


# R0015035 Bench Assemble V Notch Components

Instructions for bench assembly of v notch components

 Difficulty **Medium**

 Duration **10 hour(s)**

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Comments

## Introduction

### Tools Required

Standard hex key set

Standard spanner set

Standard HSS drill set  
Vernier 150mm  
2 meter straight edge  
40mm shaft pin jigs  
Feeler gauge set  
Internal circlip pliers  
External circlip pliers  
8mm hand reamer

### **Parts Required**

B0000041 5 x 5 x 19 key x 1  
B0000109 Linear Bearing (IKO) 40 D x 62 D x 80 L x 8  
B0000427 Leadscrew Ø25x10 435 Long x 1  
B0001047 Fixed Bearing Support Block Ø17 x 1  
B0001120 Circlip 62mm External x 16  
B0001127 ROTEX GS Coupling Ø14/Ø15 Bore & Key (98 Shore Spider) x 1  
B0001134 Ball Bearing 15ID 35OD 11 Long x 10  
C0001122K Servo Motor: Beckhoff AM8032-1E10 (Keyed) x 1  
D0010132 SZ Drive Mount Plate x 1  
D0010563 Y Axis Servo Mount x 1  
D0015147 V Notch Upper Support Bar x 1  
D0015148 V Notch Lower Support Bar x 1  
D0015149 VZ Shaft End Plate x 4  
D0015152 V-Notch Upper Moving Bar x 1  
D0015153 V-Notch Rear Moving Bar x 1  
D0015154 V-Notch Front Moving Barx1  
D0015157 Saw Motor Bar x 4  
D0015158 Shaft 40mm: 190mm ZX V Notch Saw Motor Slide x 8  
D0015159B Saw Motor Adjustment Screwx 4  
D0015160 Saw Motor Block x 4  
D0015164 VY Leadscrew Block x 1  
D0015166 VY Motor Mounting Plate x1  
D0015258 Upper Link Mount 1 x 1  
D0015259 Upper Link Mount 2 x 1  
D0015260 Upper Link x 2  
D0015261 Lower Link x 2  
D0015262 Lower Link Mount x 2  
D0015263 Mid Link Shaft x 2  
D0015264 Lower Link Shaft x 2  
M0001093 Shaft Clamping Element (Ø15-20 shafts) x 16

## Step 1 - Unless otherwise stated

Use Loctite 243 on all fasteners

Use Loctite 572 on all threaded pneumatic connection

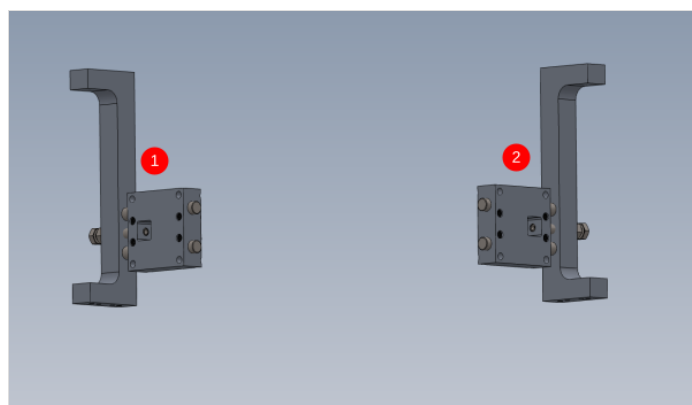
Pen mark all fasteners to show finalised



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## Step 2 - Saw motor bar assemblies

2 off No. 1 and 2 off No.2 required assembling



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## Step 3 - Prepare Adjustment bolts

4 off D0015159B Saw Motor Adjustment Screw require M8 x 70 set bolts cutting to suit M8 thread depth on adjuster bolts

Adjust each bolt individually as discrepancies in thread depth are possible



## Step 4 - Check M16 thread and add M8 set bolt

1 Fit M16 x 1.5 nut to each screw . Ensure nut winds fully to face of bolt

2 Fit M8 x 70 set bolt to each bolt. Treat the M8 and M16 adjuster bolt as pairs from this point and do not mix up. Wind the M8 set fully into the adjuster bolt and tighten

3 Measure the gap indicated , and minus 3mm. This will give you the exact amount that needs removing from the M8 bolt

4 Remove M8 from adjuster bolt, and cut exact amount calculated off the end of the M8 bolt . Dress end

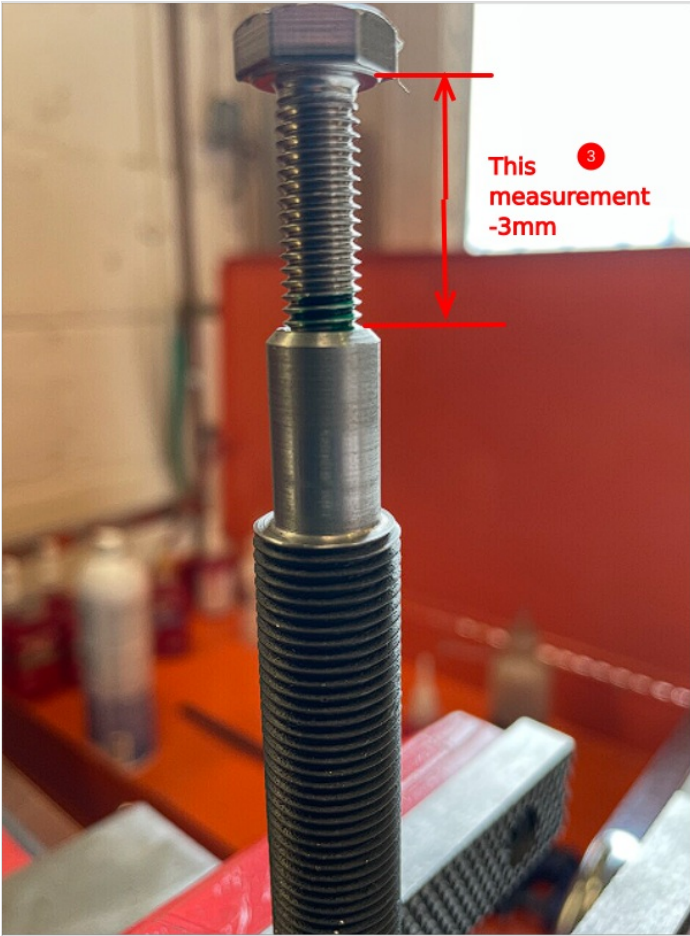
5 Add M8 penny washer to cut M8 bolt , refit to adjuster bolt. Tighten fully.

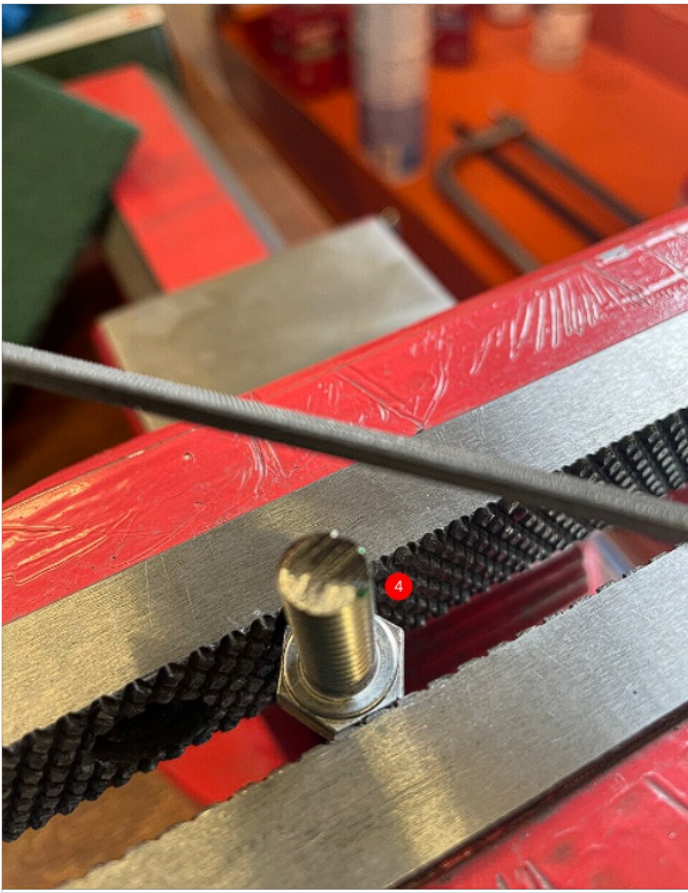
6 M8 Set bolt should fully tighten and leave a gap big enough for penny washer to float around

Repeat for remaining 3 adjuster bolts











## Step 5 - M0001093 Shaft Clamping Element (Ø15-20 shafts)

M0001093 Shaft Clamping Element require the issued M6 x 35 cap head to be swapped for a M6 x 30 socket cap.

Swap bolts in all 16, paying attention to correct re assembly



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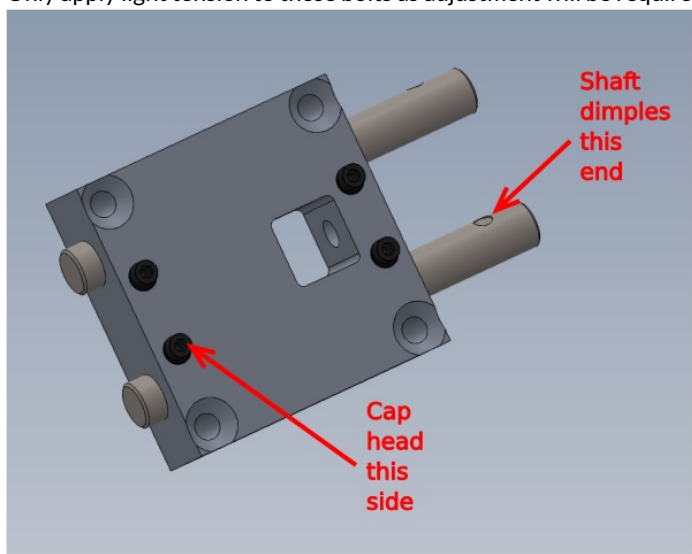
## Step 6 - Assemble motor mounts

4 off

Fit 2 off D0015158 Shaft 40mm: 190mm ZX V Notch Saw Motor Slide into D0015160 Saw Motor Block with 4 off M0001093 Shaft Clamping Element

Ensure flats of M0001093 Shaft Clamping Element are aligned correctly to allow shaft to pass through

Only apply light tension to these bolts as adjustment will be required later on







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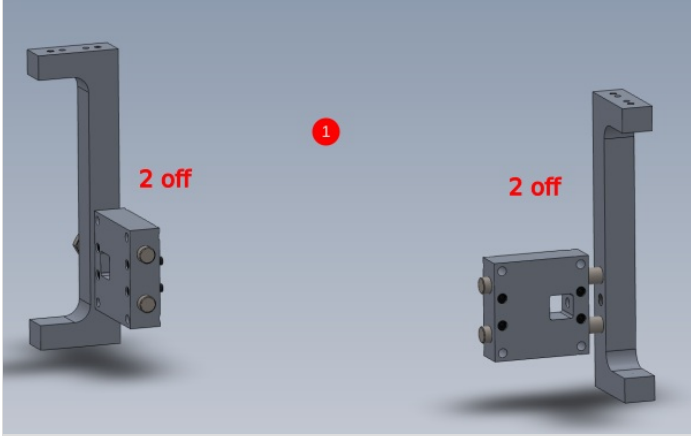
## Step 7 - Fit to Saw motor bar

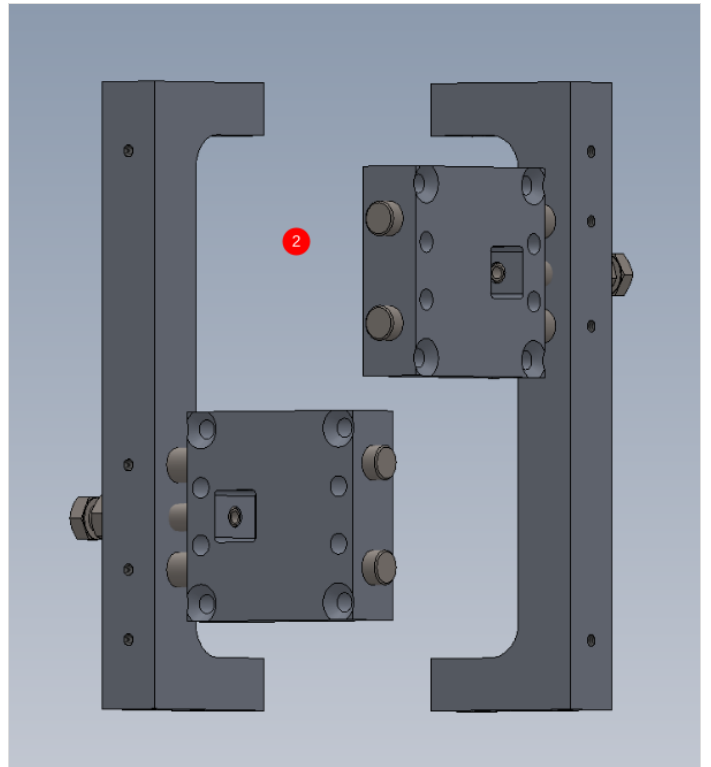
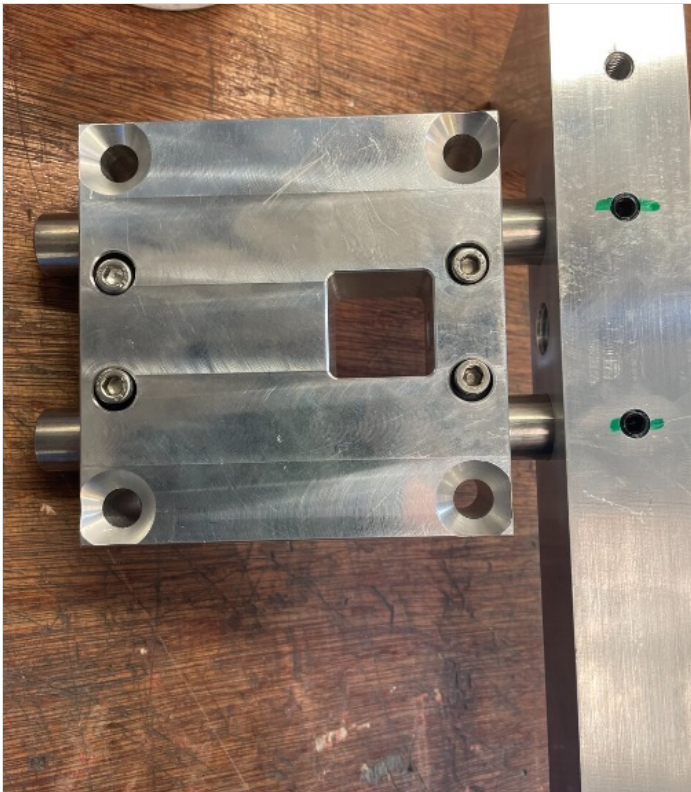
1 Fit assemblies as shown

Secure shafts with M8 x 12 KCP grub screws

2 Add previously assembled M16 adjusted bolts . Remove m8 and washer , apply copper slip to thread and machined shank of bolt and wind into assembly .

3 Apply loctite 270 to m8 bolt and refit and thoroughly tighten Make 2 off each hand







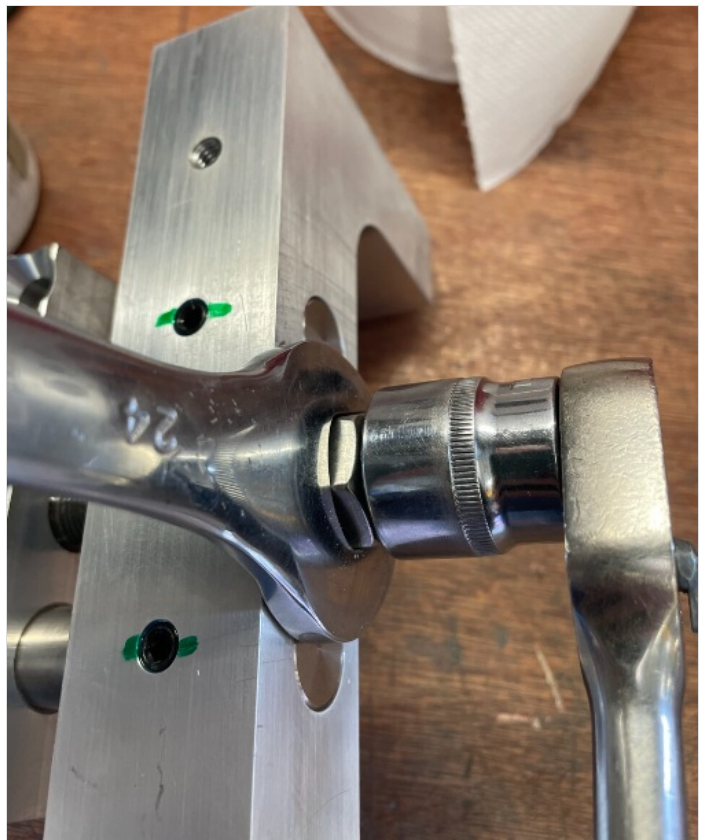
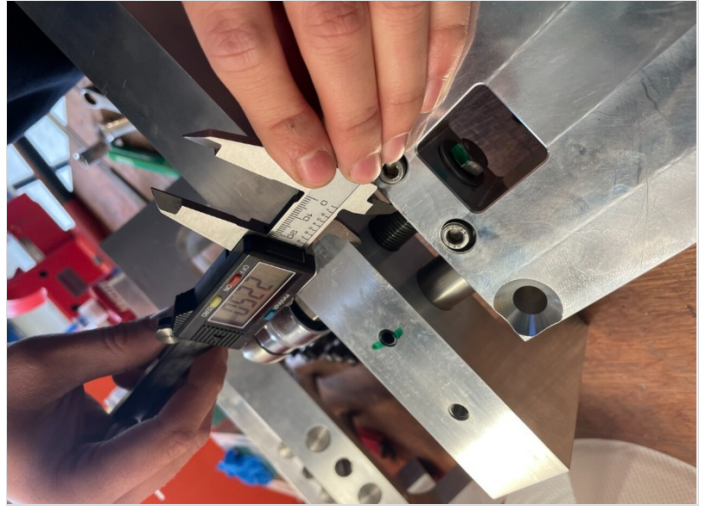
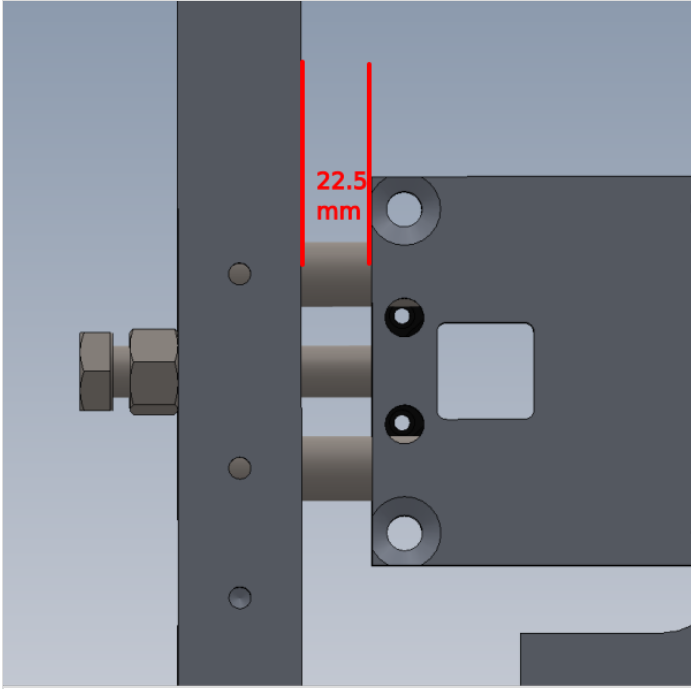


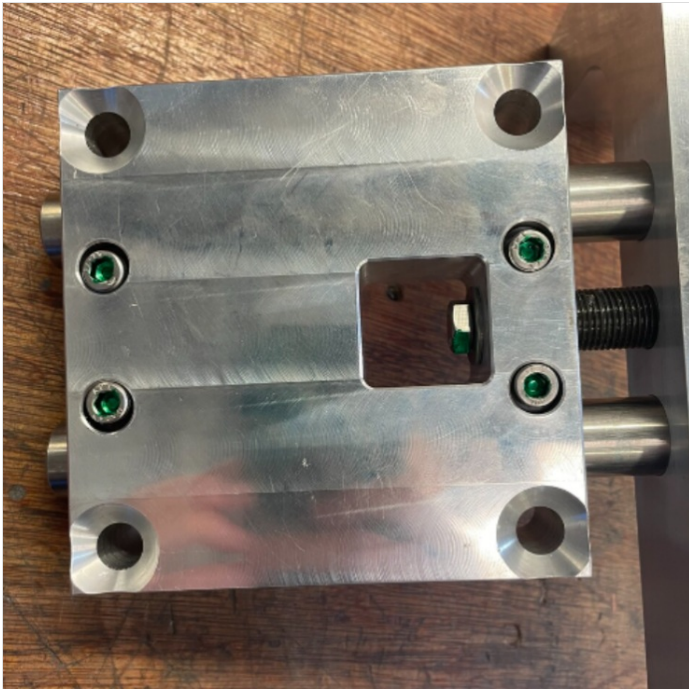
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## Step 8 - Set distance

Set gap to 22.5mm and lock off m16 nut and ensure measurement isn't effected from tightening

Tolerance  $\pm 0.1\text{mm}$





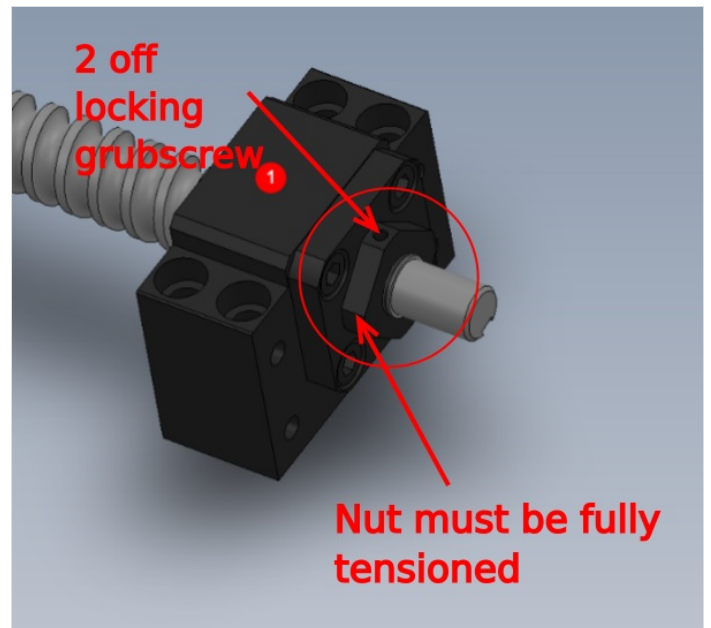
## Step 9 - Warning!

in the following steps

Attach B0001047 Fixed Bearing Support Block  $\text{\O}17 \times 1$  as shown to B0000427 Leadscrew  $\text{\O}25 \times 10$  435 Long . Ensure locking grub screws are tensioned in lock nut once tightened

It is vital that the indicated part is correctly tightened and securing grub screws are locked off when tensioned.

Qualities have arisen from this area so please ensure correct practice is followed when assembling



## Step 10 - Assemble leadscrew assembly

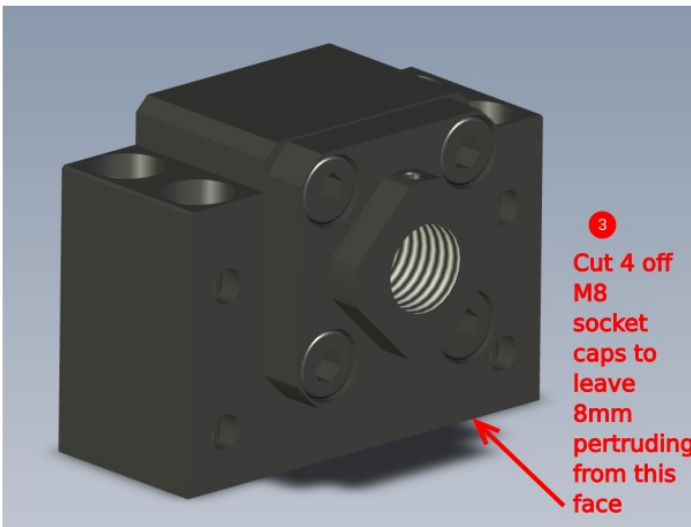
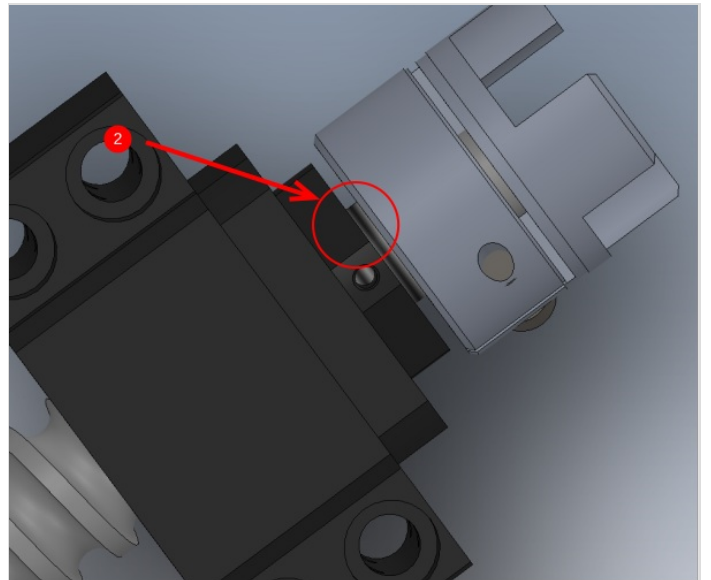
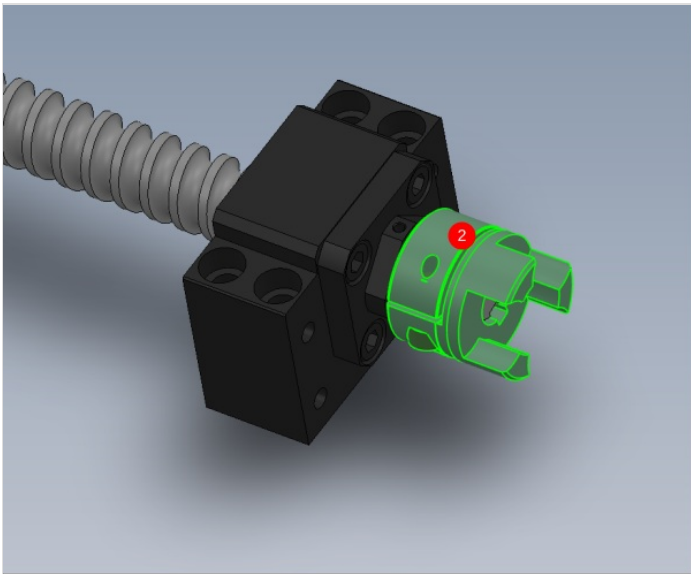
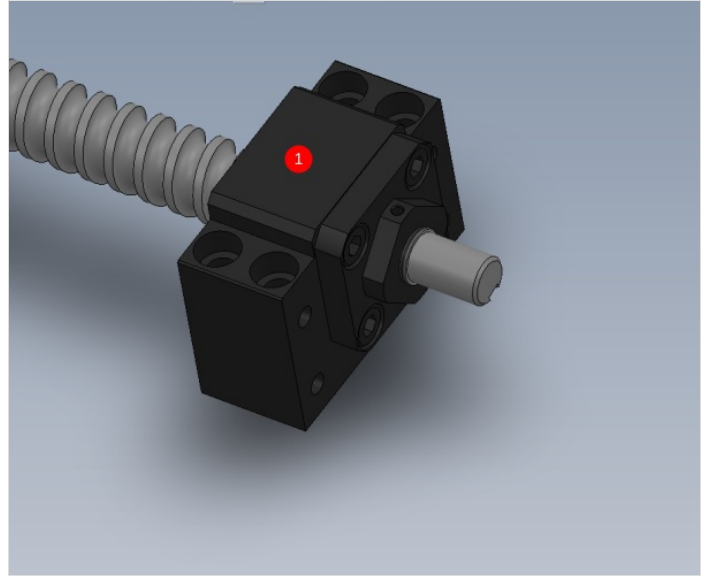
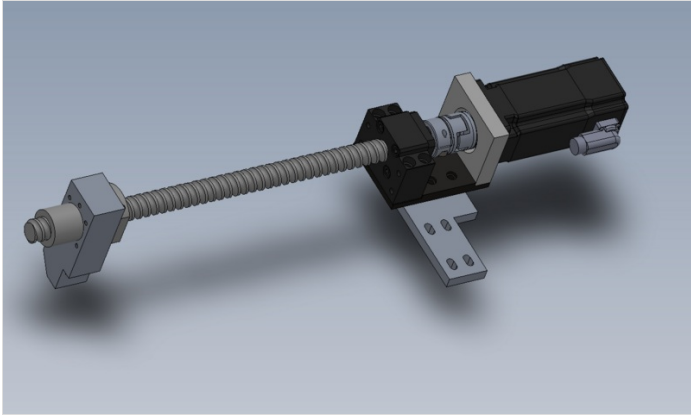
1 Attach B0001047 Fixed Bearing Support Block  $\text{\O}17 \times 1$  as shown to B0000427 Leadscrew  $\text{\O}25 \times 10$  435 Long . Ensure locking grub screws are tensioned in lock nut once tightened

2 Insert B0000041 key into leadscrew and fit B0001127 ROTEX GS Coupling  $\text{\O}14/\text{\O}15$  Bore & Key (98 Shore Spider) , push to should and finalise coupling m6 fastener

3 Cut 4 off M8 socket caps to leave 6.5mm protrusion from indicated face

4 Attach to D0010132 SZ Drive Mount Plate ensuring indicated faces are touching




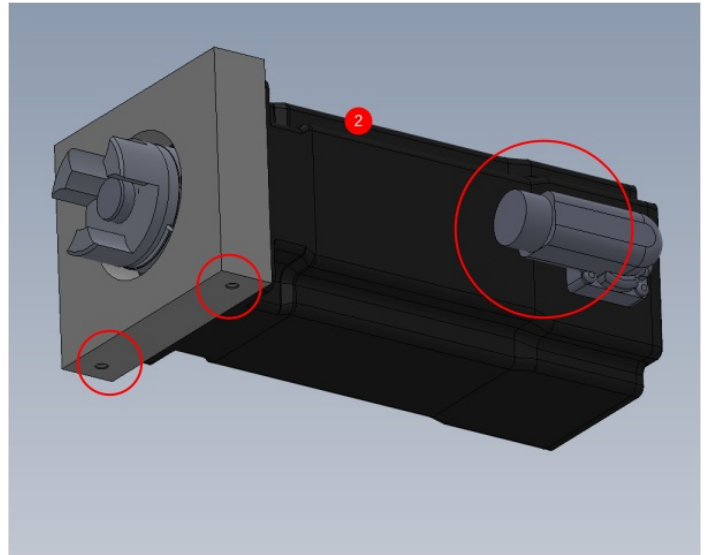
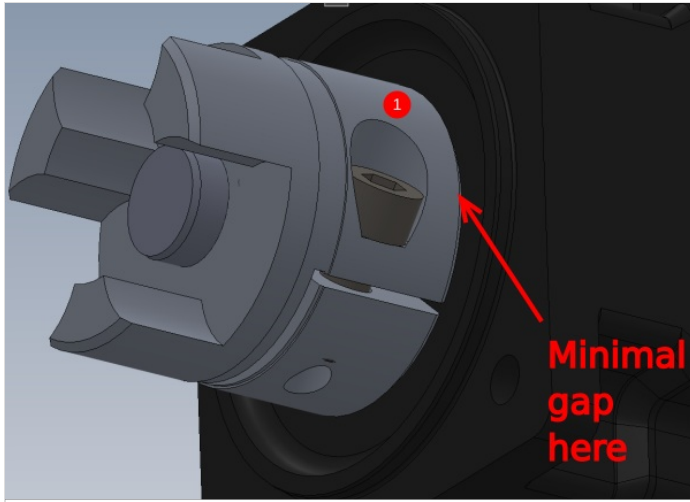


## Step 11 - Assemble motor assembly

1 Attach B0001127 ROTEX GS Coupling  $\varnothing 14/\varnothing 15$  Bore & Key (98 Shore Spider) to C0001122K Servo Motor: Beckhoff AM8032-1E10 (Keyed). Set coupling close to motor face (1mm)

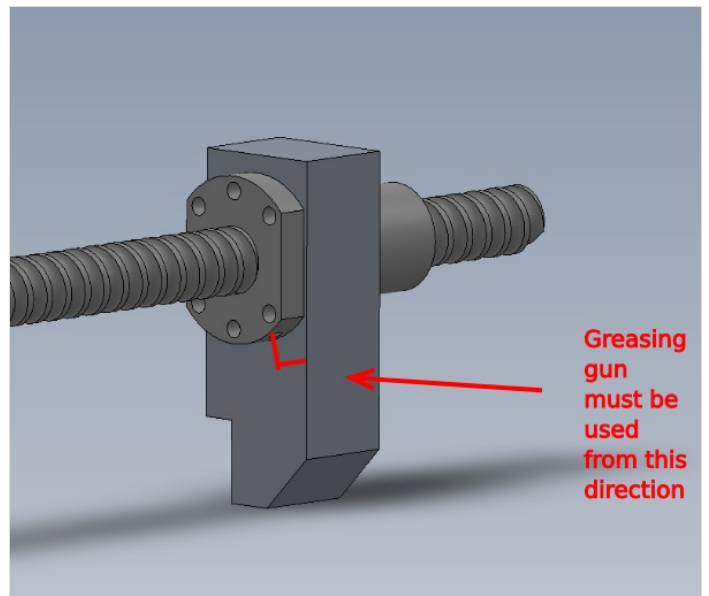
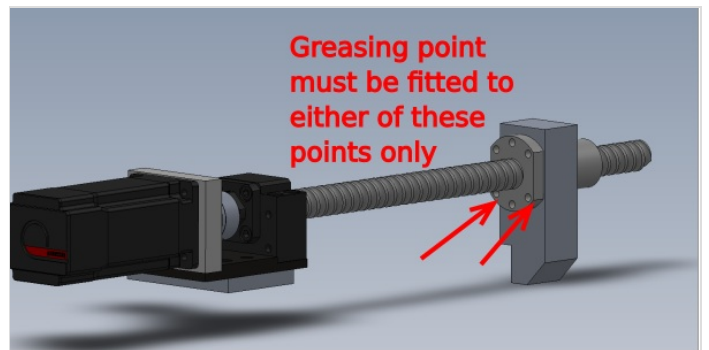
2 Fit D0010563 Y Axis Servo Mount x 1 using 4 off M5 x 16 socket caps

 ...Take note of mounting hole orientation and servo plug position



## Step 12 - Greasing Point location

Please ensure grease point is fitted as shown.



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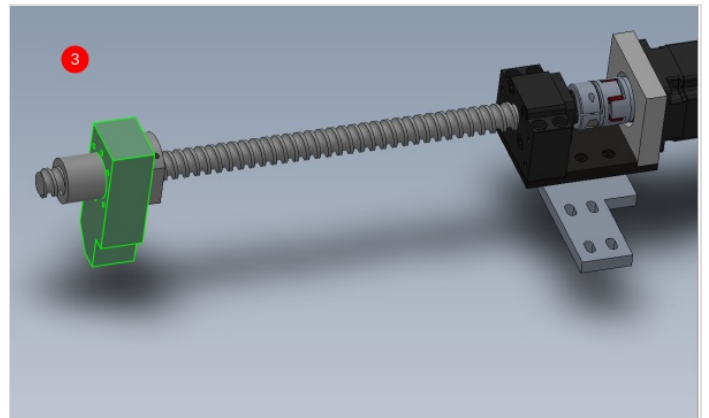
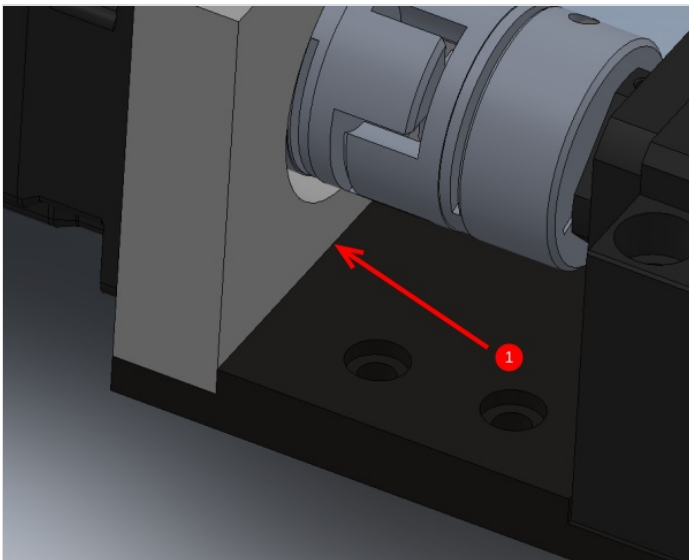
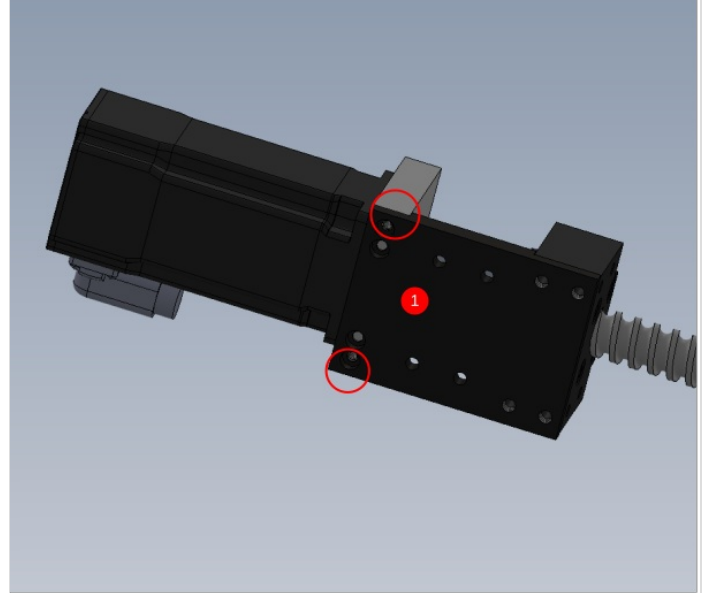
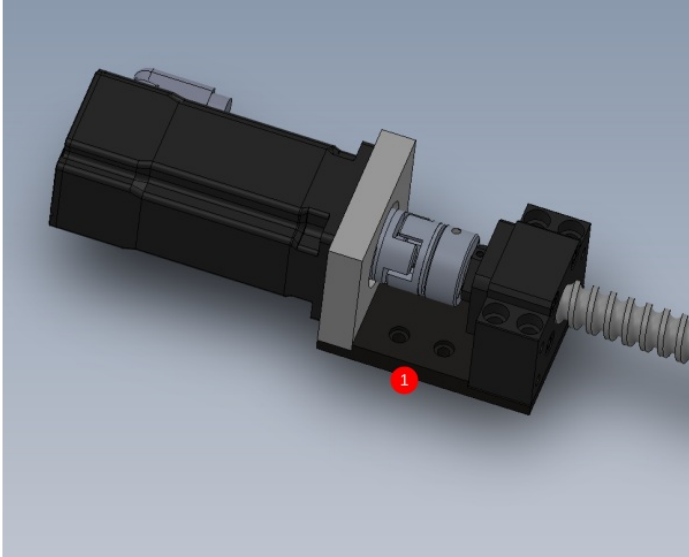
## Step 13 - combine servo assembly

1 Use M5 x 12 socket cap 2off to combine assemblies

Make sure faces are mated correctly (indicated) and coupling is aligned

2 Fit D0015166 VY Motor Mounting Plate as shown using 4 off M6 x 16 sockets caps . Do not apply tension or adhesive to these bolts

3 Fit 90 degree grease nipple to leadscrew nut face in the direction shown. Fit D0015164 VY Leadscrew Block x 1 using 6 off M6 x 25 socket caps and A form washers, do not adhesive or final tension to these fasteners on nut





## Step 14 - Assemble link bars

**!** ...It is vital fit of bearings in the following steps is checked and addressed appropriately.

1 if bearings are loose in bores, check part to drawing and if in tolerance, use Fe10 solvent to clean bores and bearings and use Loctite 641 to fix

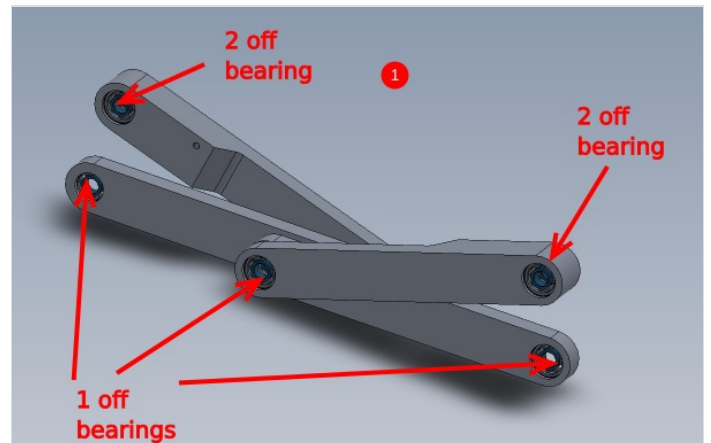
2 if bearings are tight, check drawing and if in tolerance check with supervisor



## Step 15 - Fit bearings

1 Fit B0001134 Ball Bearing 15ID 35OD 11 Long x 10 to parts  
D0015260 Upper Link x 2  
D0015261 Lower Link x 2

2 Captivate with 10 off 35mm internal circlip

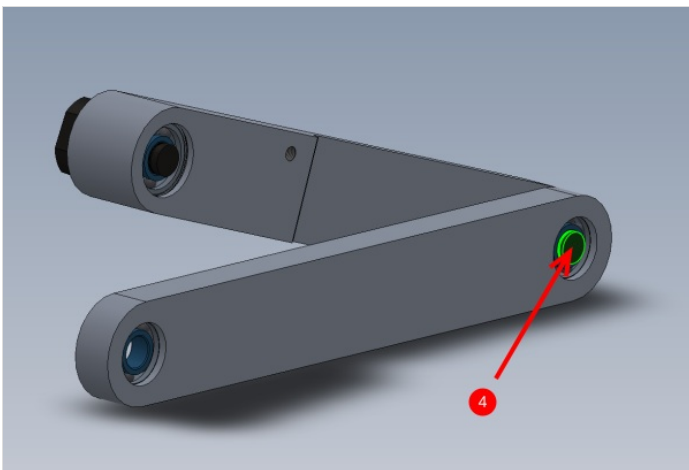
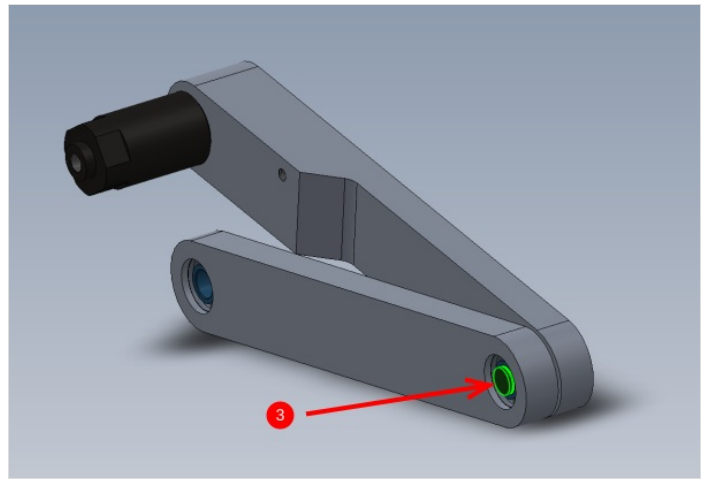
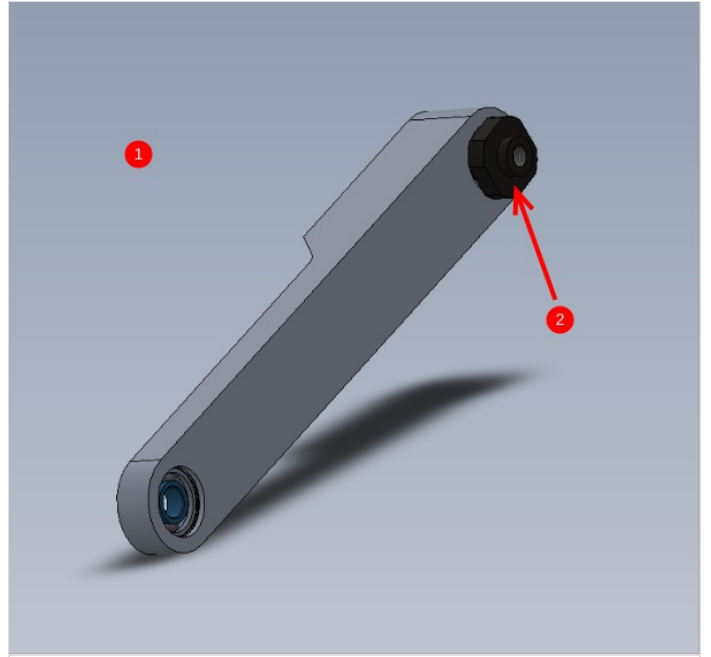
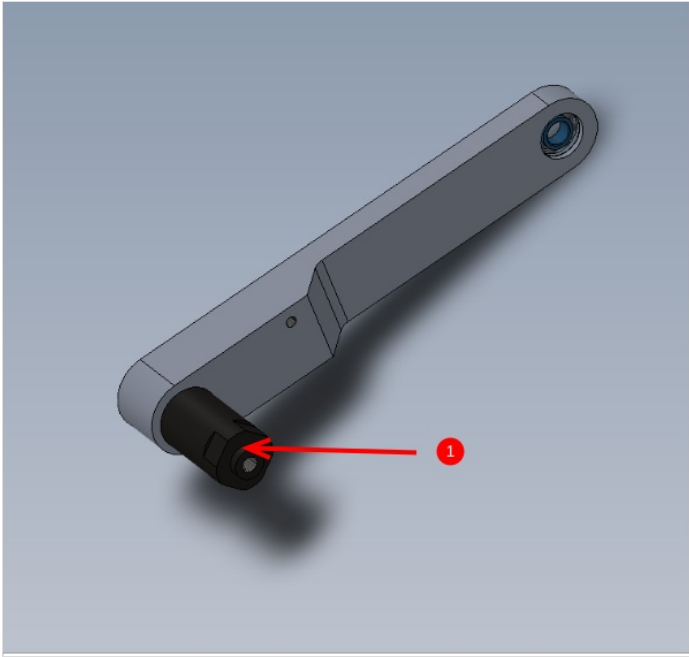


## Step 16 - Fit connector shafts

1 Fit D0015259 Upper Link Mount 2 x 1 as shown . Captivate with external circlip 15mm

2 Fit D0015258 Upper Link Mount 1 x 1 as shown. Captivate with external circlip 3 Fit D0015263 Mid Link Shaft as shown to combine parts built . Fix with 15mm external circlips

4 Fit D0015263 Mid Link Shaft as shown to combine parts built . Fix with external circlips (size required)



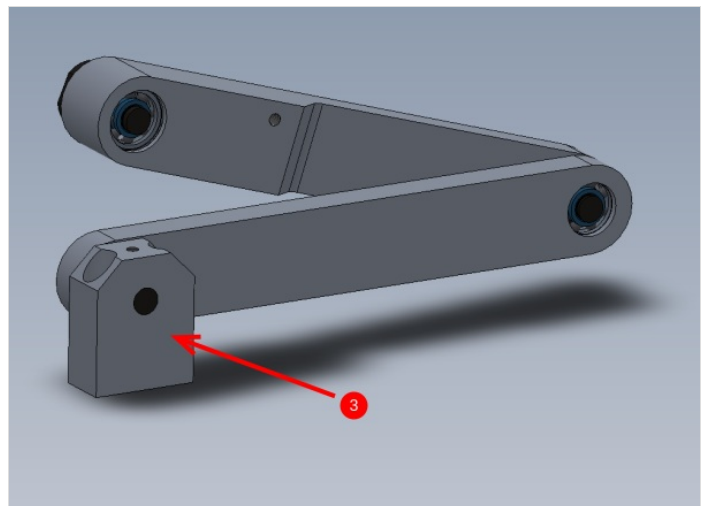
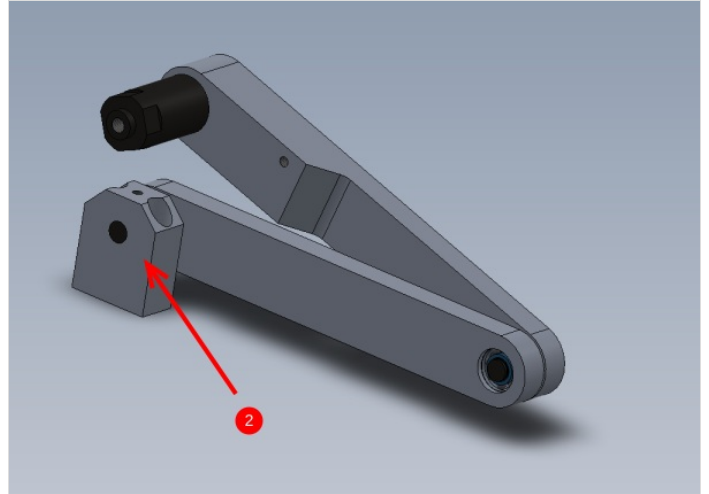
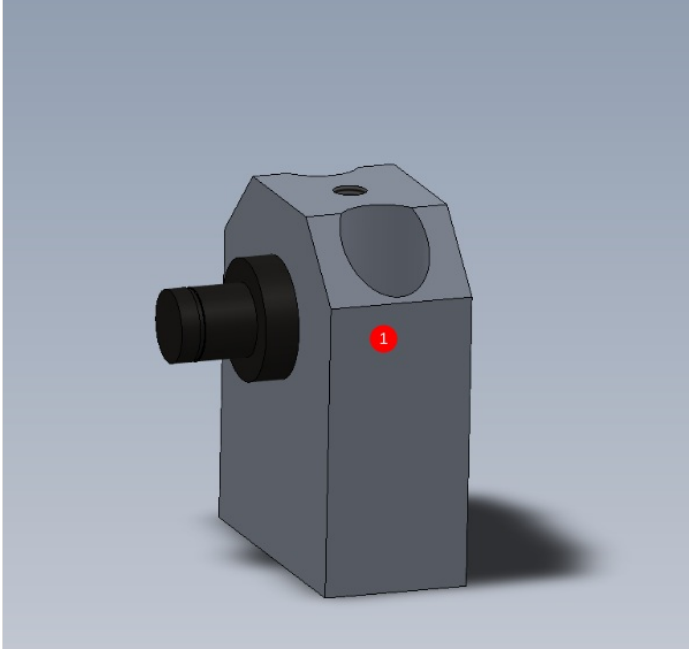
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## Step 17 - Assemble link mounts

1 Fit D0015264 Lower Link Shaft to D0015262 Lower Link Mount as shown  
Capivate with M8 x 16 KCP grub screw aligned into dimple on shaft  
2 off to assemble

2 Fit to assembly as shown and captivate with 15mm external circlip

3 Fit to assembly as shown and captivate with 15mm external circlip





## Step 18 - Assemble bearing blocks

1 Fit 8 off B0001120 Circlip 62mm External to 8 off B0000109 Linear Bearing (IKO) 40 D x 62 D x 80 L x 8 as shown

2 Insert bearings into bores of parts

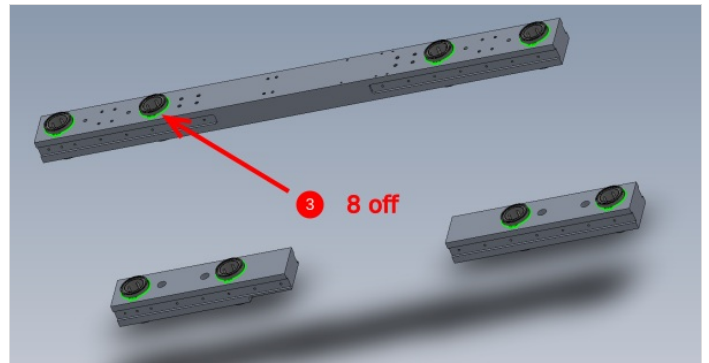
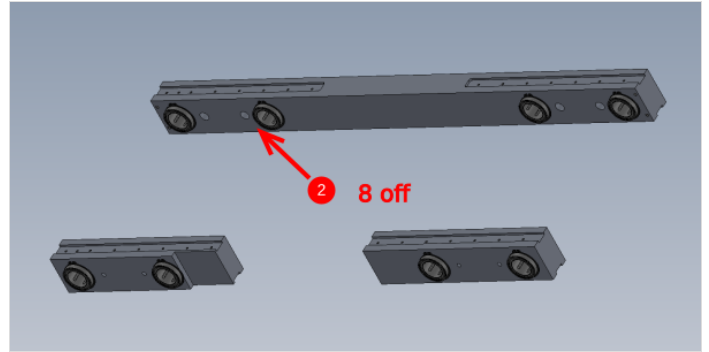
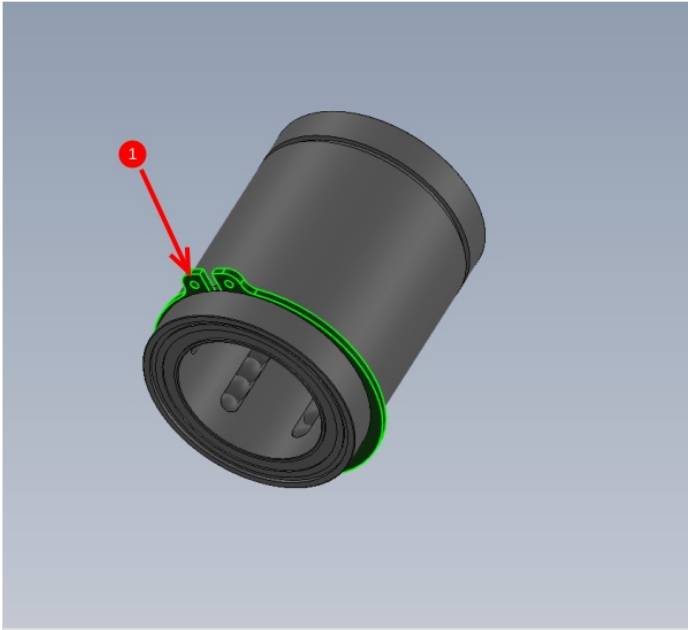
D0015152 V-Notch Upper Moving Bar x 1

D0015153 V-Notch Rear Moving Bar x 1

D0015154 V-Notch Front Moving Bar x 1

Bearing bore is slightly oversize, so bearings should push through by hand when aligned correctly

3 Fit 8 off circlips to captive fitted bearings



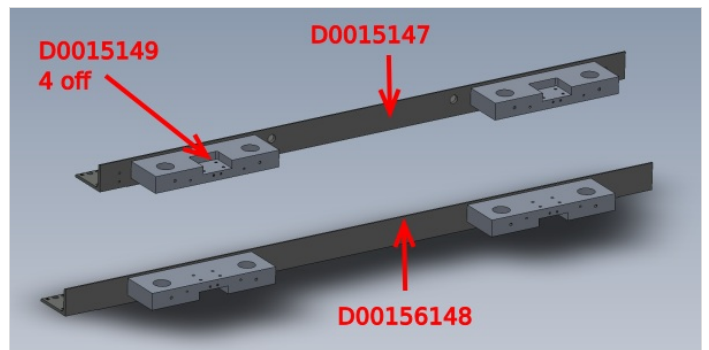
## Step 19 - Assemble Main Cross members

Use following parts

D0015147 V Notch Upper Support Bar x 1

D0015148 V Notch Lower Support Bar x 1

D0015149 VZ Shaft End Plate x 4



## Step 20 - Prepare cross members

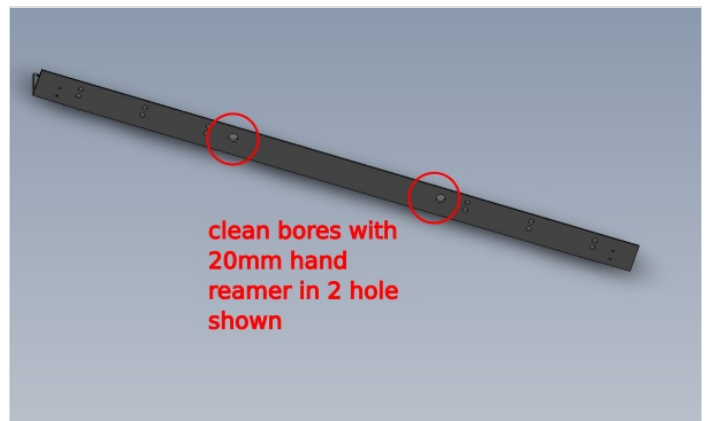
Tap all holes present in

D0015147 V Notch Upper Support Bar x 1

D0015148 V Notch Lower Support Bar x 1

To clean paint.

Use 20mm hand reamer to clear paint from indicated bores in D0015147 V Notch Upper Support Bar

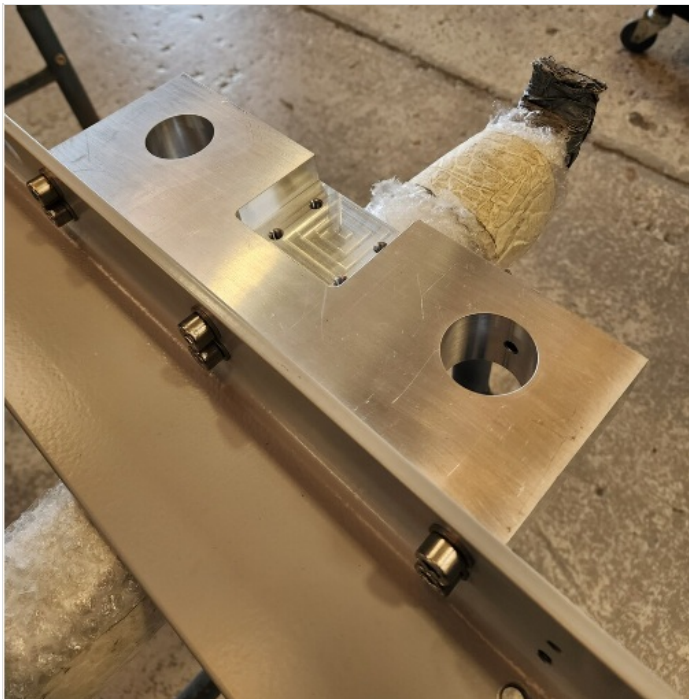
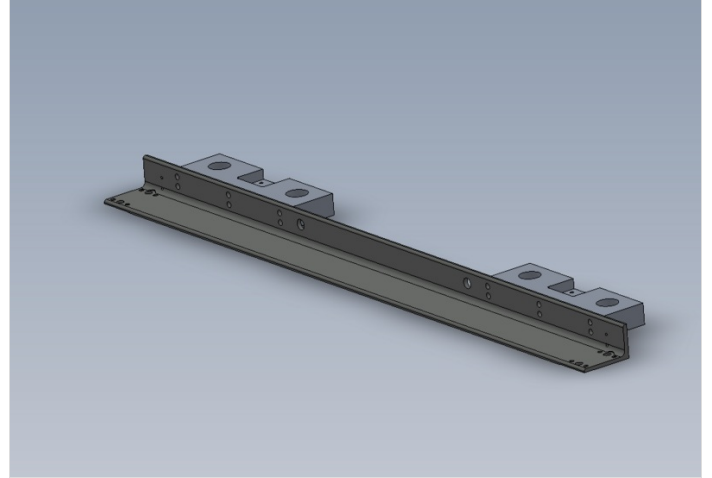
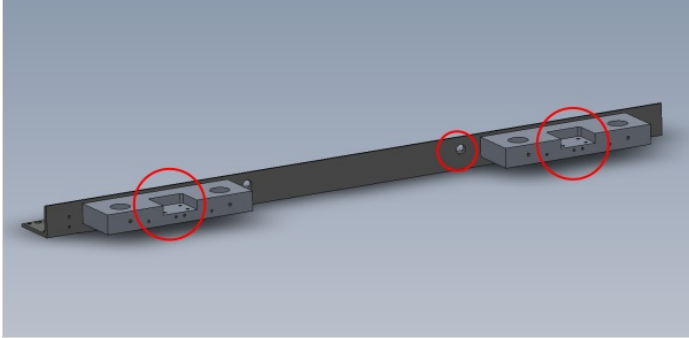


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## Step 21 - Mount blocks and add setting jigs

Orientate D0015149 VZ Shaft End Plate x 2 as shown onto 0015147 V Notch Upper Support Bar

Use 12 of M10 x 25 socket caps and A form washers to lightly fasten blocks to support bar . Do not apply adhesive at this stage.



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## Step 22 - Set pitching of blocks

1 Position pre assembled bearing block over end plates

2 Insert 4 off 40mm shaft blanks into bores through bearings in bearing block and secure with M8 x 12 flat bottomed grub screws

**⚠** ...Take care not to damage bearing seals when inserting shafts

3 Tighten m10 socket caps to hold pitching of end plates then remove bearing block





## Step 23 - Align with straight edge

1 Use 2 meter straight edge to flatness between blocks

2 Identify area where gap is present on each block using feeler gauge 0.05mm /0.002" to check

3 Only adjust 1 point on each block up to achieve flatness. Slacken socket caps on the end you want to adjust.

4 Tighten M10 Socket caps to fix position then recheck with straightedge







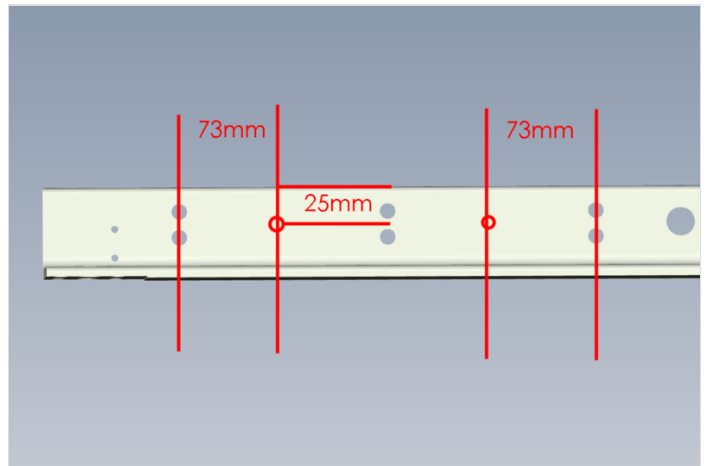
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## Step 24 - Dowel

Position now requires doweling with 8mm x 50 dowels (2 per endplate)

Add dowels in the positions shown

Leave dowels protruding 10mm from painted face



## Step 25 - Finalise fixings

M10 socket caps can now be individually removed, adhesive added and re tightened and finalised



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## Step 26 - Repeat steps 19 to 22

Use steps above to build 2nd crossmember using parts

D0015148 V Notch Lower Support Bar x 1

D0015149 VZ Shaft End Plate x 2

Note orientation of blocks

