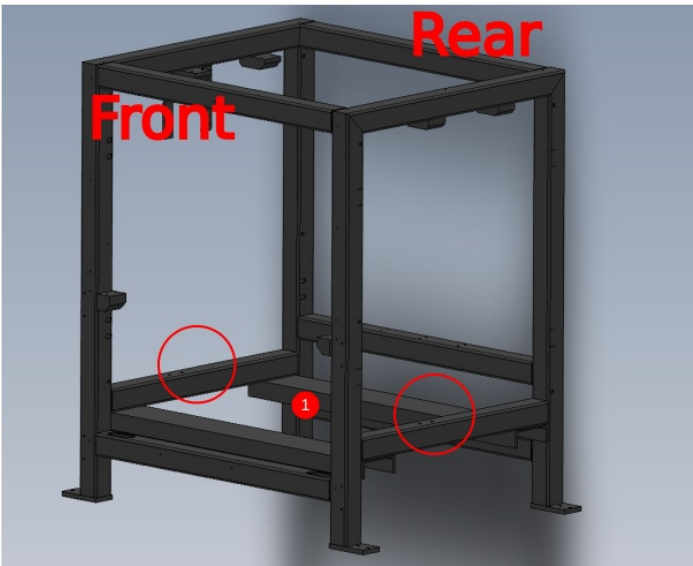
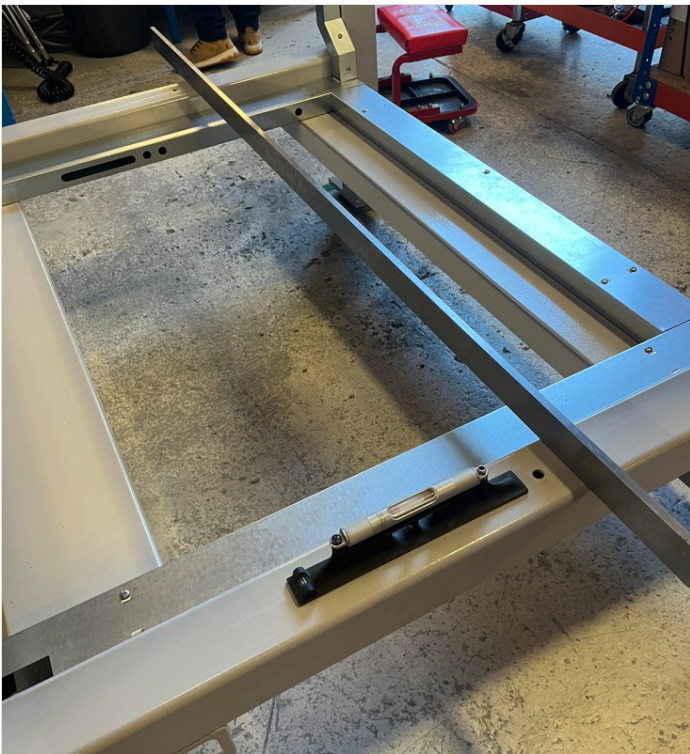
Locate bolts into 4 off green machine levelling pads

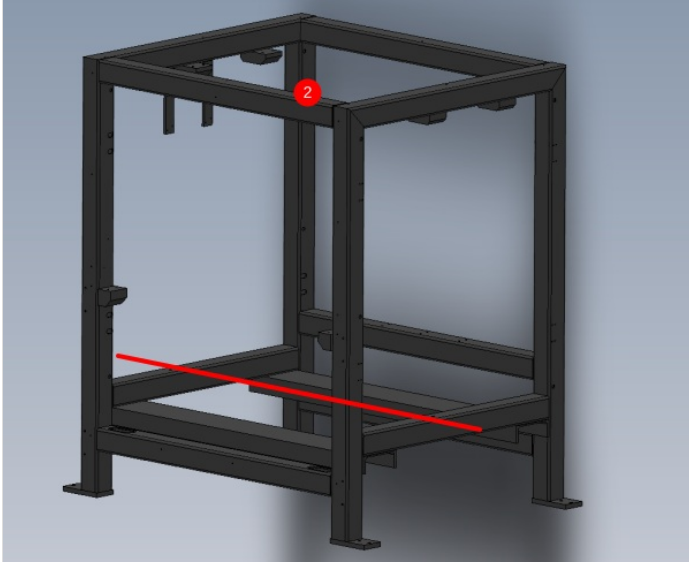
Set gap between green pad and base of foot to approximately 20mm

Step 3 - Level Frame

1 Use engineers level to level frame at the indicated points . Any discrepancy between the two faces should be adjusted to be even both sides

2 Use 2 meter straight edge and 300mm engineers level to level Y axis of machine at the indicated points



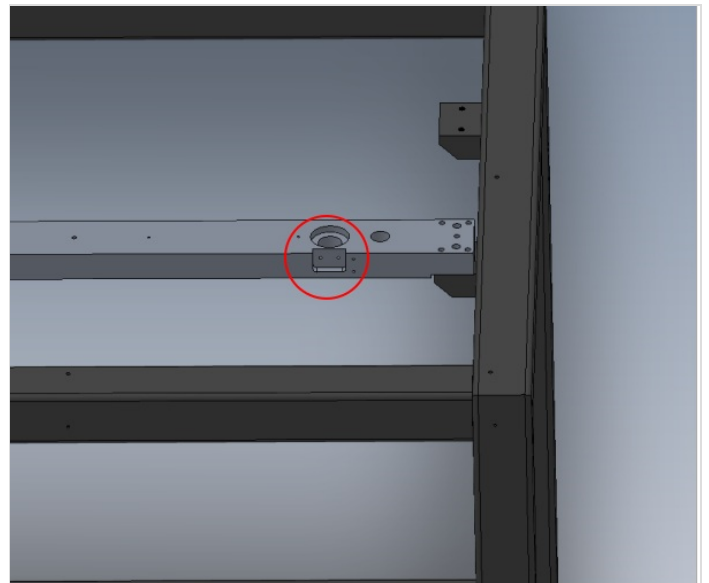
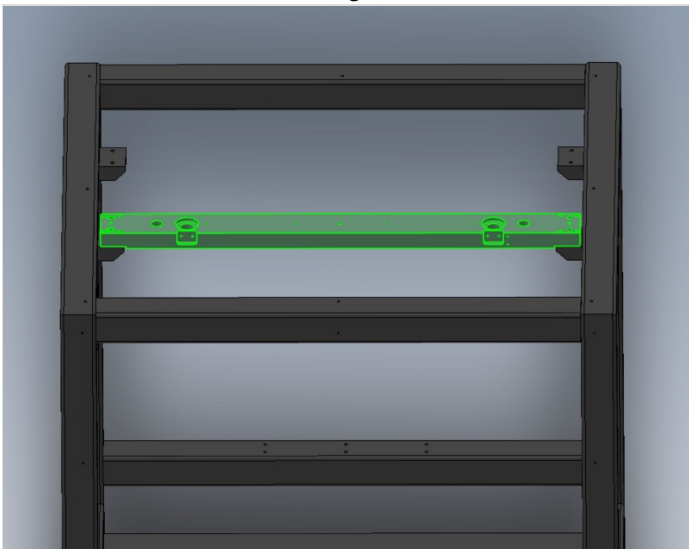


Step 4 - Instal Upper beam mount

Mount and orientate D0007787 Upper Beam Mount x 1 as shown

Fix with M12 x 70 socket caps and A form washers , do not apply adhesive

Add 8 off M10 x 35 flat bottomed grub screws



Step 5 - Level upper beam mount

When mounting top beam, ensure beam is set evenly on frame mounts as shown

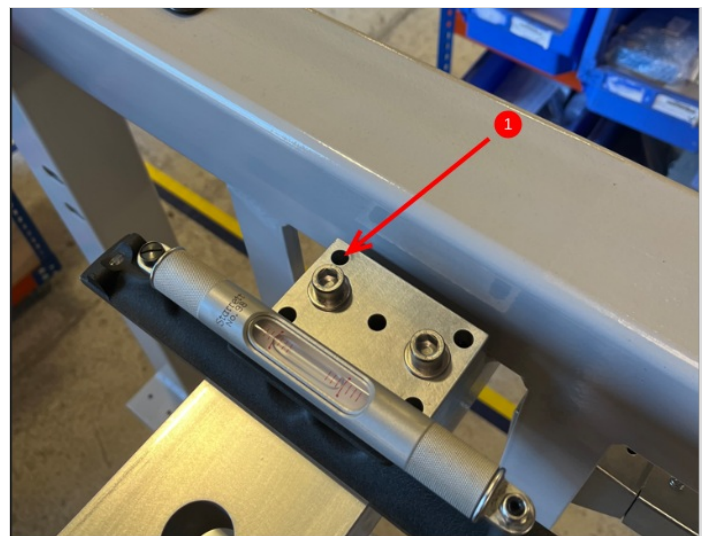
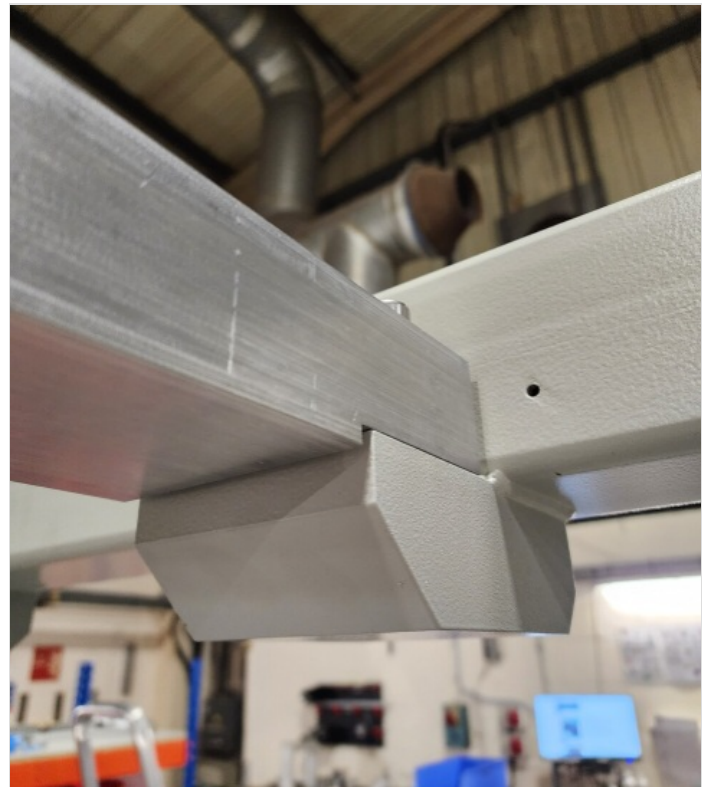
1 Level X axis on both sides of the beam at the indicated point using M10 grubscrews to adjust

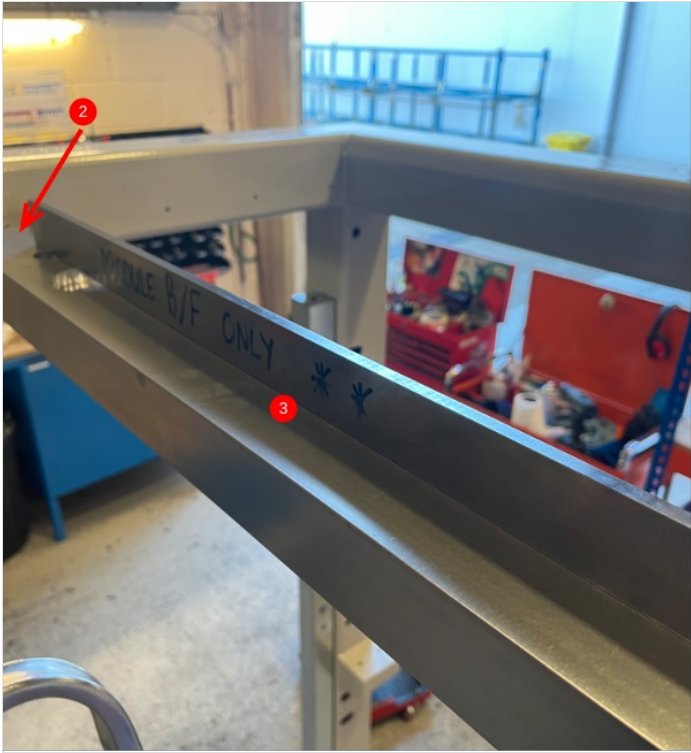
2 Adjust Y Axis using grubscrews . only adjust one end up, as height needs to remain as close as possible to frame mounting point.

Use 1 meter straight edge and engineers level

3 Check and adjust flatness by using 1 meter straight edge to gauge. Bias can be used on jacking grubscrews to manipulate the upper beam mount flat.

i ...Beam should be set level and flat under tension from M12 x 70 socket caps Upper beam mount should remain as close as possible to frame mounting points





Step 6 - Install Z axis shafts

1 Mount H0007711 Shaft 40mm: 1350mm Microline Z (c/w M16 x 45 bolts) x 2
and suspend in place with M16 x 45 hex head bolts and D0007681 Shaft Adjust Plate x 2
Add 2 off large black tie wraps per side as shown

2 Fit 2 off bearing block from R0015296 Bench Assemble bearings Assemblies to z shafts orientated as shown.
M6 holes should face centre of machine and M8 holes and 8mm dowel holes should face front of machine



Step 7 - Assemble centre platform

1 Prepare 6mm dowel holes indicated with 6mm reamer in D0007695 Platform

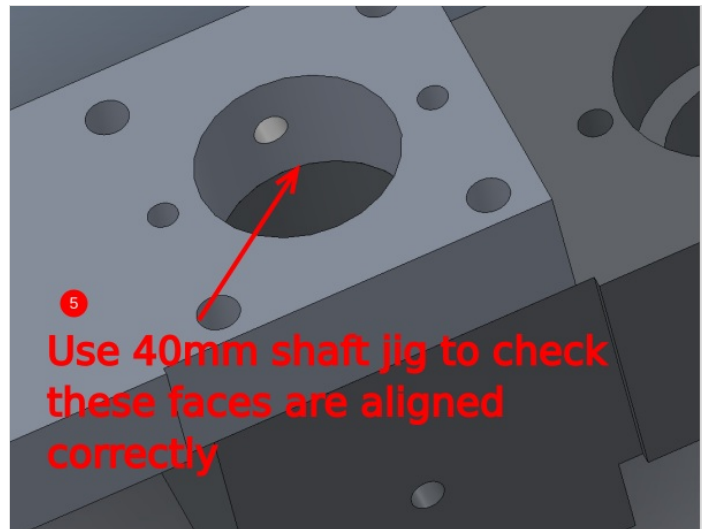
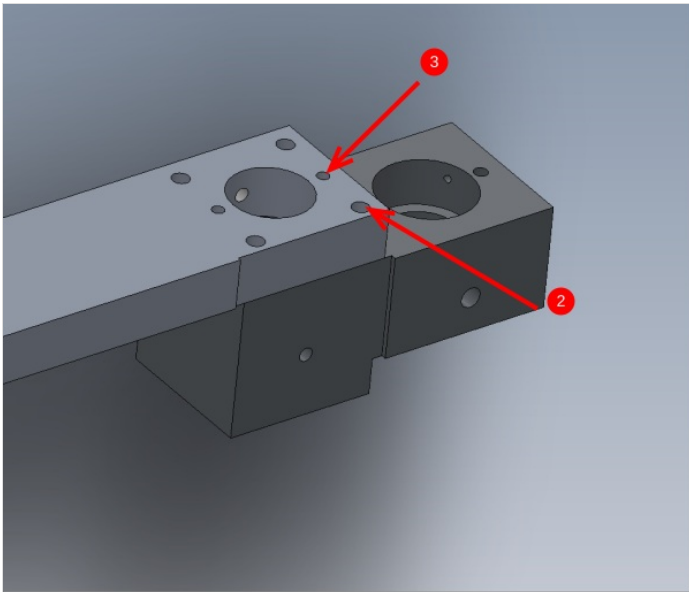
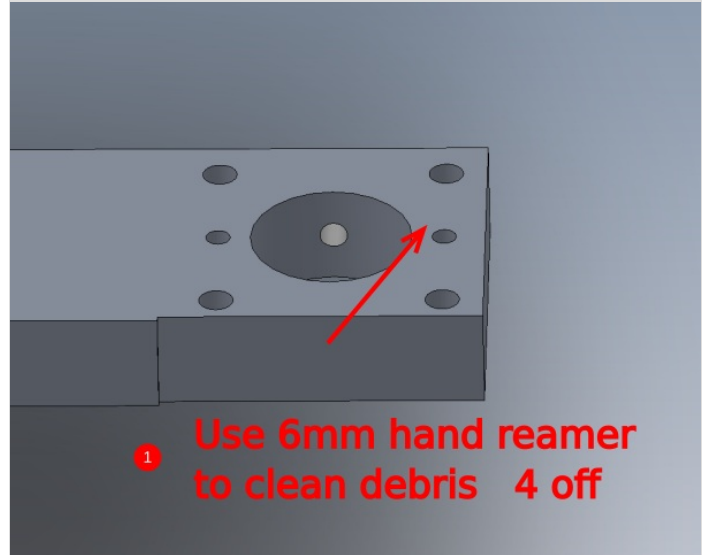
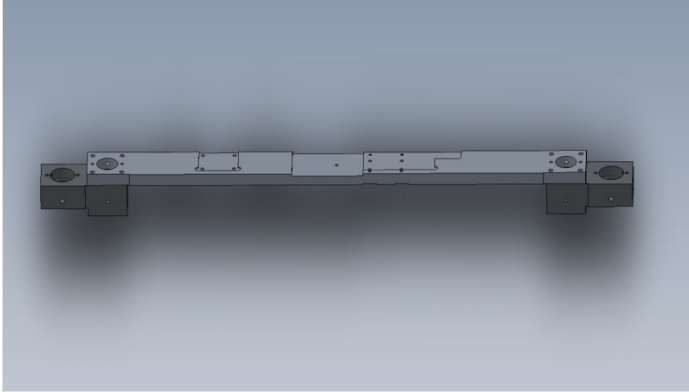
2 Lightly attach as shown 2 off D0008087 Z Servo Housing using 4 off M8 x 40 socket caps and A form washers per block

3 Fit 4 off 6mm x 30 dowel to align blocks

4 Finalise M8 socket caps

5 Check with 40mm shaft jig that alignment is correct and shaft can pass through assembled 40mm bore

💡 ...If 40mm shaft jig does not pass through assembled bores, emery tape can be used to manipulate bores. Only slight polishing should be required. Report any major adjustment required to supervisor



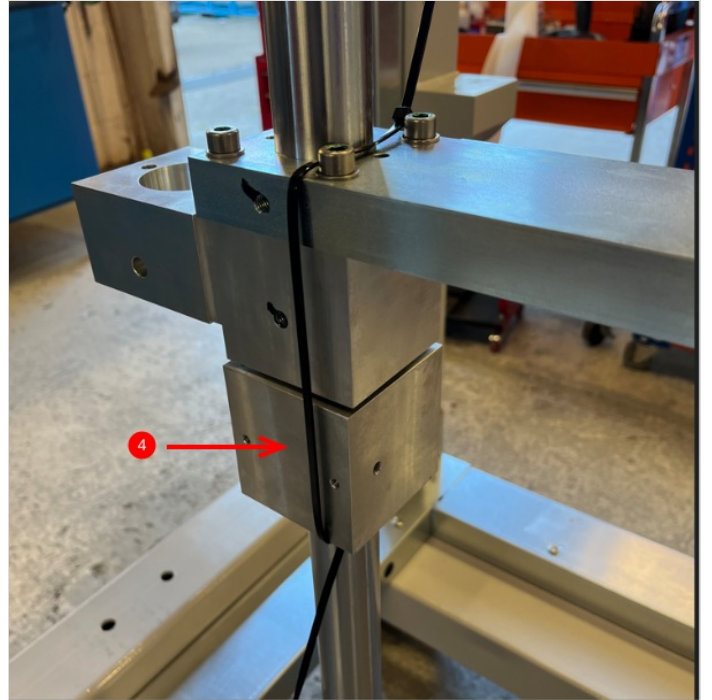
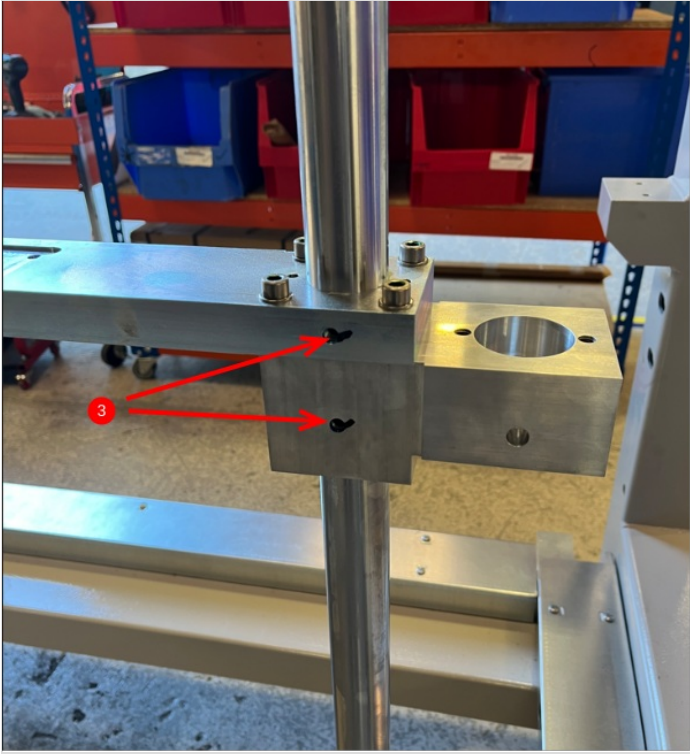
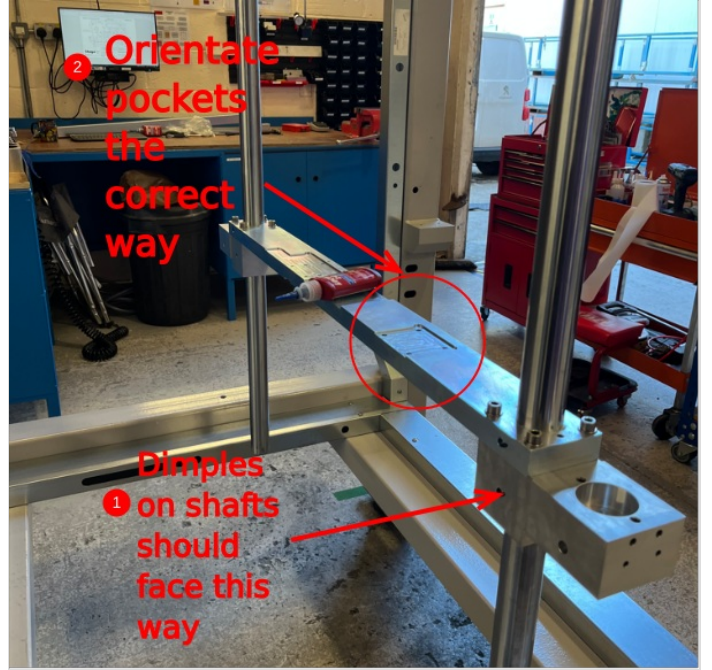
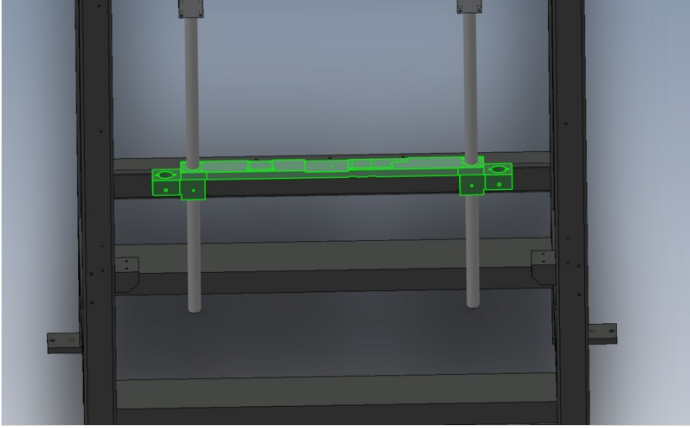
Step 8 - Fit Centre platform

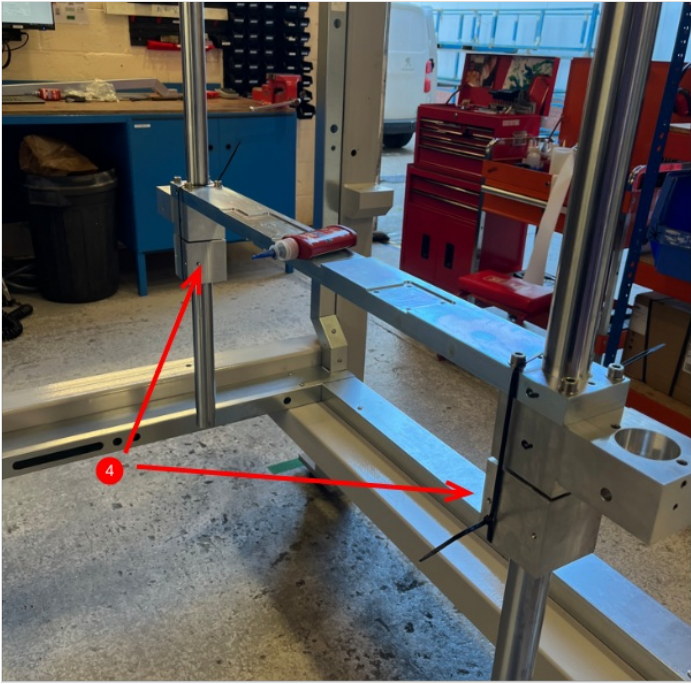
1 Ensure 2 off dimples on each main vertical shaft are facing the rear of the machine

2 Slide into position centre platform assembly ensuring the correct orientation is achieved in regards to Machined pockets on the centre platform

3 Align dimples to M8 tapped holes in crossmember and fix with 4 off M8 x 16 kcp grubscrew

4 Fit 2 off bearing block from R0015296 Bench Assemble bearings Assemblies as shown. Blocks should be orientated as previous fitted upper blocks





Step 9 - Fit lower beam mounts

Do not use any adhesive on these fasteners in this step

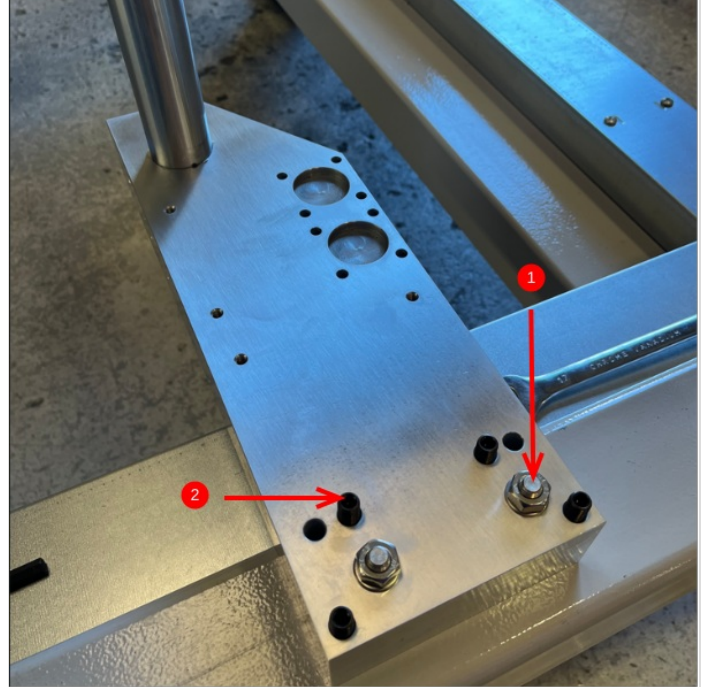
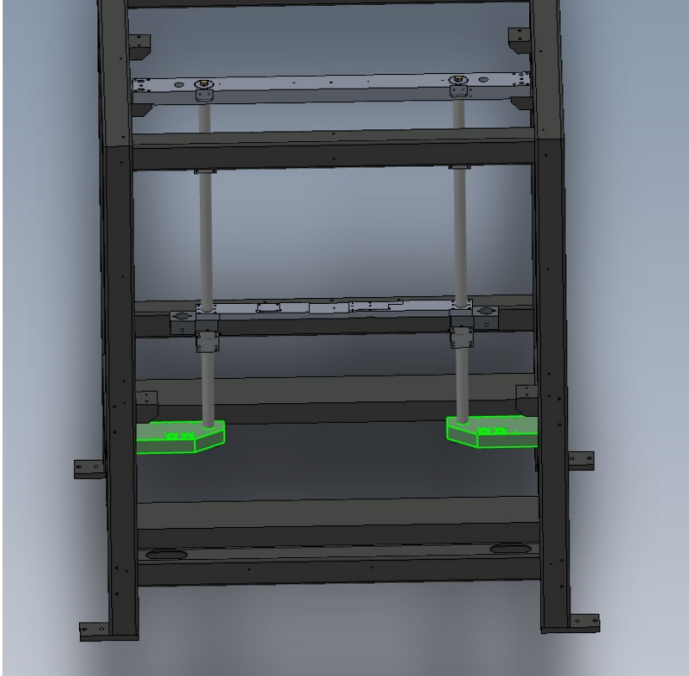
Fit

D0007683 Lower Beam Mount x 1

D0007684 Lower Beam Mount - Mirror x 1 as shown

1 Use M10 x 70 socket caps , A form washers and standard M10 nuts to fix as shown

2 Insert 4 off M10 x 30 flat bottomed jacking grubscrew as shown



Step 10 - Level lower beam mounts

1 Apply Medium tension to M10 socket caps and wind down M10 jacking grubscrews to touch on frame

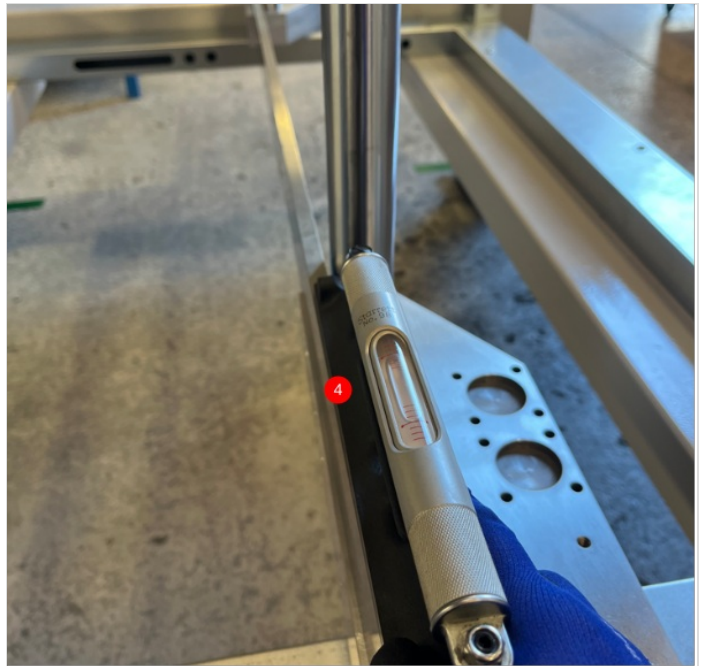
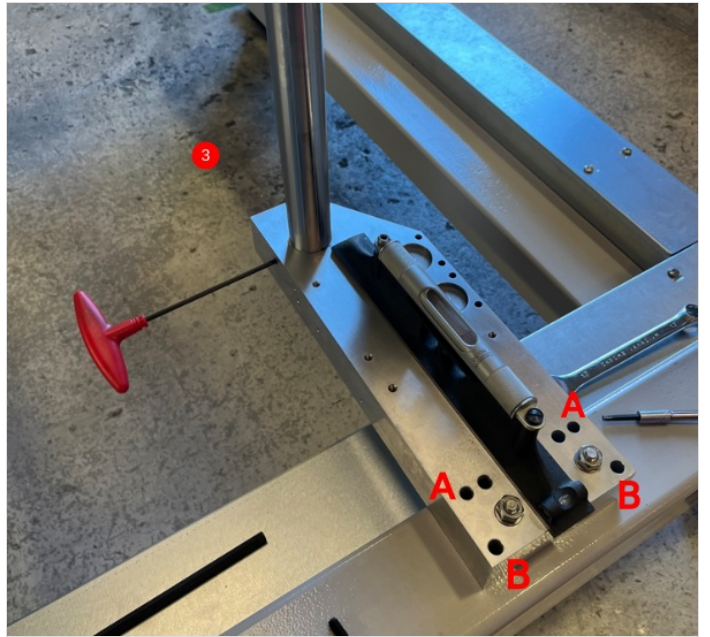
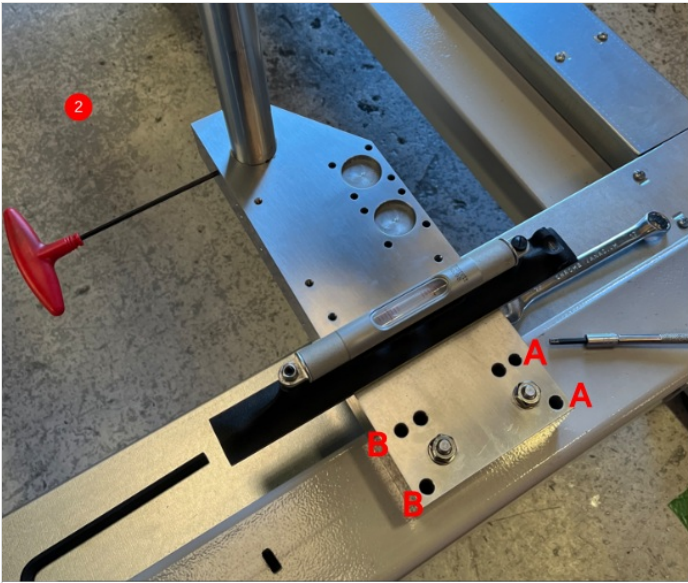
2 Level X axis of block using pair A or B, never use all 4

3 Level Y axis of block using pair A or B, never use all 4

Repeat for other side

4 Level across beam mounts using 2 meter straight edge. Adjust lowest platform to correct any error . Always use all 4 jacking grubscrews turned exactly the same amount to raise platform to adjust

5 Once levelled, check no gaps are present on contact face of straightedge along both lower beam mounts




Step 11 - Align lower beam mounts

1 Insert 1 off M8 x 16 kcp grub screw per lower beam mount and apply light pressure with no adhesive

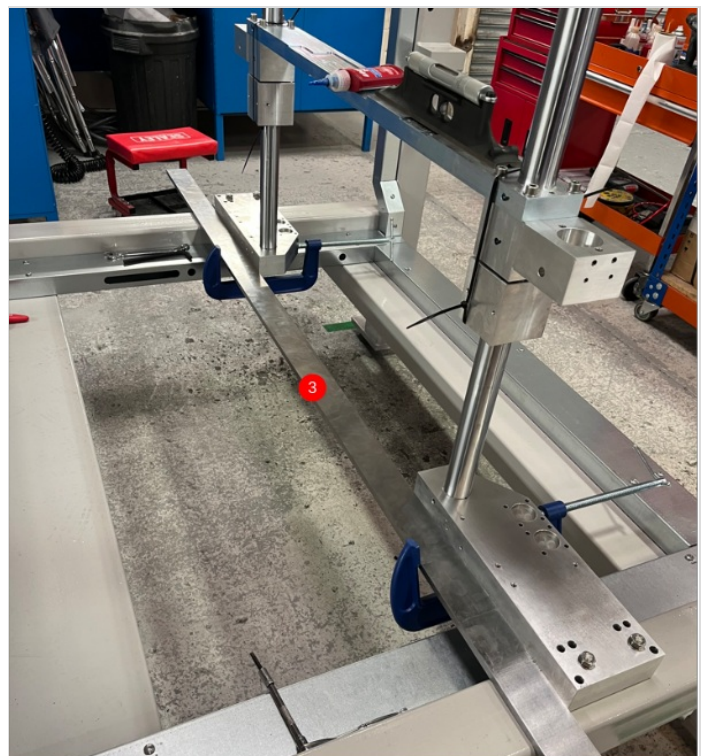
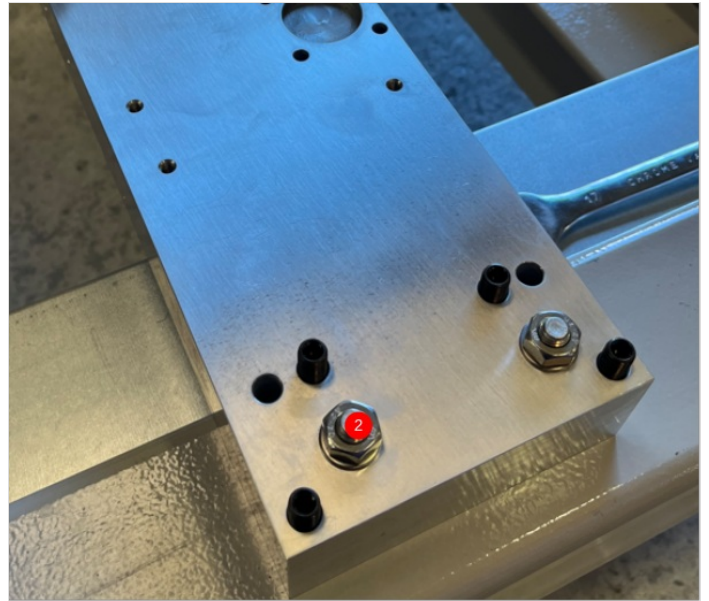
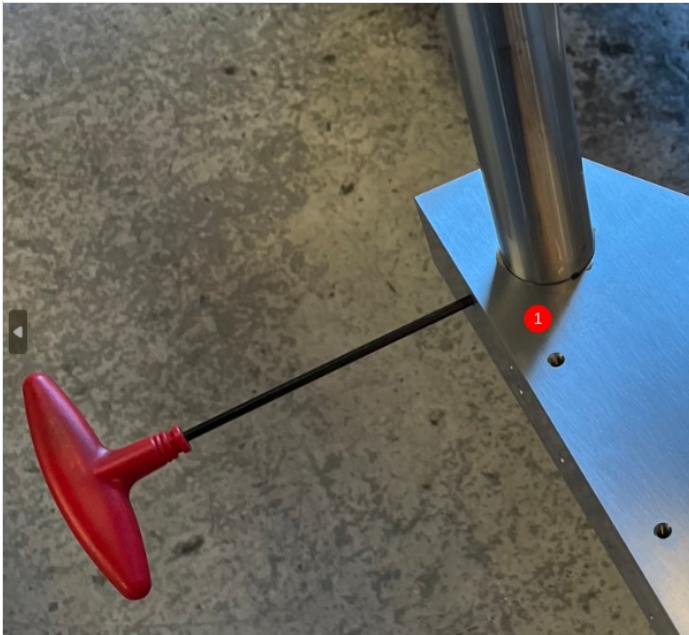
2 Release pressure on M10 socket caps that hold lower beam mounts in place

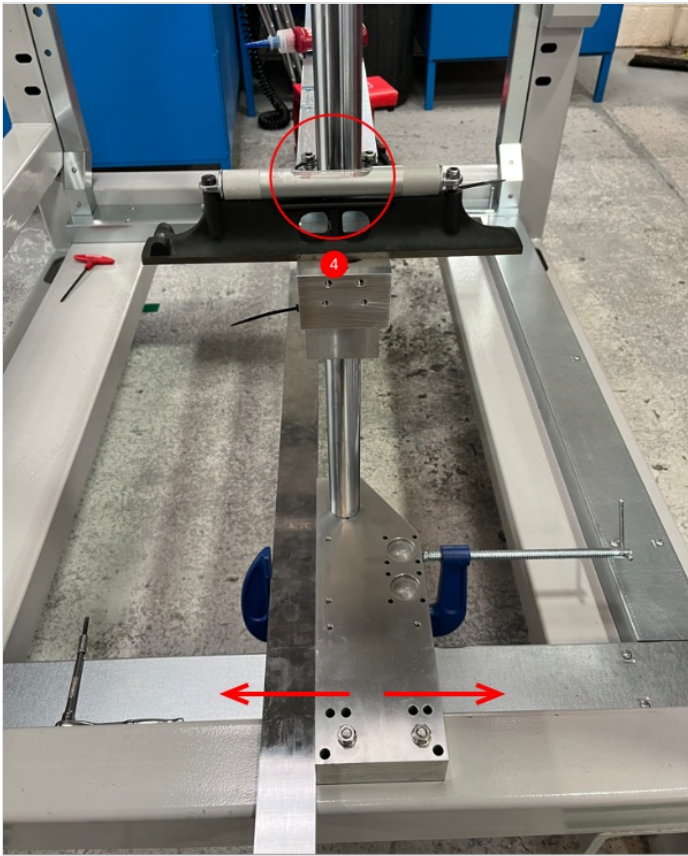
3 Use straight edge as indicated

 ...Only Apply light pressure to G clamps shown to hold straight edge. Heavy pressure will damage straight edge

4 Adjust lower beam mount position using level as indicated . Once level is achieved, apply light pressure to M10 socket caps and repeat for other side

5 Adjust Lower beam mount position using a level as indicated . Repeat on other side



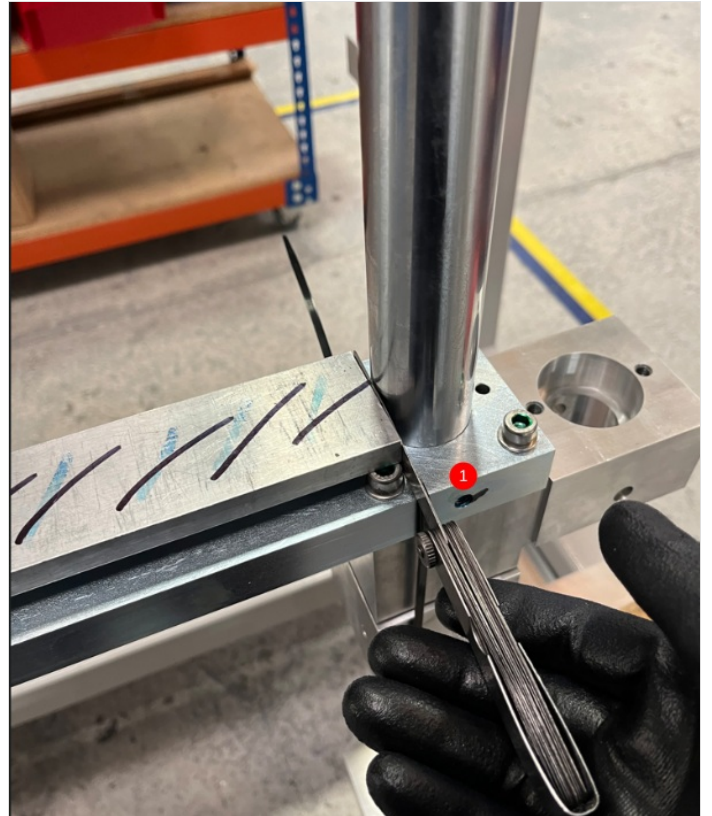


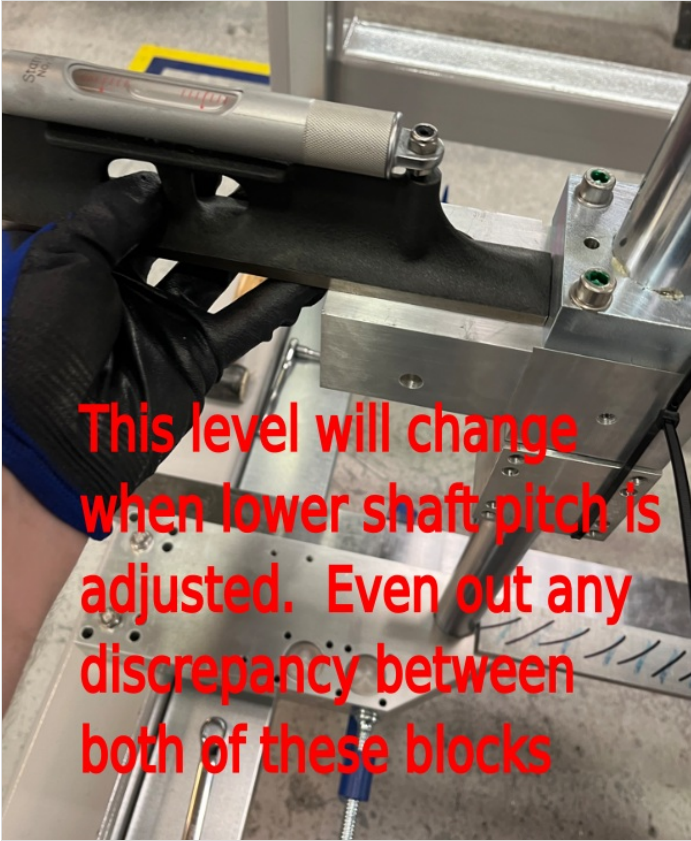
Step 12 - Check shaft pitching

1 Use Z shaft slip gauge to measure pitch of shafts at upper point shown . Measure gap using feeler gauges

2 Check shaft pitching at lower point shown , this must be set to replicate upper measurement . Adjust lower beam mounts to adjust this measurement

i ...Adjustment for lower shaft pitching will change previous set level on Z servo housing. The level must be equalised between the two blocks when adjusting the shaft pitch





This level will change when lower shaft pitch is adjusted. Even out any discrepancy between both of these blocks

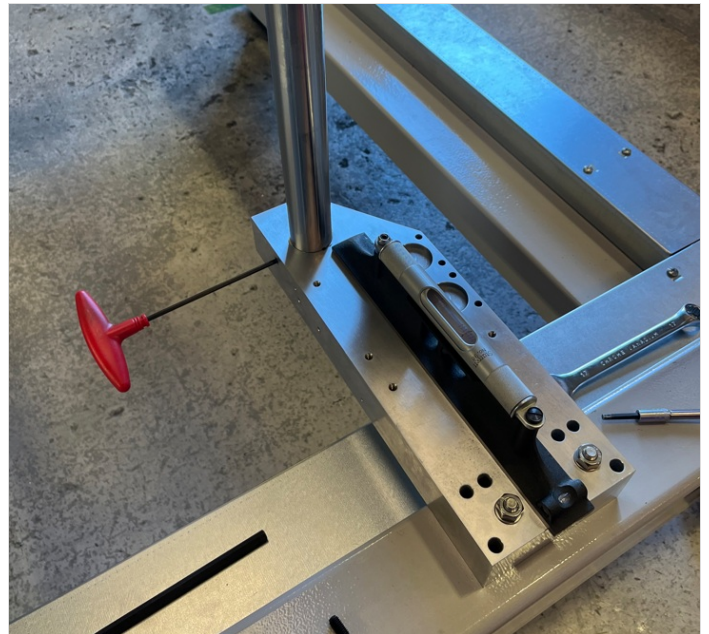
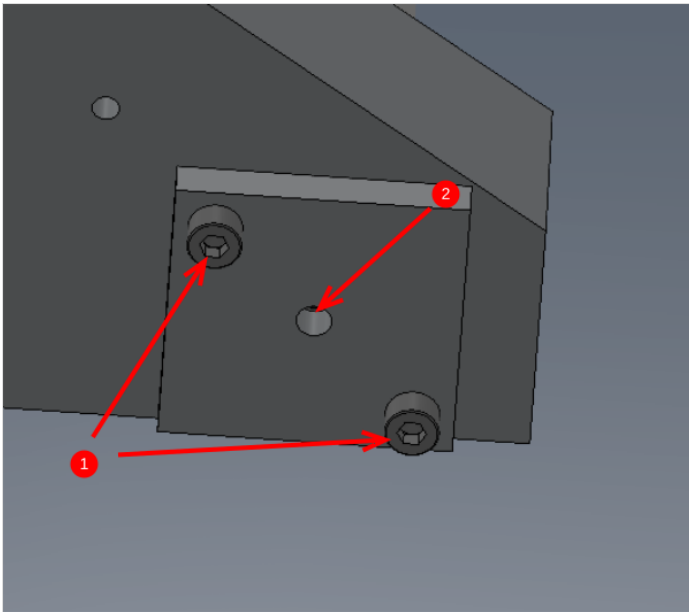
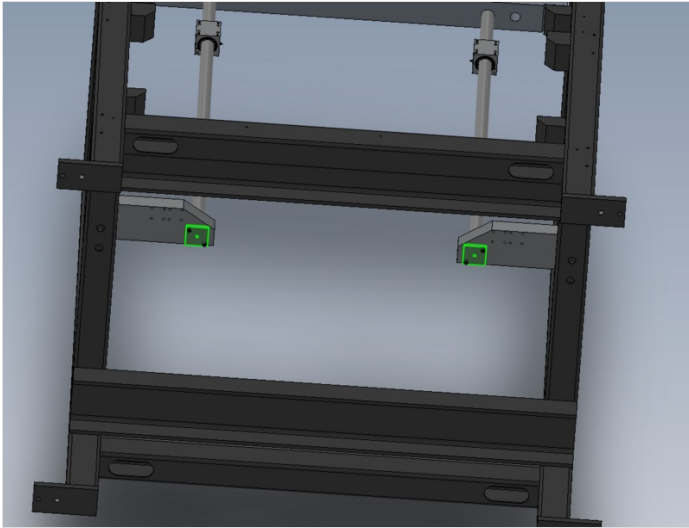
Step 13 - Attach bottom plate

Attach 2 off D0000095 bottom plate as shown

1 Use 2 off M8 x 30 socket caps with A form washers to fix each plate .

2 Use M8 x 70 Set bolt with standard M8 nut and A form washer in central hole

3 Tension M8 nut only when level is on top of plate above so no movement occurs

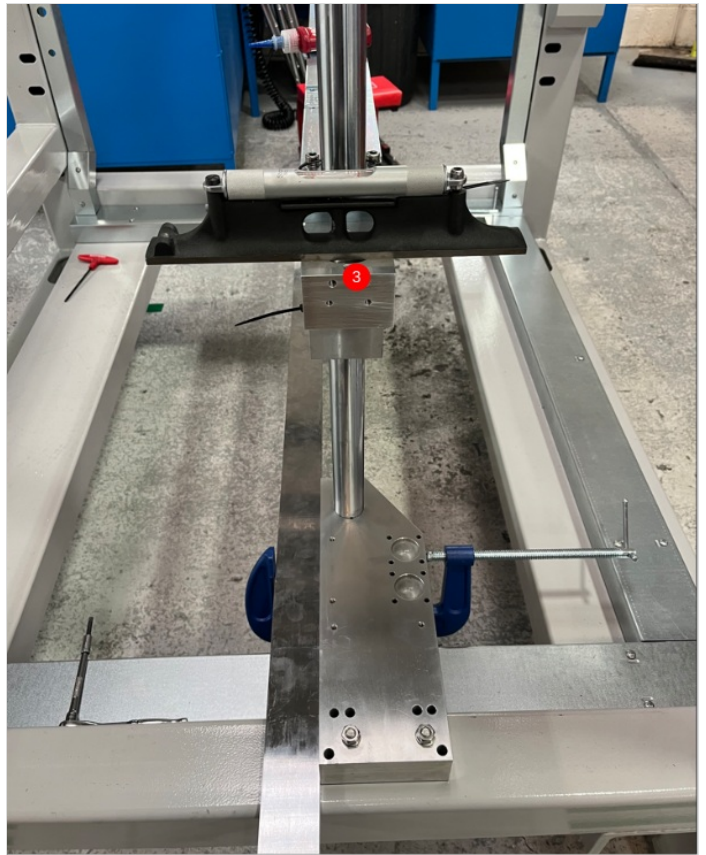
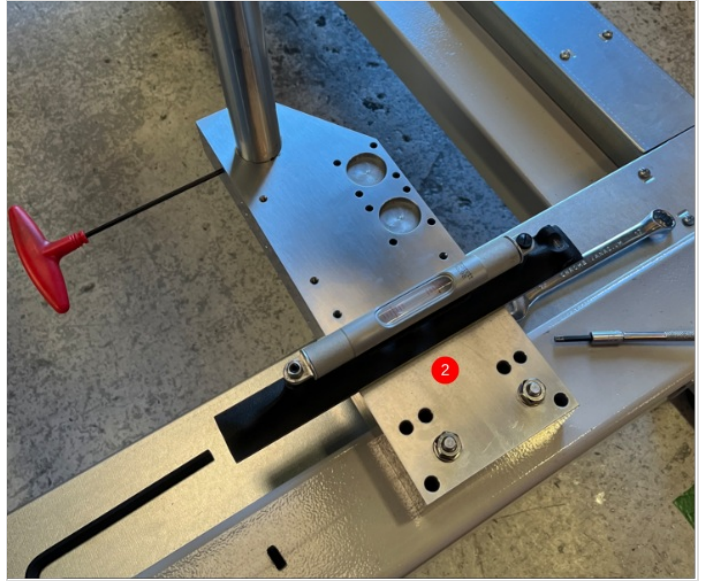
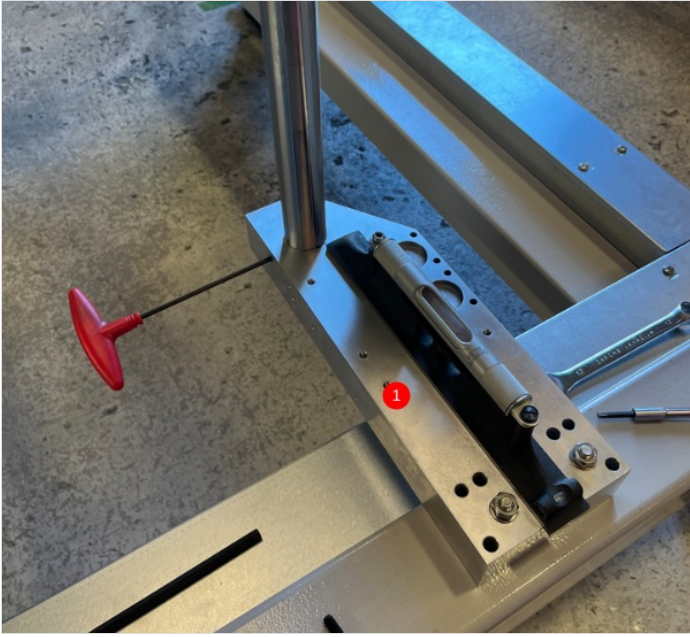


Step 14 - Quality check

Check the following points

- 1 Level Check
- 2 Level check
- 3 Level check
- 4 Level check
- 5 Alignment and Level check
- 6 Alignment check

Supervisor sign off required

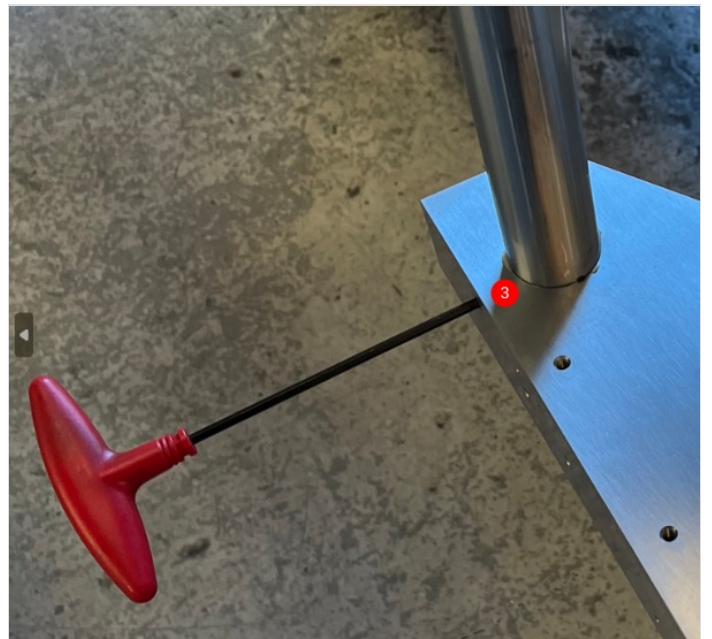
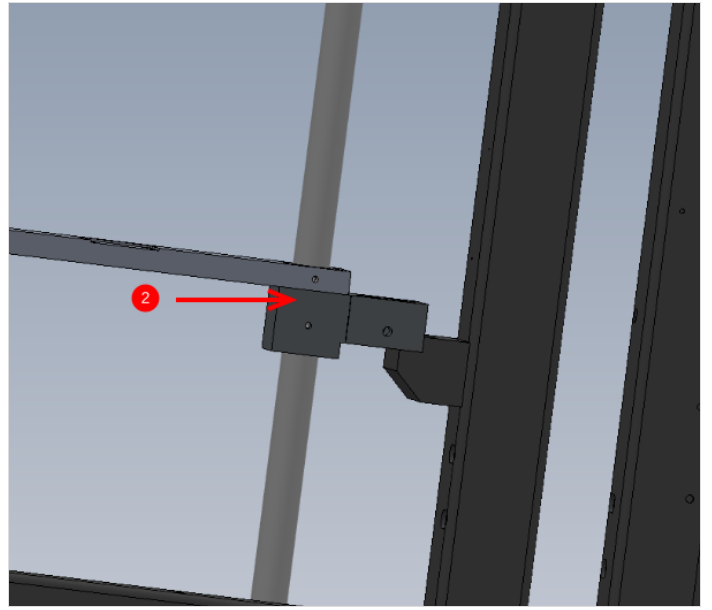
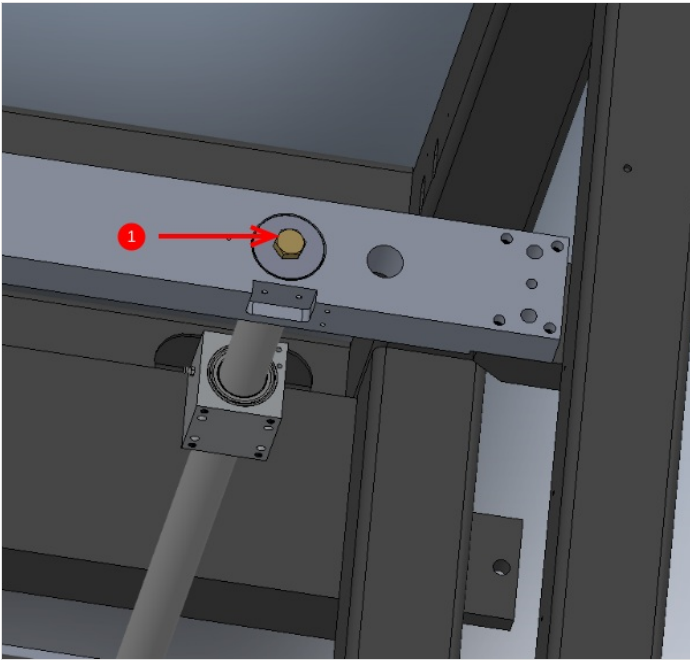


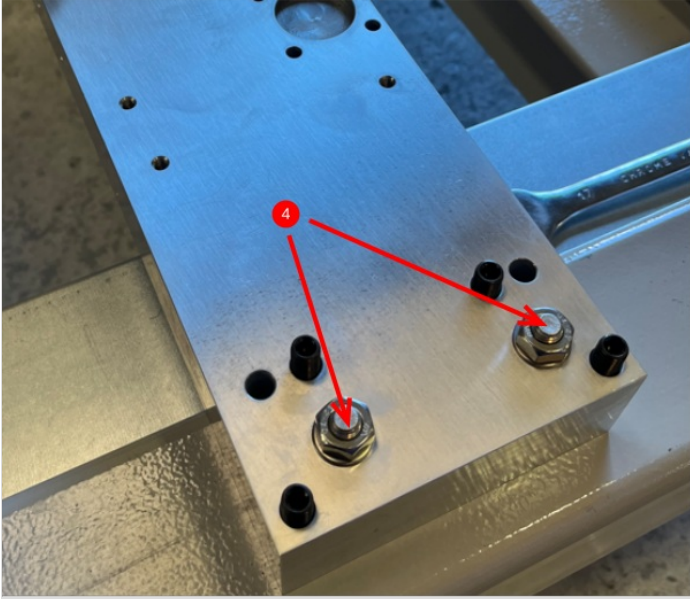


Step 15 - Quality check

Check the following

- 1 Z shaft M16 set bolts are glued and finalised
- 2 4 off Grubscrews are finalised
- 3 2 off grubscrews are finalised
- 4 M10 socket caps are finalised





Step 16 - continue to part 2 of dokit

R0002913E Install and Align Rotary head Subframe PART 2
