



# R0015028D ZX5 Hepco Beam Alignment Module C

Instructions for mounting and aligning hepco x axis beam

 Difficulty **Very Hard**

 Duration **13 hour(s)**

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Comments

## Introduction

## Tools Required

Engineers level  
Hepco flat spanner T0000491  
Hepco Box spanner T0000492  
Standard hex key set  
Incremental shim pack

## Parts Required

B0000046 Slide Base Bearing Block (Straight Grease Nipple) x 6  
B0000184 Journal Cap Seal 34 x 4  
B0000185 Double Row Long Stud Journal Eccentric x 2  
B0000186 Double Row Long Stud Journal Concentric x 2  
B0000234 Straight Grease Nipple M6 ST/ST x 6  
B0001006 Linear rail 25mm x 820mm x 6  
B0001102 Double edge spacer slide and beam 7600mm x 1  
D0015072 Carriage Plate x 1  
D0015492 Vertical Beam Adjustment Plate x 5  
D0015493 Lateral Beam Adjustment Plate x 5  
P0000200 Elbow Adaptor 6mm - M5 x 2  
B0000173 blanking cap x 90  
F0000331 M6 threaded plate x 120

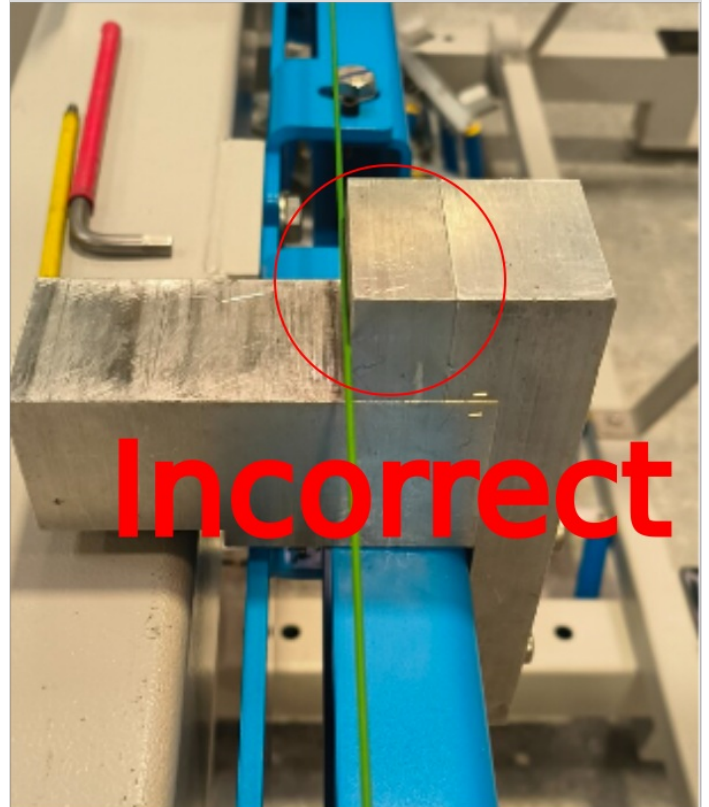
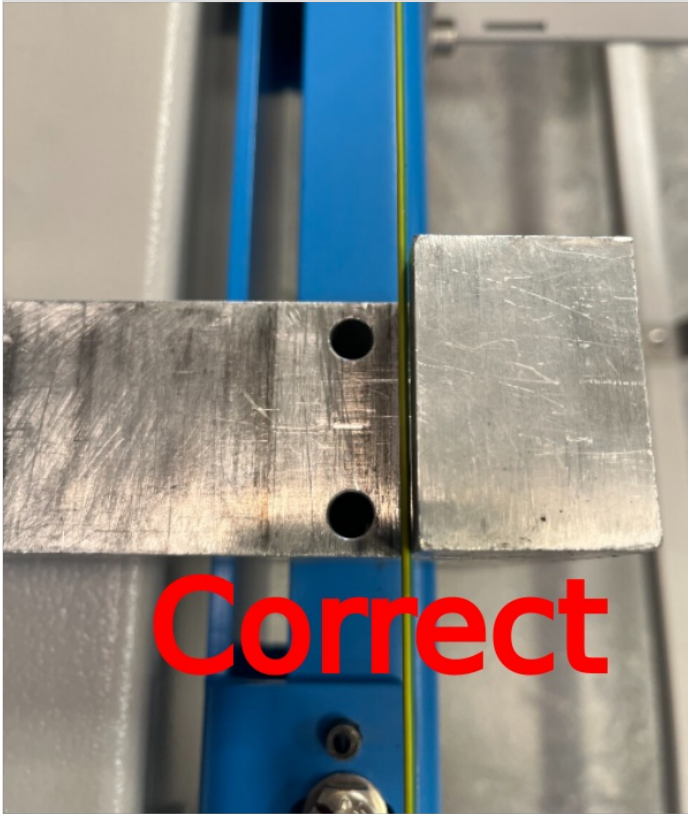
## Step 1 - Unless otherwise stated

Use Loctite 243 on all fasteners  
Use Loctite 570 on all threaded pneumatic connections  
Pen mark all bolts, fasteners and nuts once finalised



## Step 2 - Additional spacer

Ensure additional spacer is removed from jigs when using for alignment on module C



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## Step 3 - Please Note

Following step has changed to include the fitting and use of 6 setting jigs

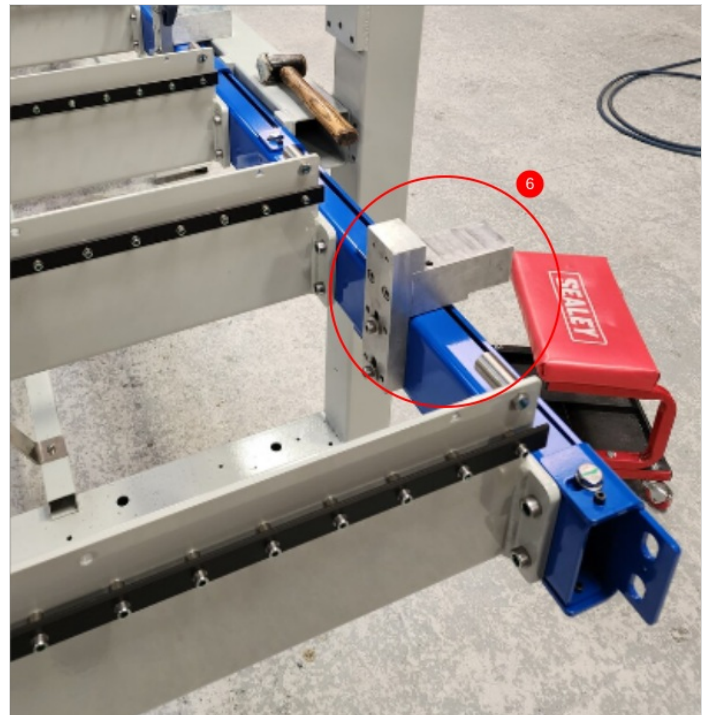
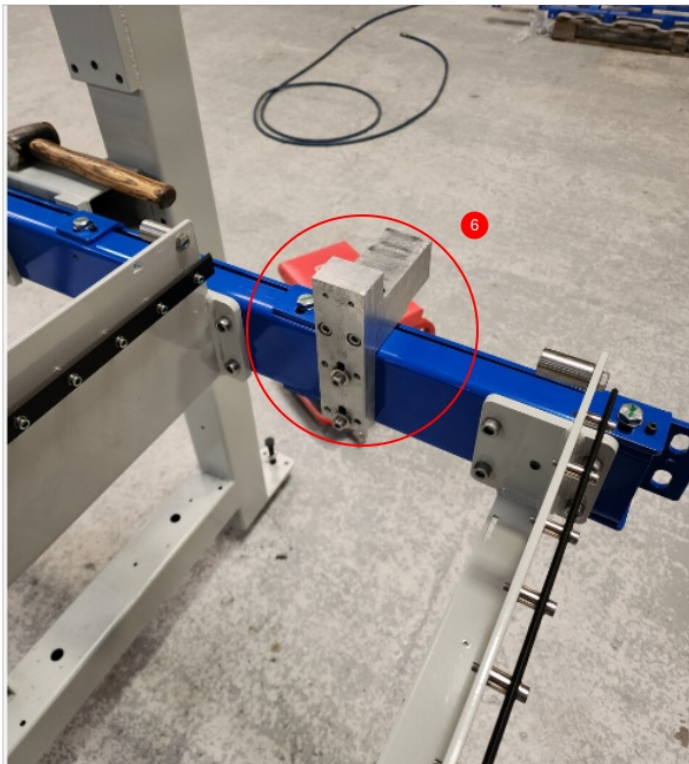
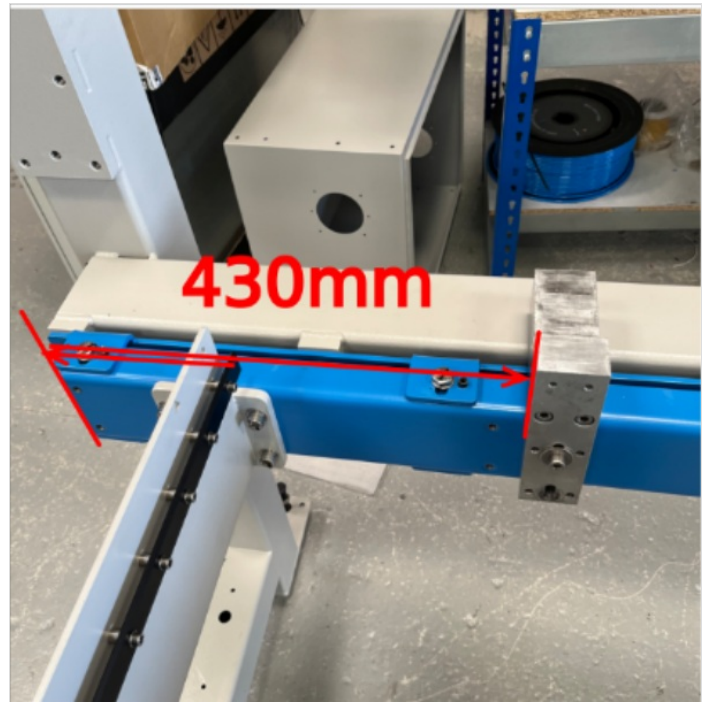
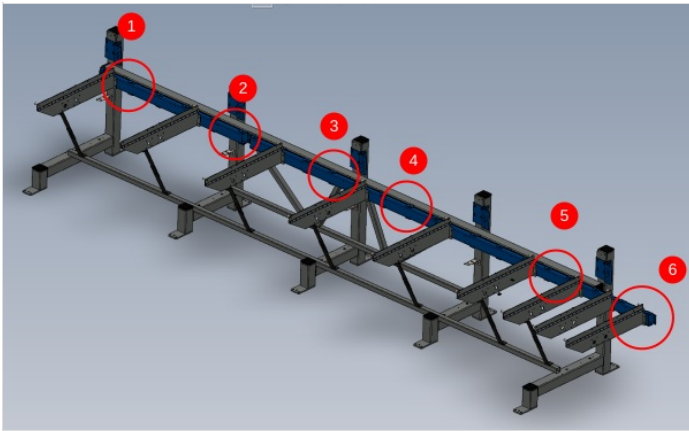


## Step 4 - Attach Setting jigs

Mount setting jigs to channel section in positions shown using M8 cap head bolts and heavy washers

Position one shown will require fixing points drilling to channel section . Drill M8 and position to measurement shown of 430mm using m8 x 40 socket caps and heavy m8 washers

Ecr raised to add holes to D0015037b 18/10/23

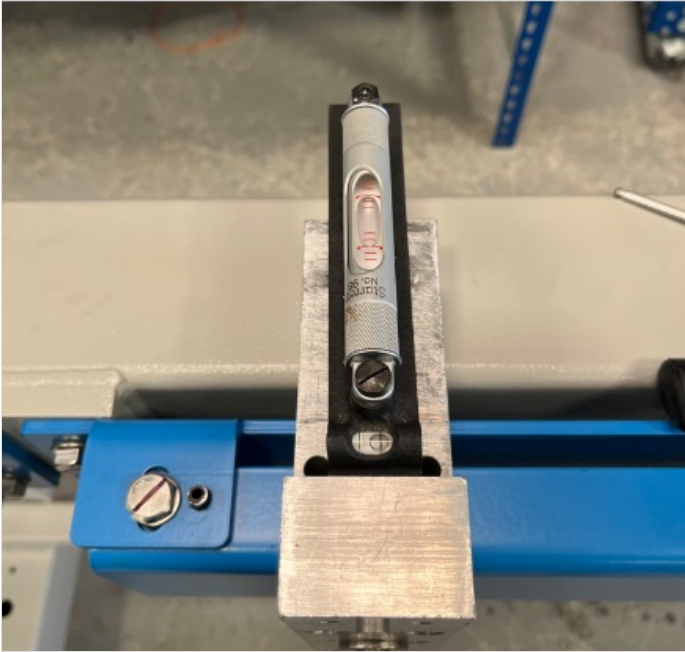


## Step 5 - Level Setting Jigs

**i** ...The correct setting of these jigs is vital to correct installation of the hepco drive system. Accurate positioning of these will enable quality checks to be performed on the supplied hepco rail

Use an engineers level to individually adjust each jig to be level on both axis

**!** ...Always ensure when levelling that the jig remains in contact with the blue support bar on at least one point . The distance between the top face and the blue mounting section is vital to the correct set up



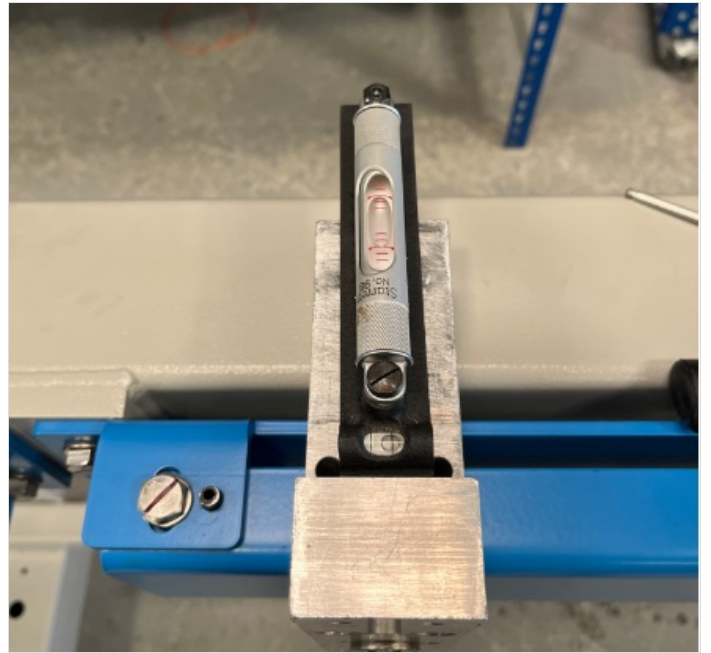
## Step 6 - Level x axis between jigs

Using a 2 meter straight edge , the jigs should be levelled to each other as shown.

Identify which Jig is the lowest point by using the straight edge and level . Adjust the lower height jigs to match the highest point one. This is to ensure that the height is maintained as much as possible between blue mounting bar and jig top face

When a jig is adjusted for height, i will need rechecking to see if the other previous levelled plains have moved. If so, re adjust to bring jig level in all axis



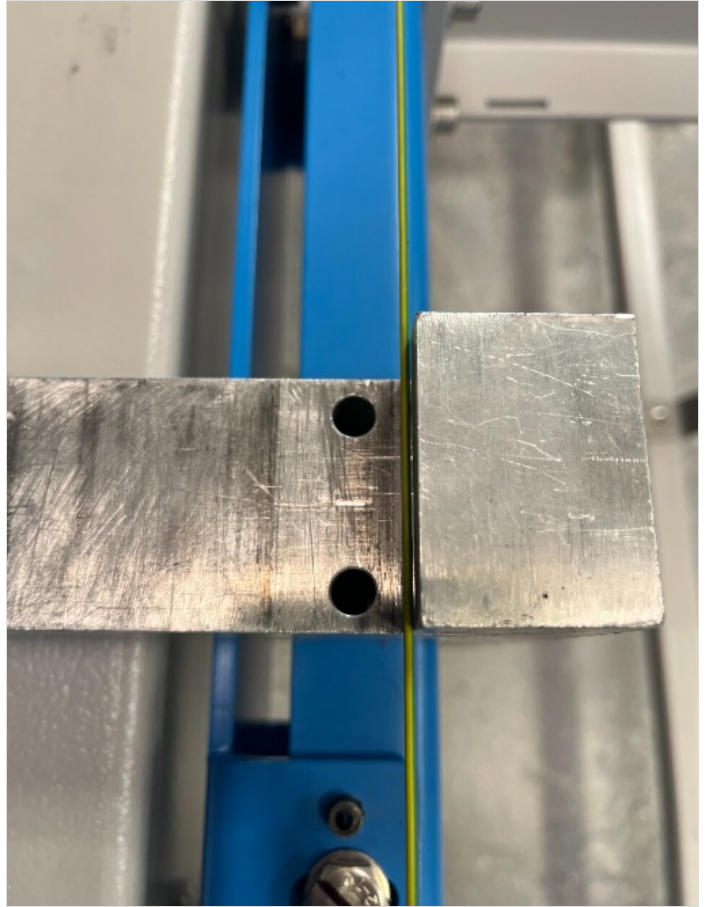


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## Step 7 - Wire line for setting straightness

A wire line should be used for setting the straightness of the jigs along the x axis

Use dokit Alignment guide using wire line for correct process to set up







## Step 8 - Quality Check

Qc Double check required at this point from Supervisor that all alignment is correct.



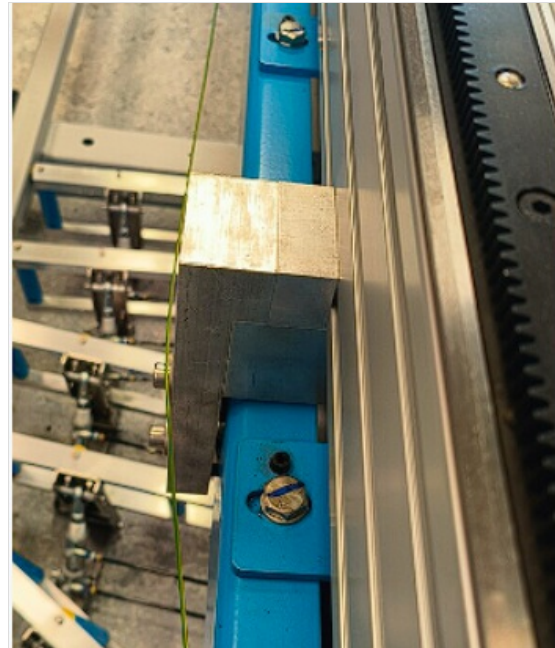
## Step 9 - Position Hepco double edge slide

B0001102 can now be assembled on jigs .

These beams are paired so check you have been issued a set correctly

Pairs can be identified as follows

- 1 and 1
- 2 and 2
- A and A
- B and B

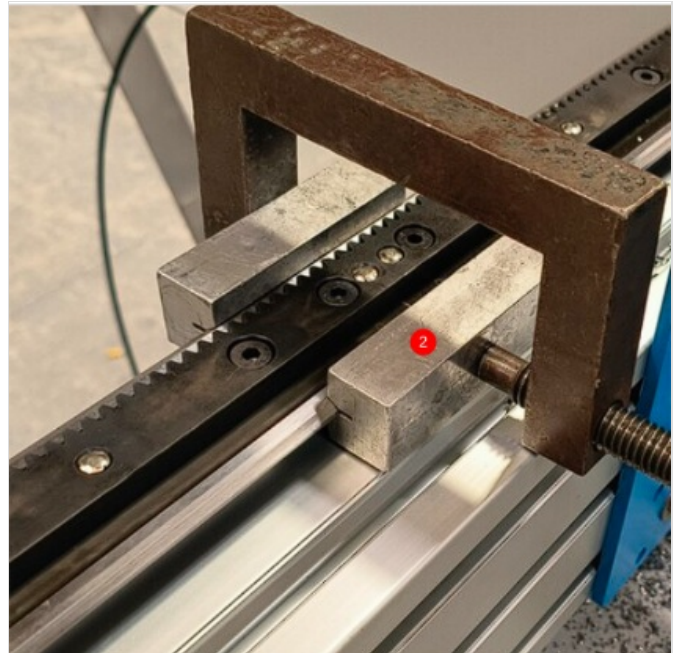
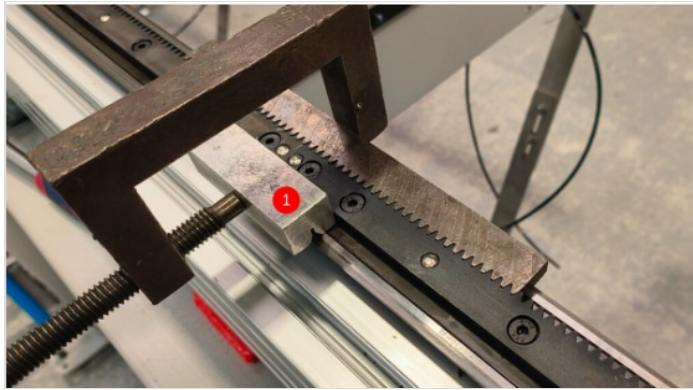
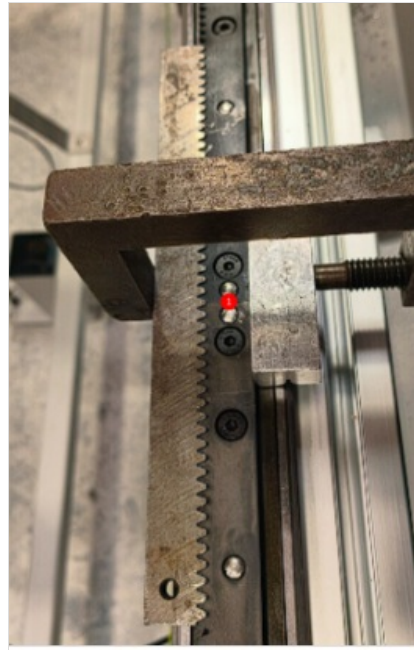
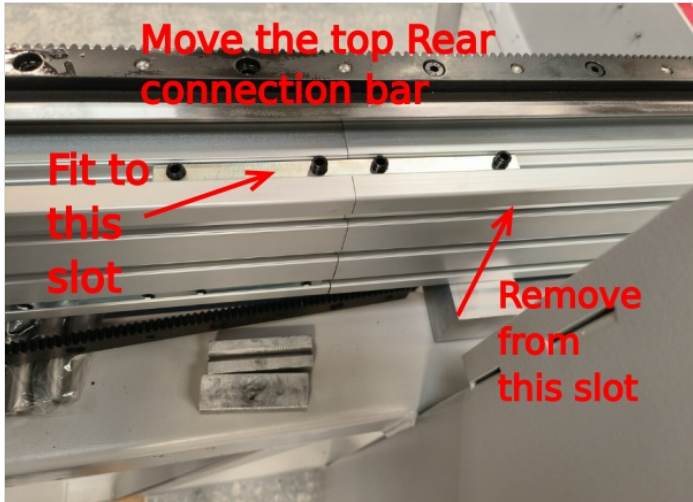


## Step 10 - Mechanically join Hepco beam

Do not fit dowels at this point on hepco join. Only tension the m6 low head bolts to hold set position when using jigs

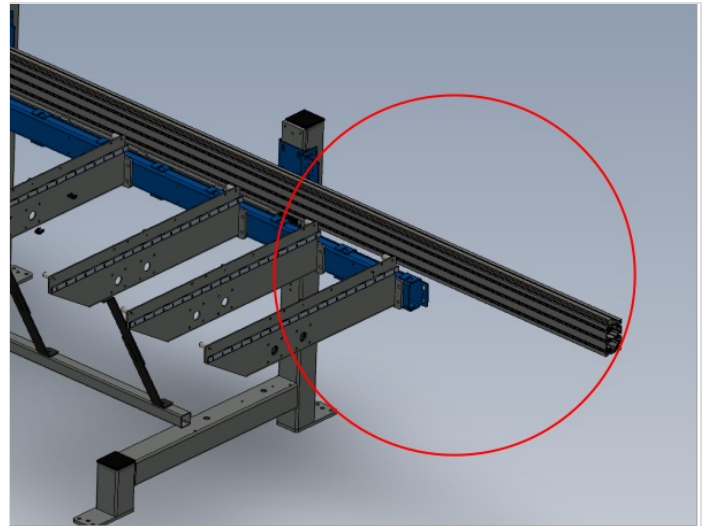
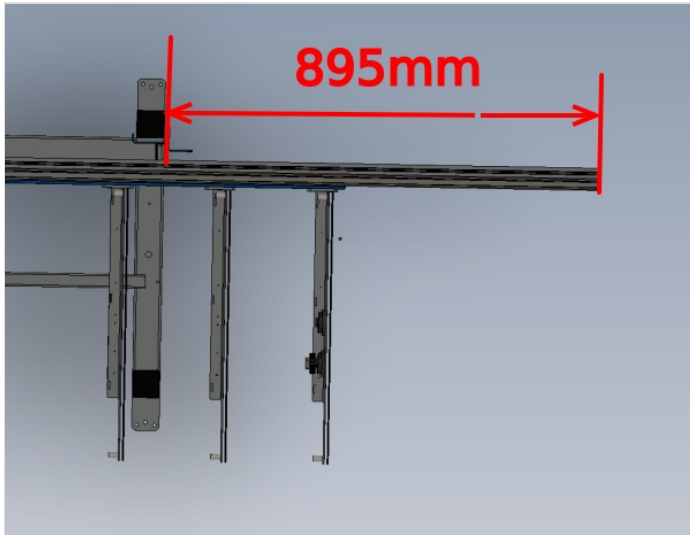
**⚠** ...Before Joining hepco sections, 1 connection bar must be moved to the top face to allow fitment of linear rails later on . See photo for clarification of position to move to

- 1 Use jig shown to ensure correct pitching of 2 sections of drive rail when coupled together
- 2 Use v blocks to ensure alignment of V's on hepco rail are correct when mating the two parts
- 3 Position and tighten the joining bars between the two sections



## Step 11 - Set beam position

Hepco slide rail should be positioned as drawing



## Step 12 - Assemble carriage

D0015072 Carriage Plate x 1

B0000185 Double Row Long Stud Journal Eccentric x 2

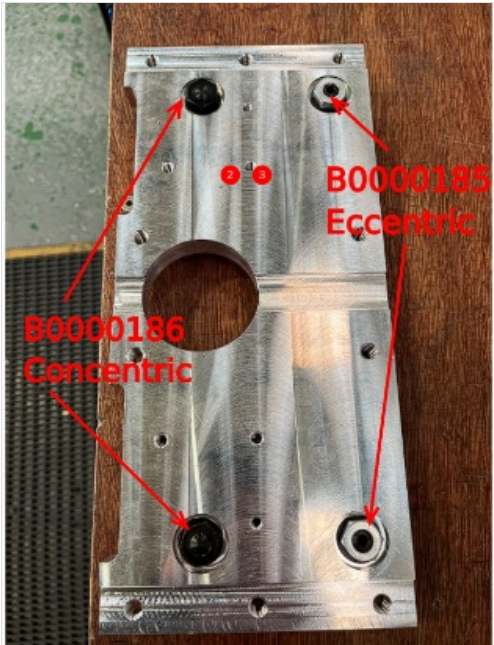
B0000186 Double Row Long Stud Journal Concentric x 2

1 Remove nuts and washers from journals

2 Insert into carriage plate in positions shown

3 Add washer and nut to top face with no adhesive





## Step 13 - Set journals

Fit assembled carriage plate to hepcoslide, orientated as shown

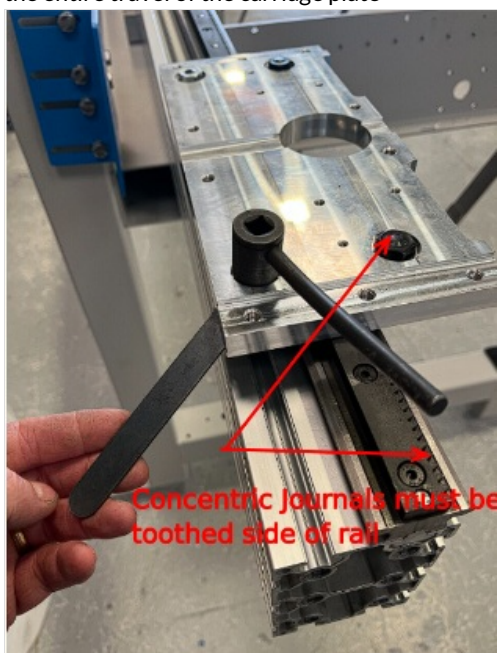
Set Tension on eccentric journals using hepcos flat spanner and box wrench

Correct tension is

**i** ...When the carriage is pushed by hand, it must be just possible to skid the journal on the v rail when held. Journal must have enough contact to be turned when the carriage plate is pushed.

**!** ...Caution must be used when tension is applied when setting. Too much can cause damage to journal and rail. Gradually increase tension checking at each point to confirm.

The journal setting must be checked at several points across the hepcos rail. Journals should be adjusted to give the best contact overall along the entire travel of the carriage plate.



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## Step 14 - Fit wipers and finalise

Remove carriage plate

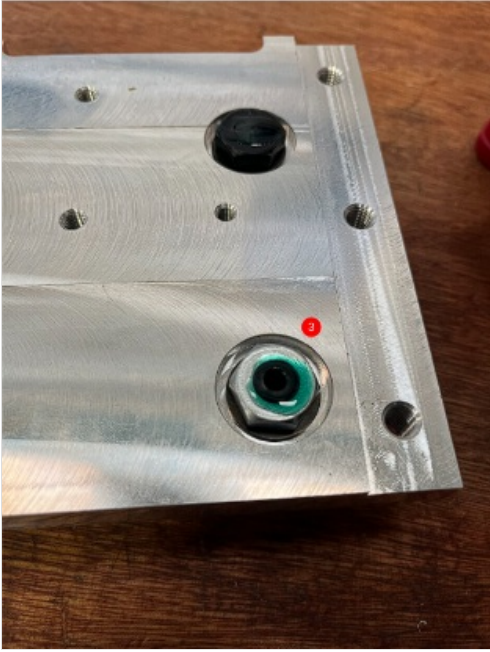
1 Fit B0000184 x 4 cap seals with adjustable inserts (supplied with cap) Adjust so journal is not in contact with cap seal but close as possible

Use 2 off M4 x 20 socket caps and M4 A Form washers per cap seal to fix

2 Dispose of fixed variant

3 Add Loctite 290 to finalised journal nuts

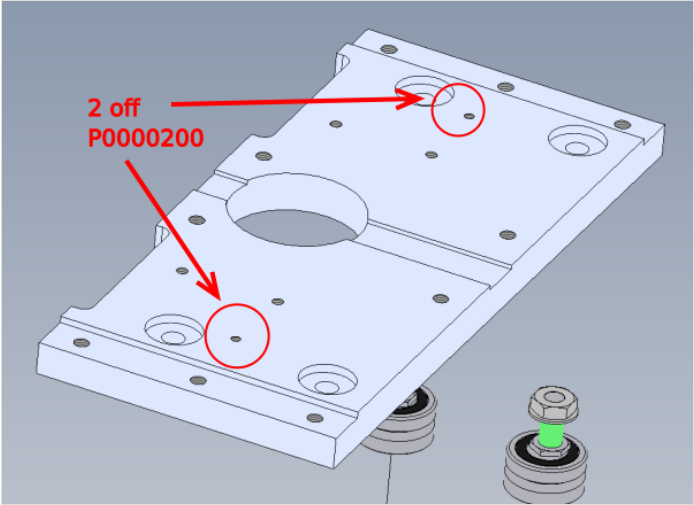




### Step 15 - Refit carriage plate

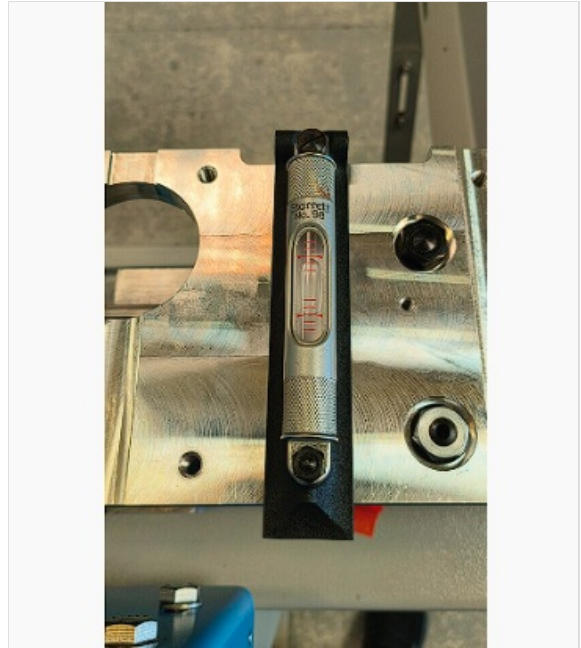
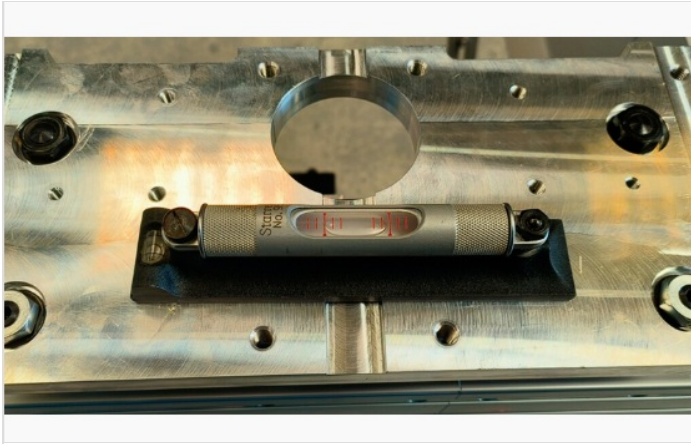
Refit carriage plate to hepco rail and check travel along the entire length to confirm correct position of cap seals. If it has become hard to push cap seals are not positioned correctly

Fit 200 P0000200 m5 6mm elbows to carriage plate at indicated points



## Step 16 - Check level of carriage plate

Inspect Level of hepco beam as shown . These levels should be checked at every 300mm along the entire length of the beam. This will give an indication of what is required for adjustment .



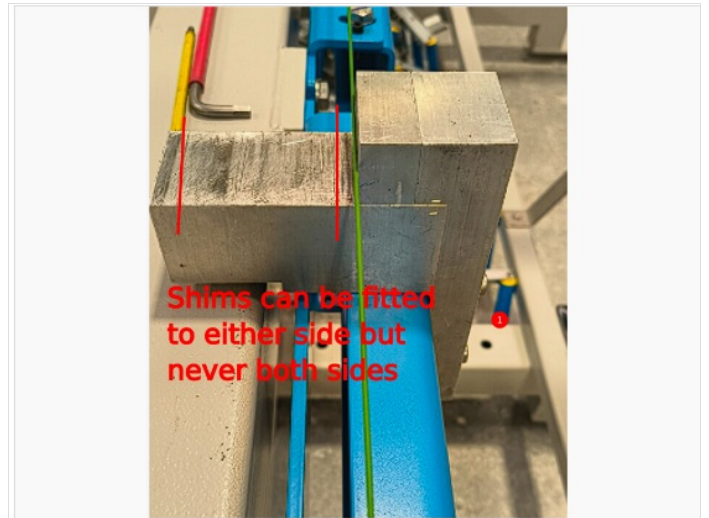


## Step 17 - 1st stage levelling

1 The first stage of levelling any discrepancy from the rail is to add bias shims to the setting jigs that the hepcos rails is sitting on . This will only give slight adjustment in one direction . Image shows where shims can be added to adjust level indicated. Never add shims to both sides (hepcos beam is removed for clarity of shim location )

2 Levelling in this direction is not likely, if setting jigs are set up correctly then this level will be correct

If this process corrects any discrepancies on level move to mounting bracket stage . If more adjustment is required continue to step 17

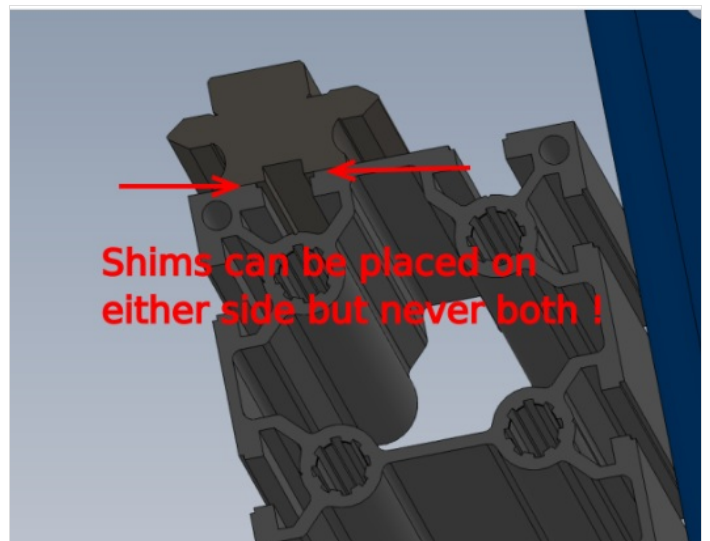


## Step 18 - 2nd stage levelling if required

In extreme cases additional adjustment may be required for correct positioning

Shims can be placed between the main hepcos slide and extruded mounting section. This step should only be undertaken with supervisor authorisation

**⚠** ...If shimming is required at these points ,care must be taken to add shims incrementally on size to avoid the straightness of the rail being compromised



## Step 19 - Laser checks

Once the hepco rail has been positioned and levelled correctly, a laser check must be performed to ensure straightness of hepco rail (photos required)

## Step 20 - Finalise hepco join

Add final dowels ( supplied with hepco beam ) to join . Ensure when fitted that dowels do not change the setting of the v rails and tooth pitching

## Step 21 - Quality Check

Sign off is required at this point to double check and ensure quality .  
Supervisor approval required



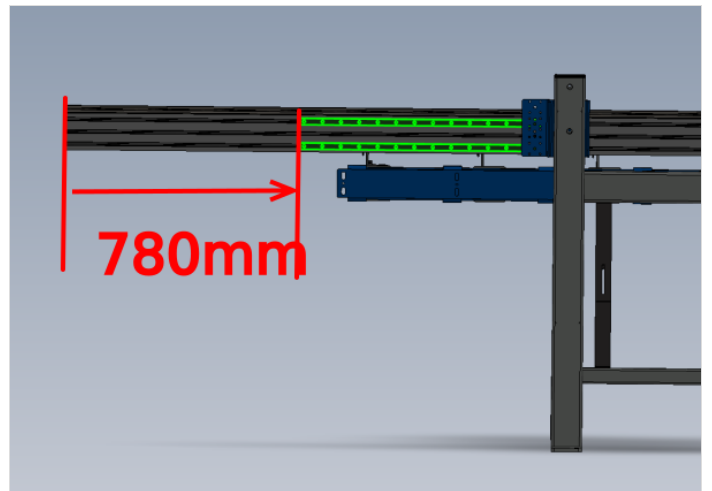
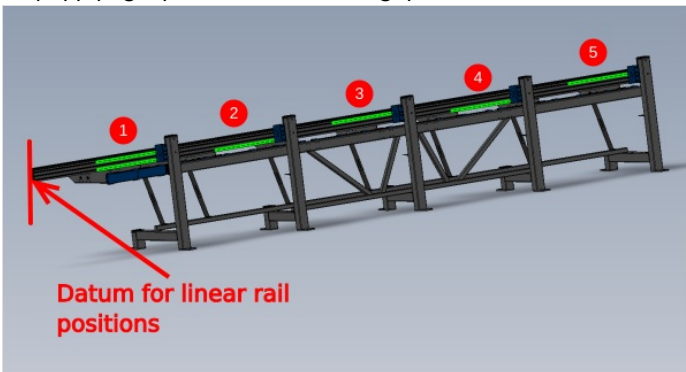
## Step 22 - Fit linear rails

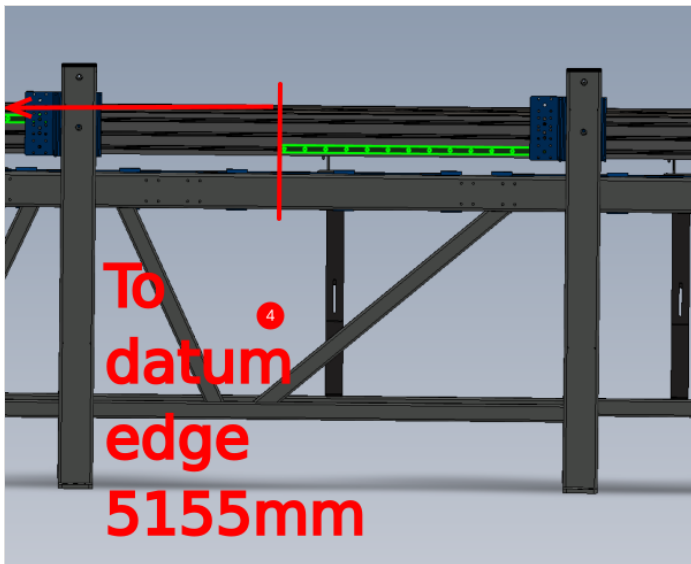
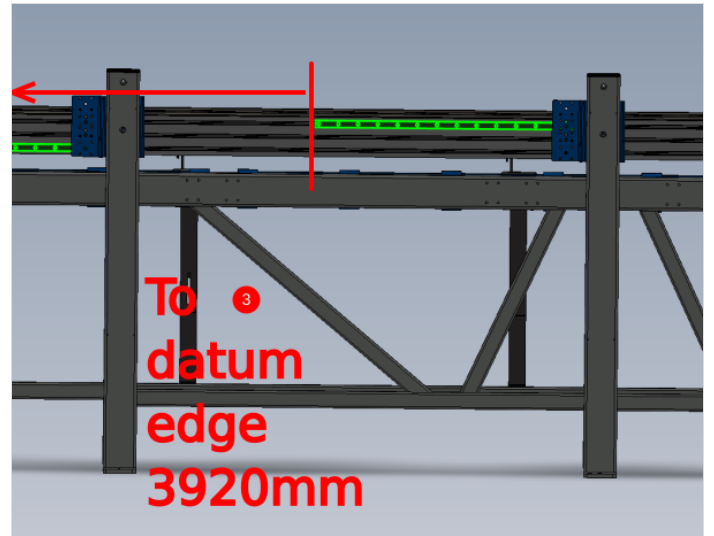
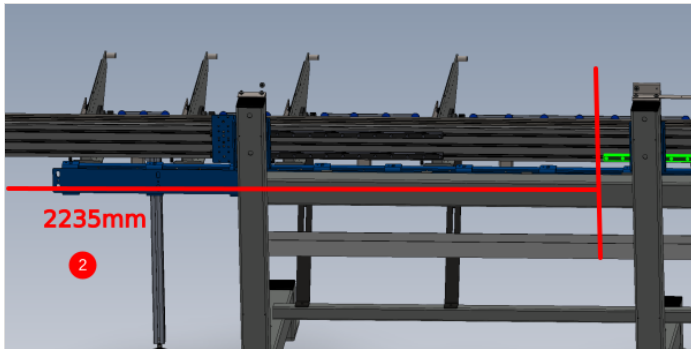
Fit 6 off B0001006 linear rails to hepco beam as shown

Use data for position of each rail

Fix with F0000331 m6 threaded plates and m6 x 20 socket caps with no adhesive ( holding stock of F0000331 plates is available from stores via request )

only apply light pressure to 2 off fixings per rail





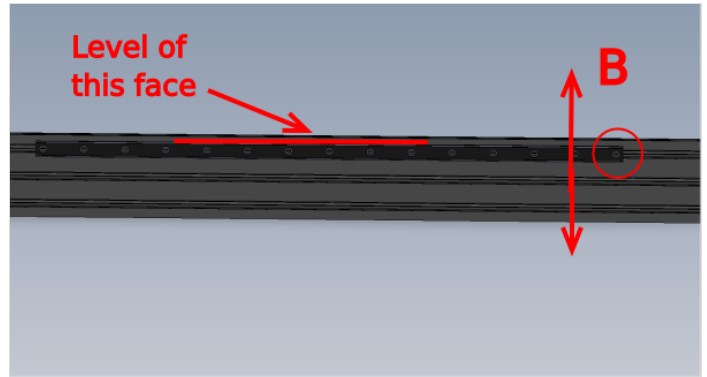
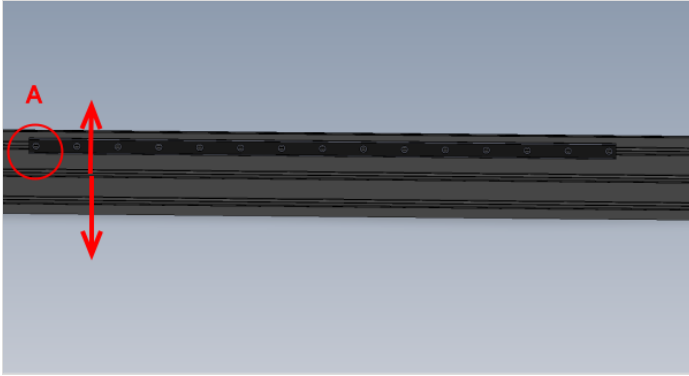
## Step 23 - Level linear rails

1 Set hole position A to middle of movement in direction shown

2 Use engineers level on indicated face and adjust position B up or down to set rail level

3 Remove central fasteners one by one, applying adhesive and adding final tension. Then remove both end fasteners ,apply adhesive and apply final tension

Repeat for all remaining 5 linear rails



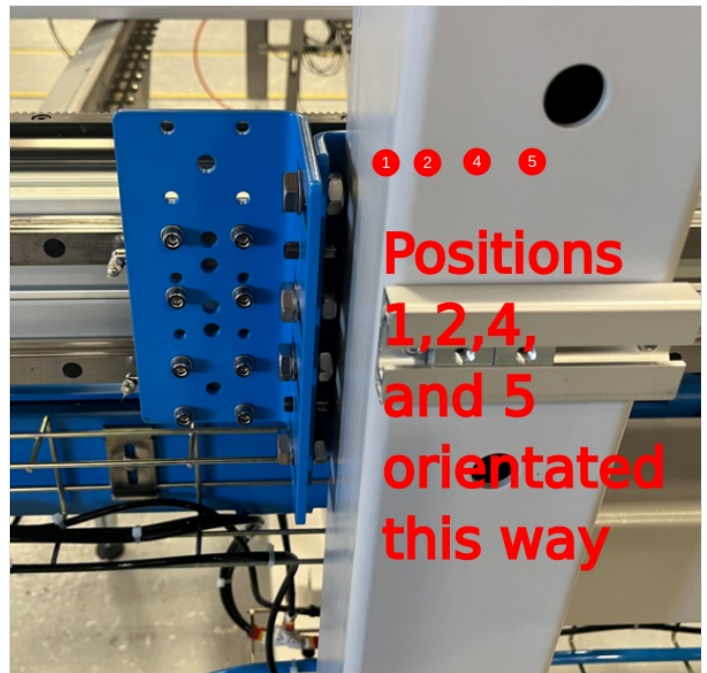
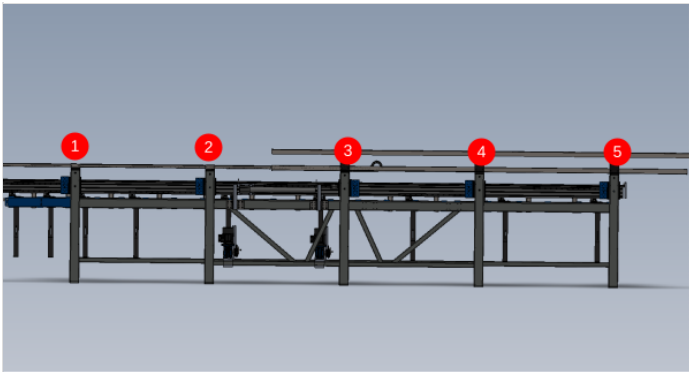
## Step 24 - Attach mounting brackets

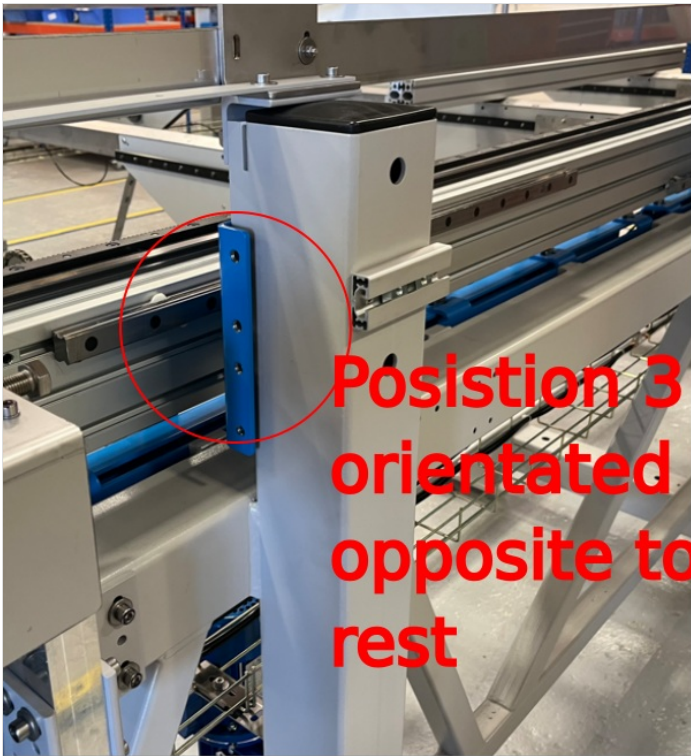
Attach D0015492 Vertical Beam Adjustment Plate x 5 and D0015493 Lateral Beam Adjustment Plate x 5 to positions shown

Use M10 x 20 and M10 x 30 set bolts, M10 A form washers And nuts on joining plates

Pay attention to orientation of position 3

only apply light pressure to fasteners to hold in place brackets





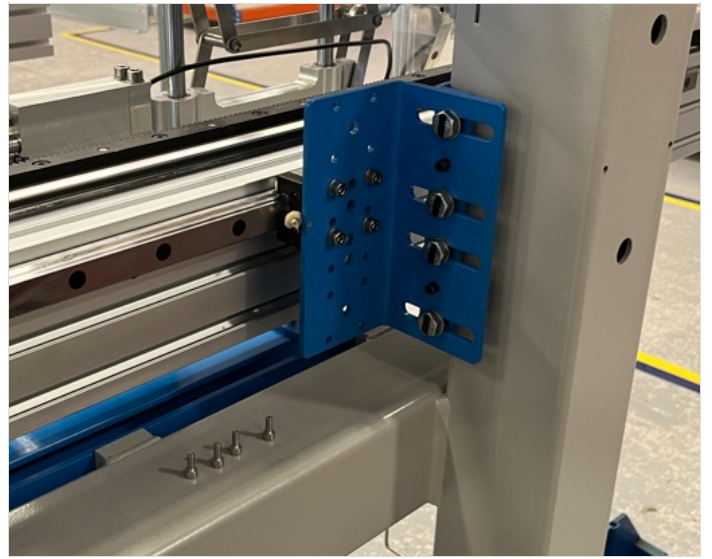
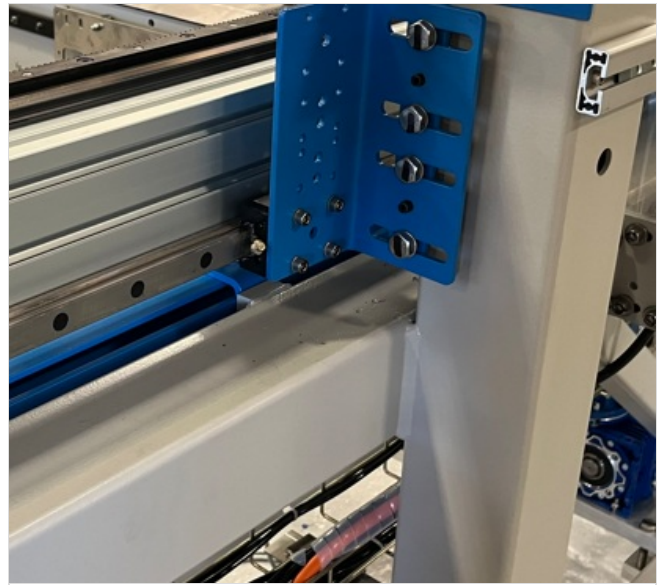
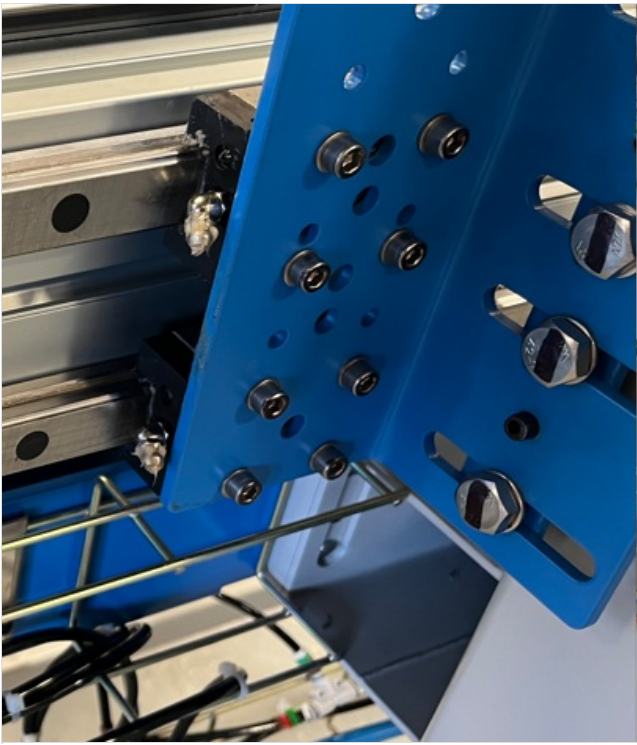
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## Step 25 - Fit bearings and finalise mounts

Attach B0000046 bearings 6 off to linear rails orientated as shown

Use M6 x 16 socket caps and M6 A form washers with adhesive and lightly fasten as shown , ensure mounting brackets are free to move to align to the bearing face .

Once all faces are in position, tighten all fasteners with adhesive and finalise



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## Step 26 - Quality check

Quality check required from supervisor before next step commences

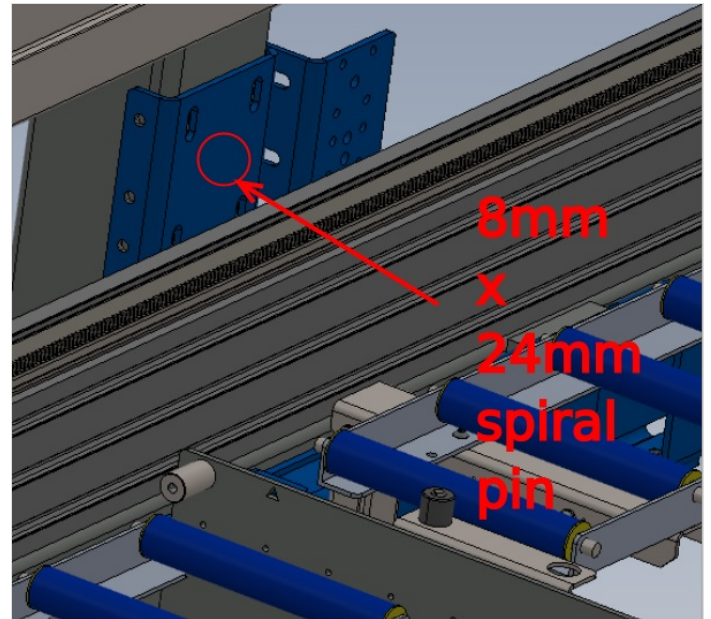
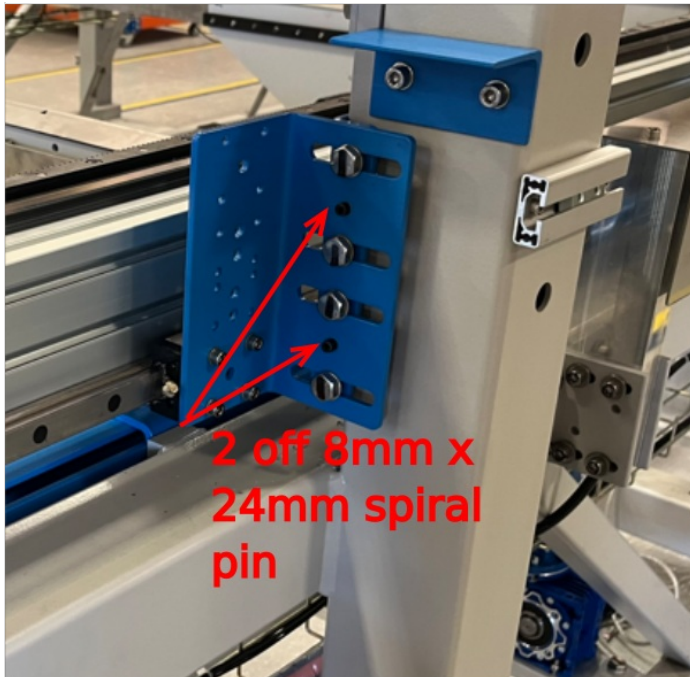


## Step 27 - Dowel in position

Brackets require fixing with 8mm x 24mm roll pins

Drill the indicated faces to secure alignment

All 5 bracket sets required pinning



## Step 28 - Quality

It is vital on the following step that the following is observed.

When removing setting jigs, the hepco beam should not drop when jig is removed

Report any movement from hepco beam when removing jigs



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## Step 29 - Remove setting jigs . grease bearings and fit blanking plugs

Setting jigs can now be removed that are supporting hepco rail in 5 positions

Fit B0000173 blanking plugs to linear rails. Ensure plugs are fitted flush to rail face, not below

Grease all linear bearings on hepco rail

