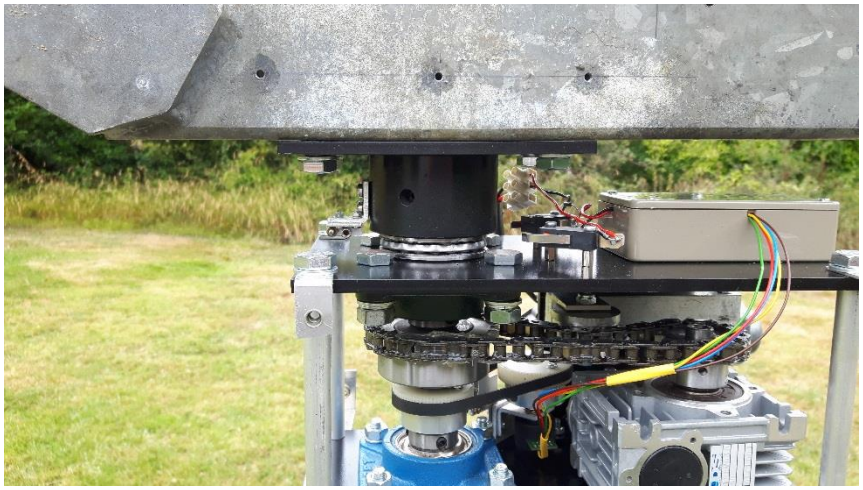
Azimuth Drive for small dishes



Dave Powis G4HUP

EME 2016

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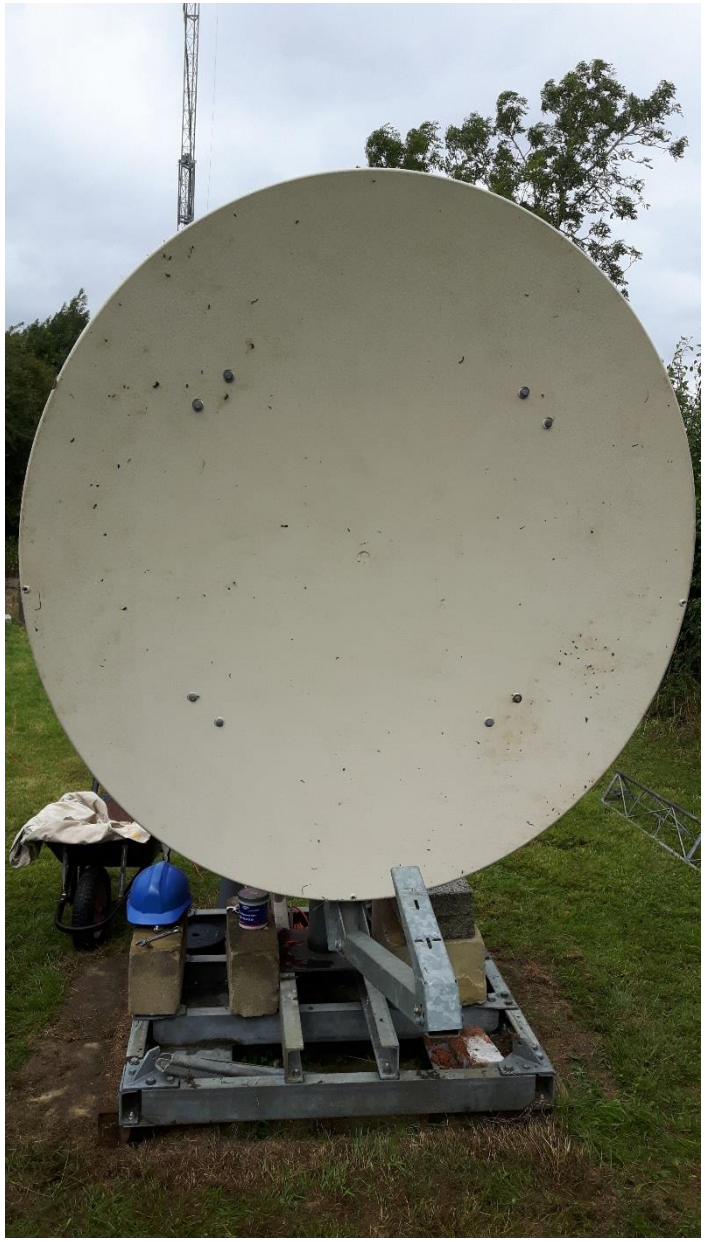

Introduction

- Converting an ex-satellite service dish to EME use, with full azimuth control.
- 2006 - 2.4m prime focus
- 2015 – 1.8m offset

2.4m PF Motor Drive

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Performance

- 1 rotation took about 70 sec
- Drive was too coarse for accurate dish control
- W2DRZ controller had no ‘nudge’ capabilities

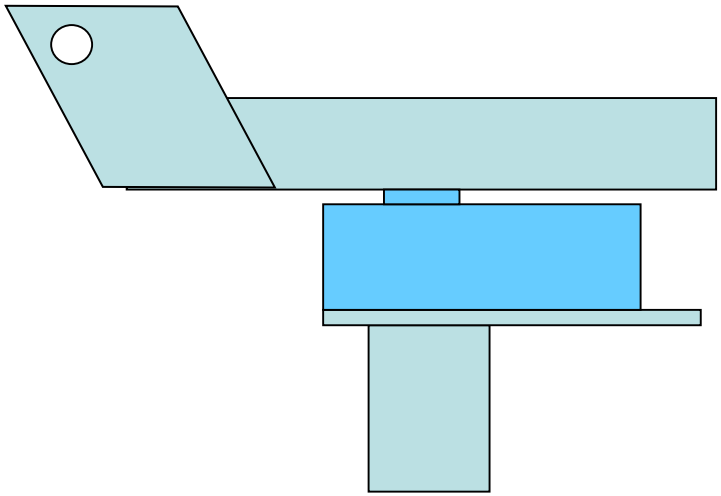
1.8m offset Dish Frame

- Pole top mount, with axial bolt to secure
- Need slow, smooth drive for mm wave operation

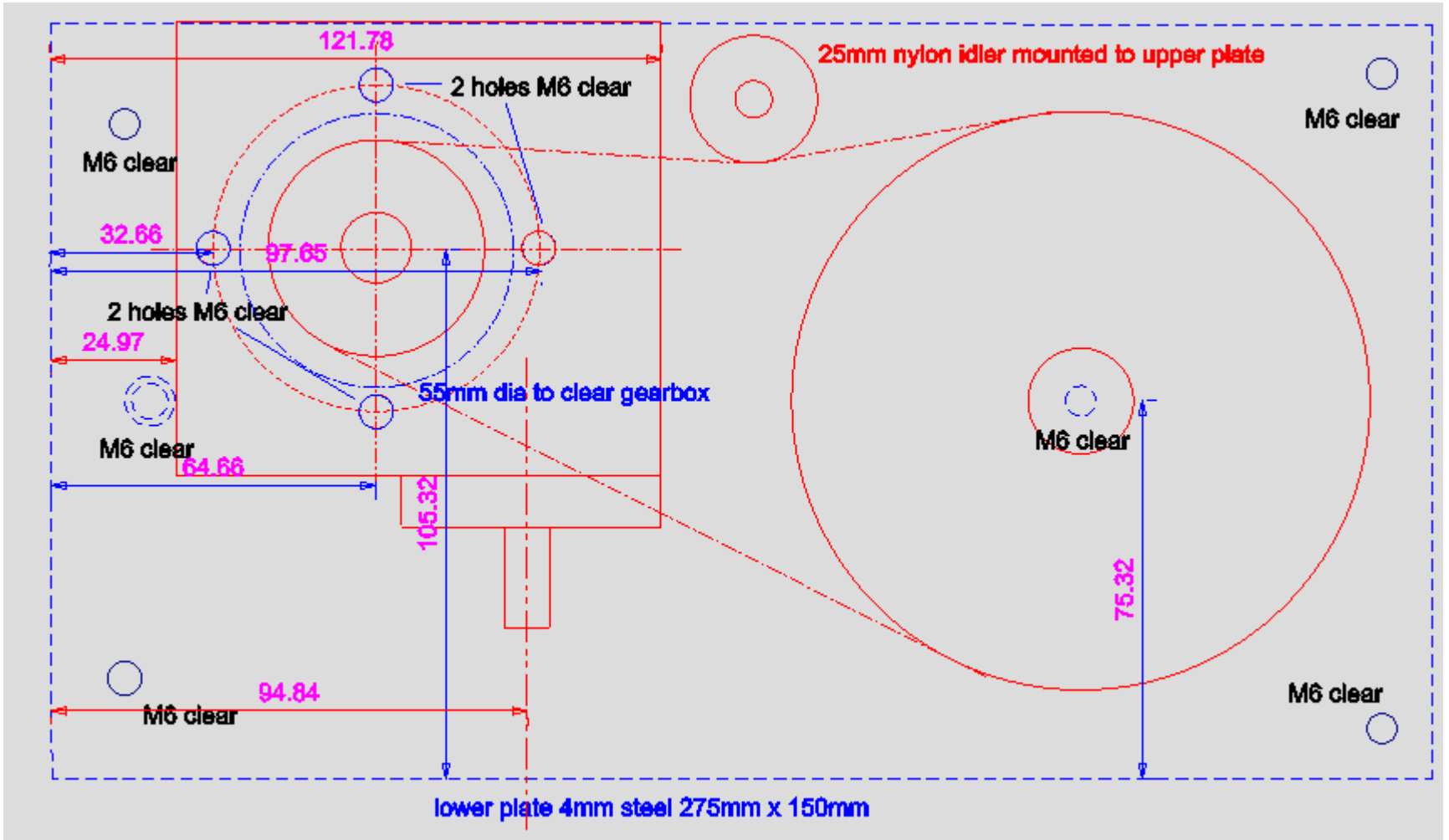
The Plan

- Split the mount and insert a drive gearbox between the upper and lower parts

Light blue – original parts
Dark blue – new gearbox & bearing

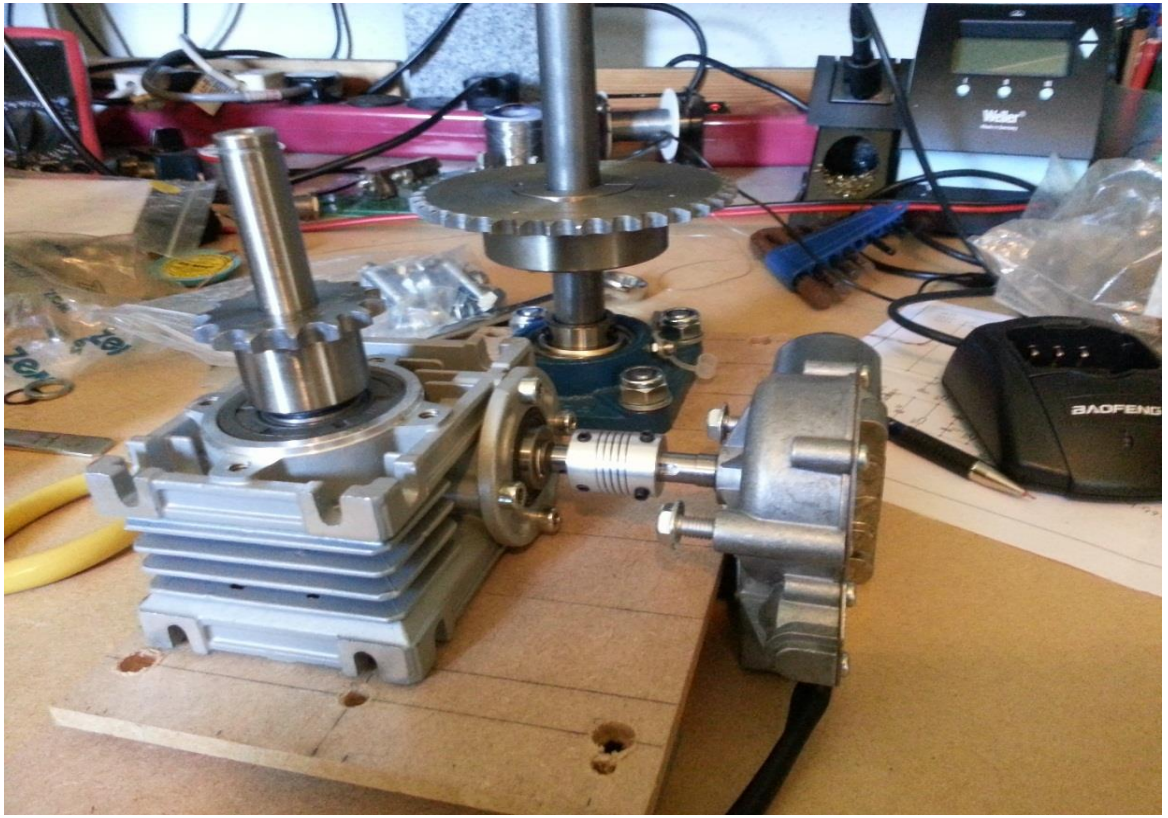


Original CAD Plan



The Model

- Before cutting ‘real metal’ a mock up was built using MDF in place of steel!



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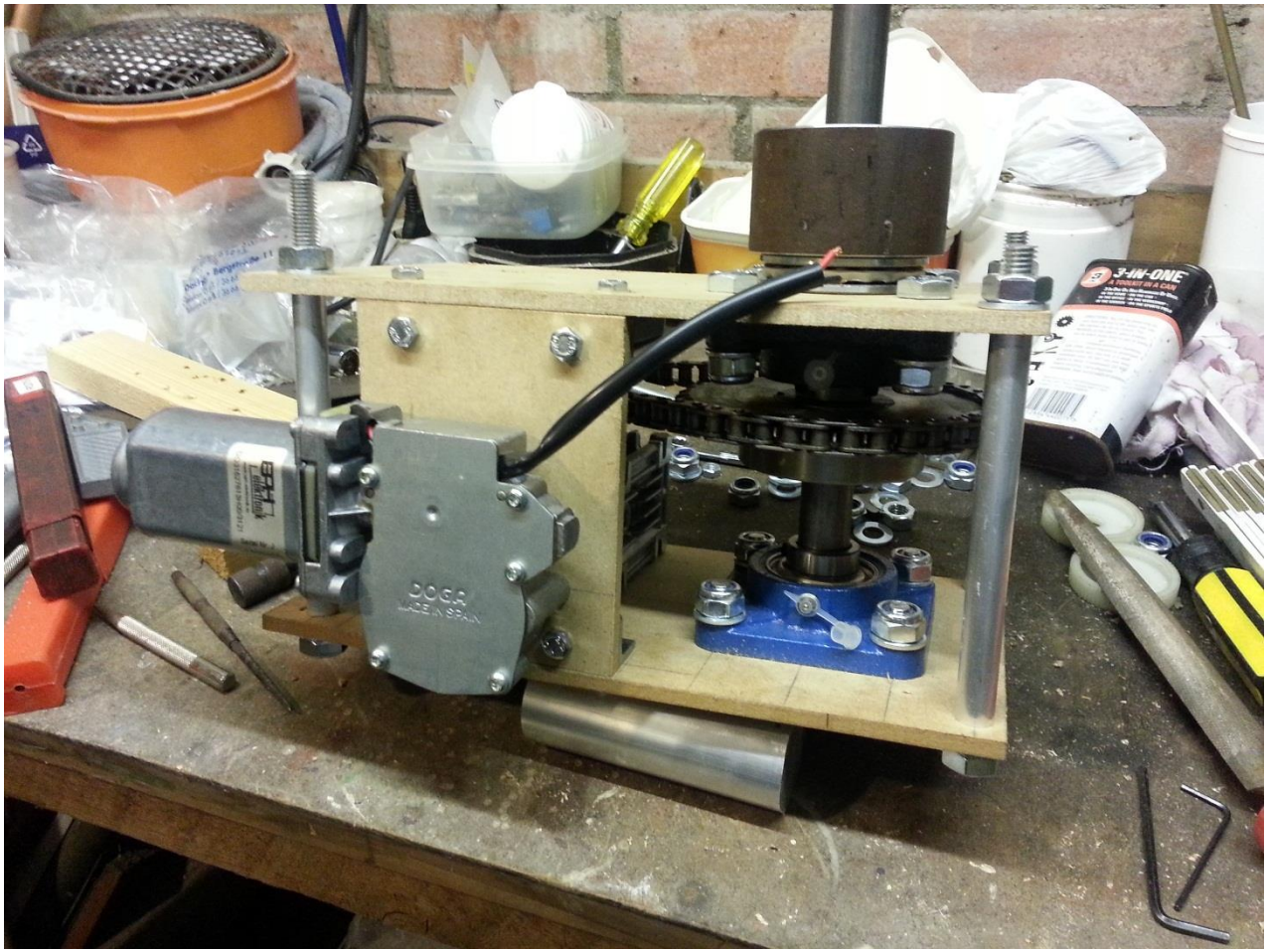
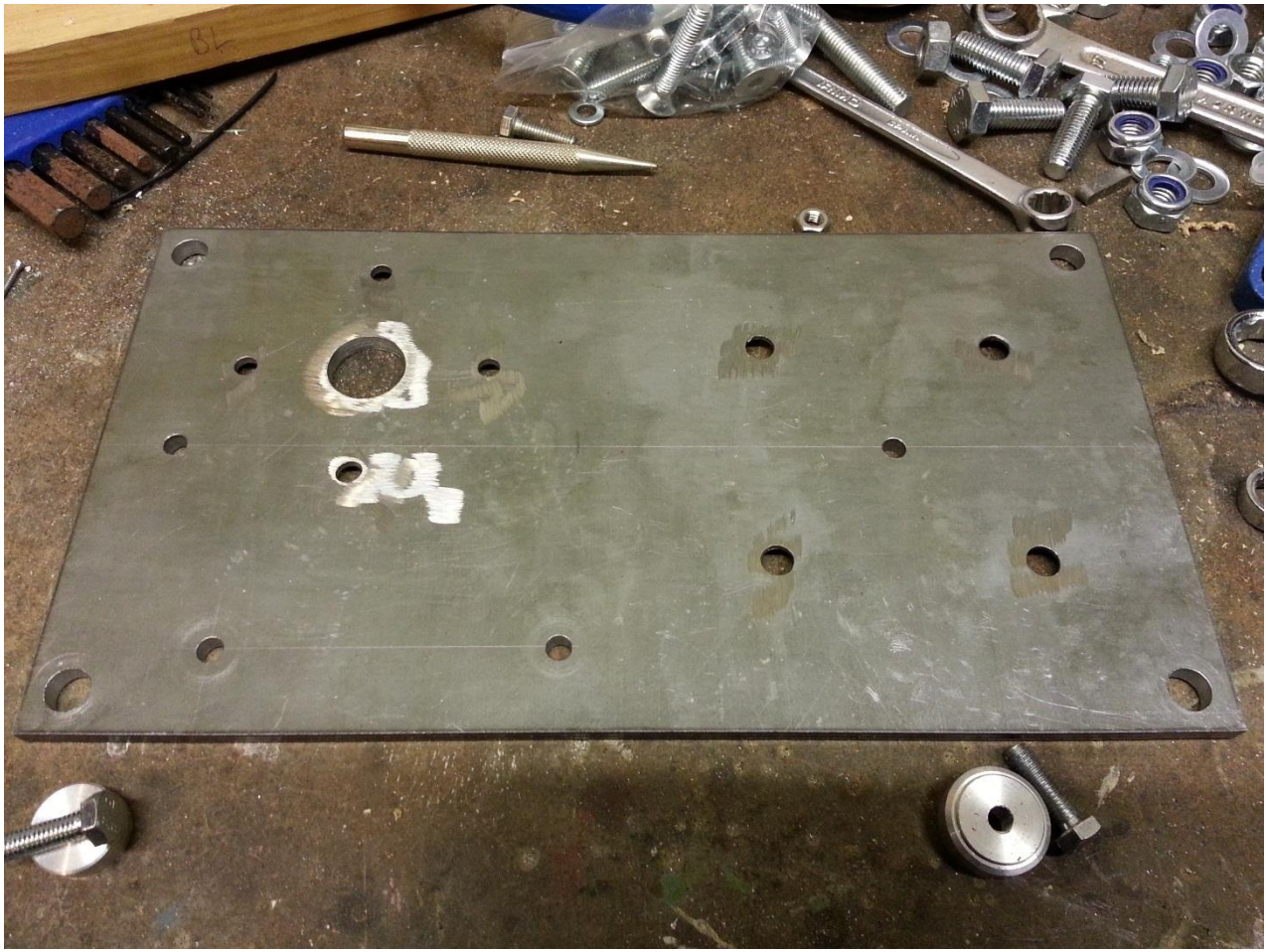
Final Model stage



Real Work!



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Gearbox and lower bearing

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First test

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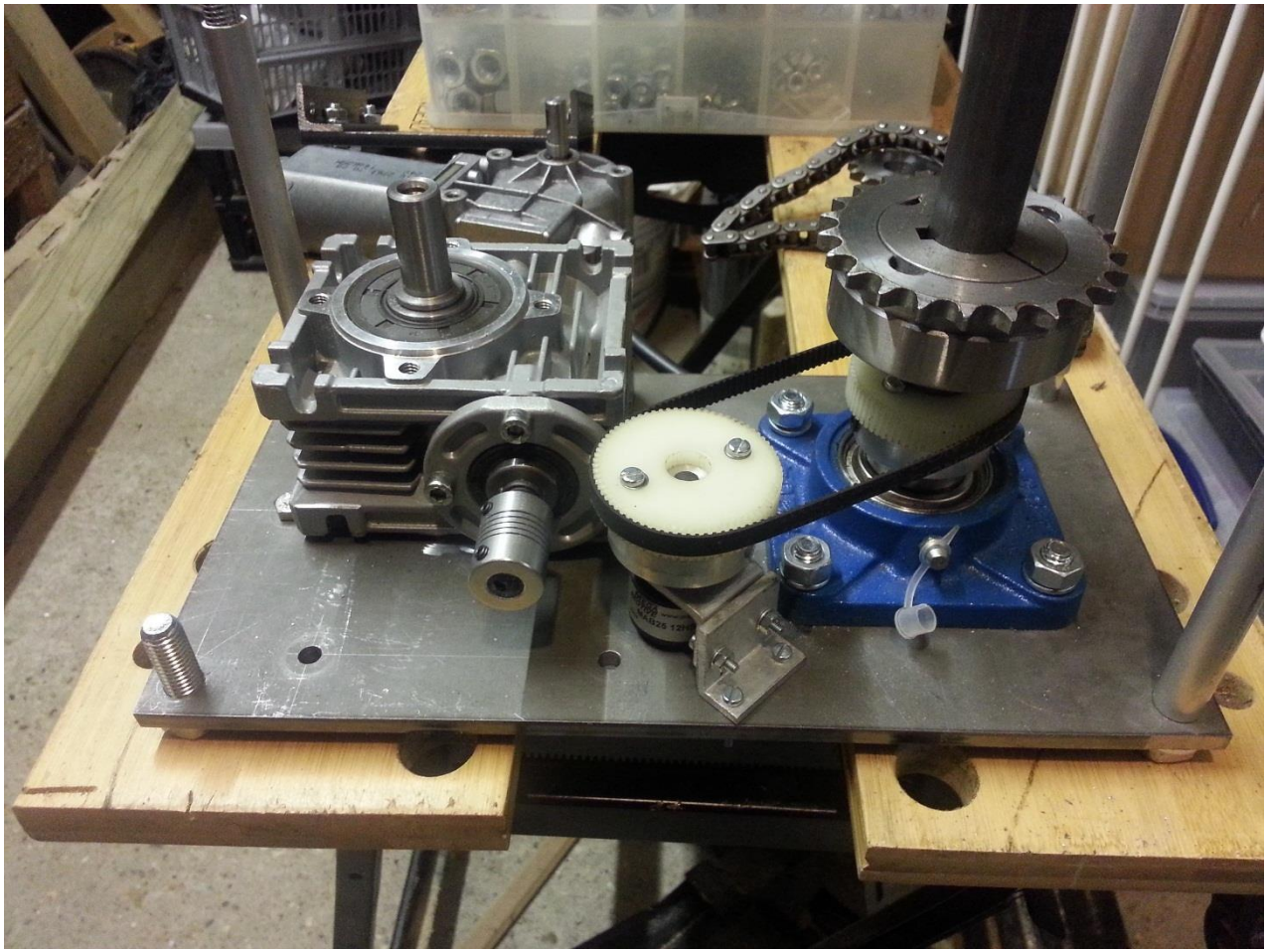
Az Sensor Drive



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Junction box and limit switches

Spine and Screw Jack installed

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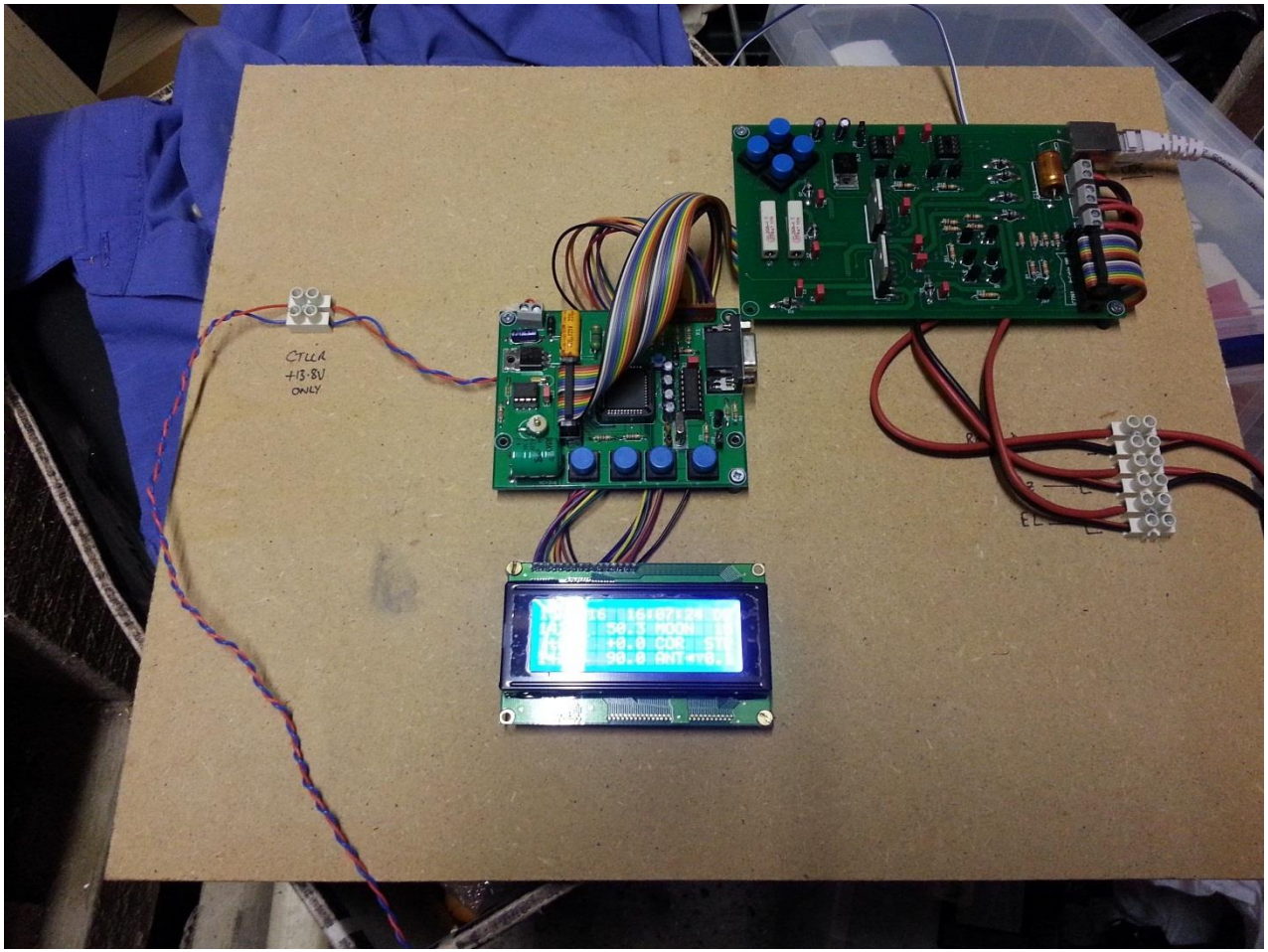
Under control!



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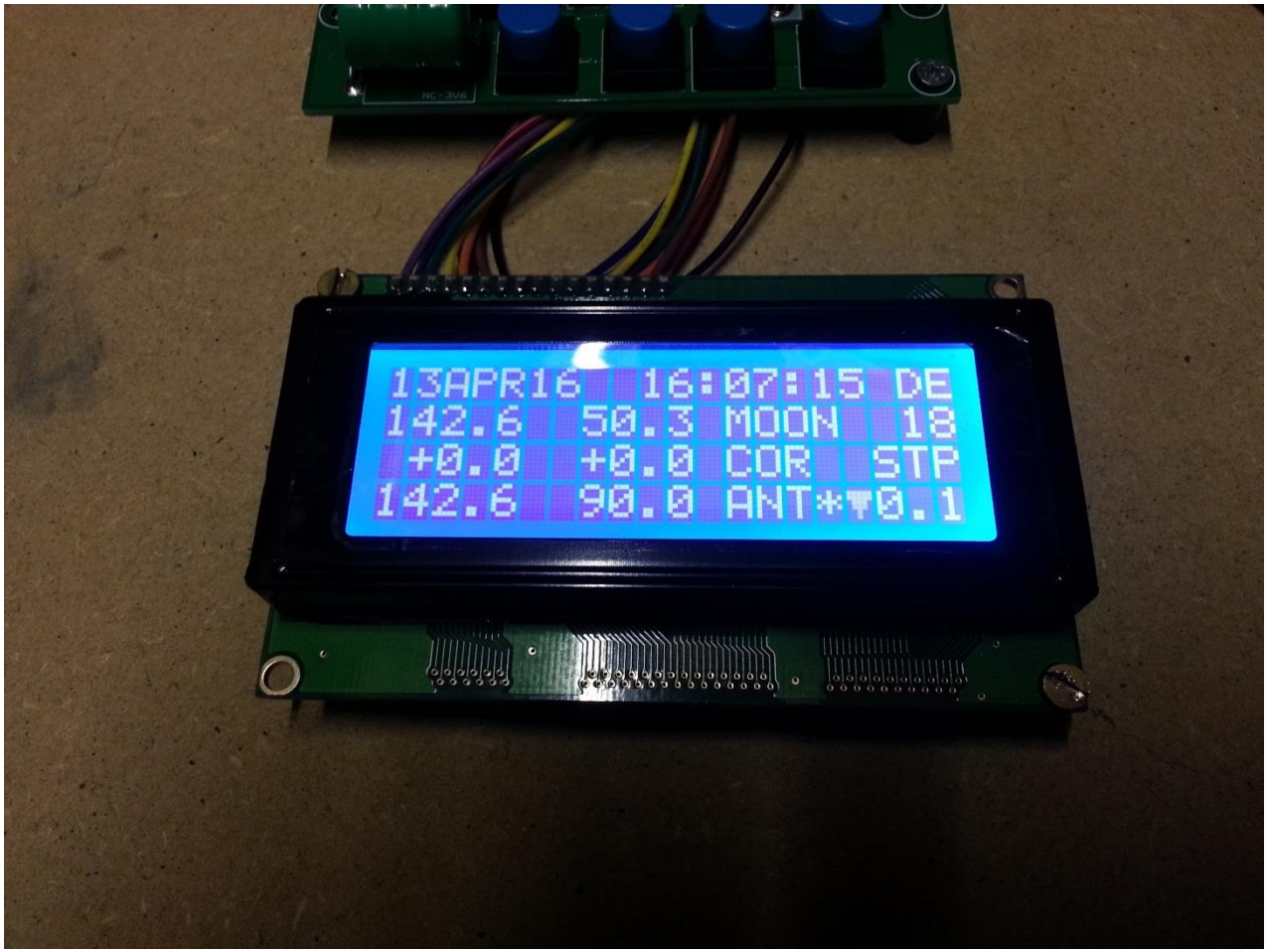
Tracking



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Pallet ready for supersturcture

Cable exit

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Final build

- Centering the drive gearbox on the lower plate

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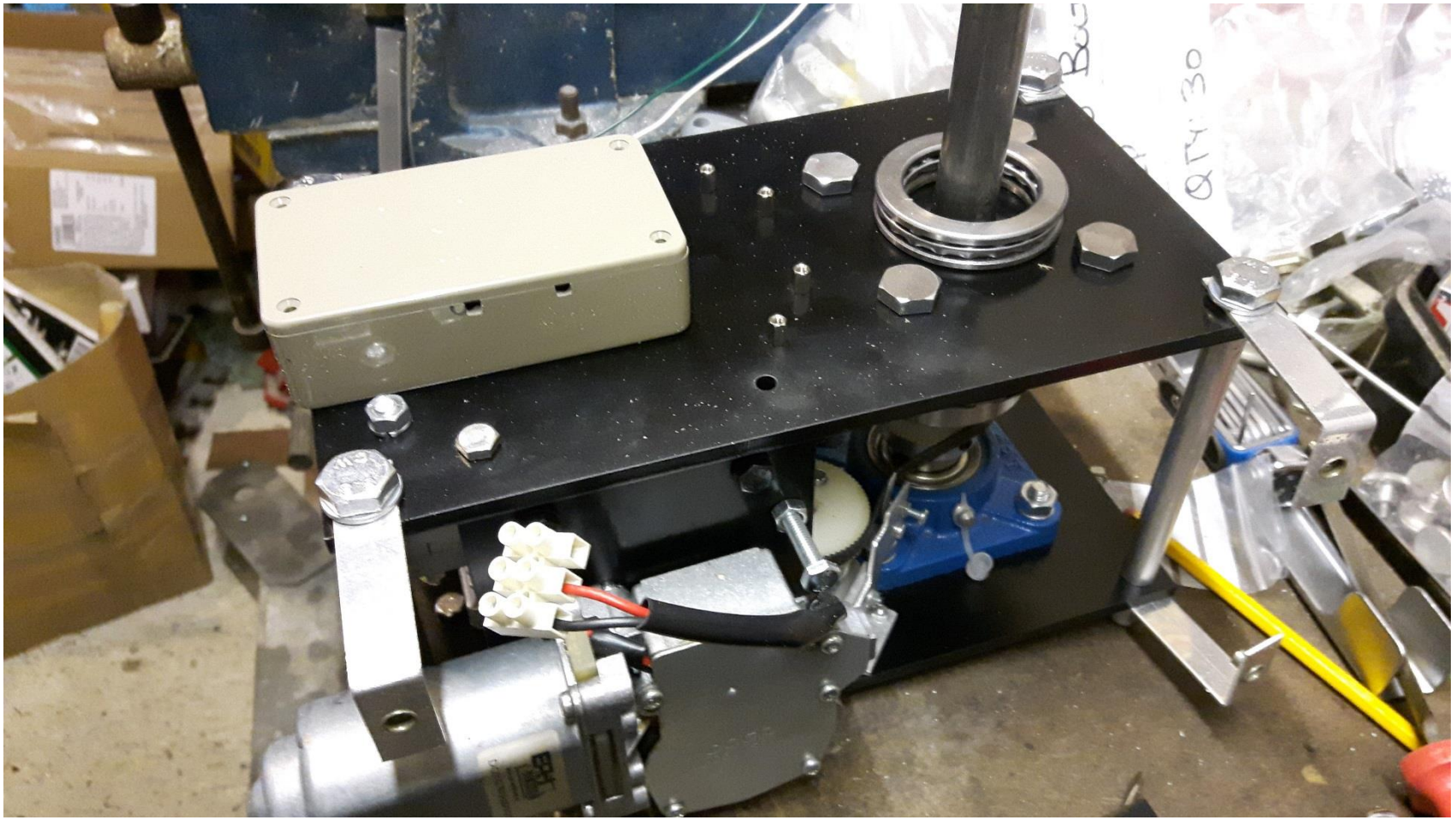
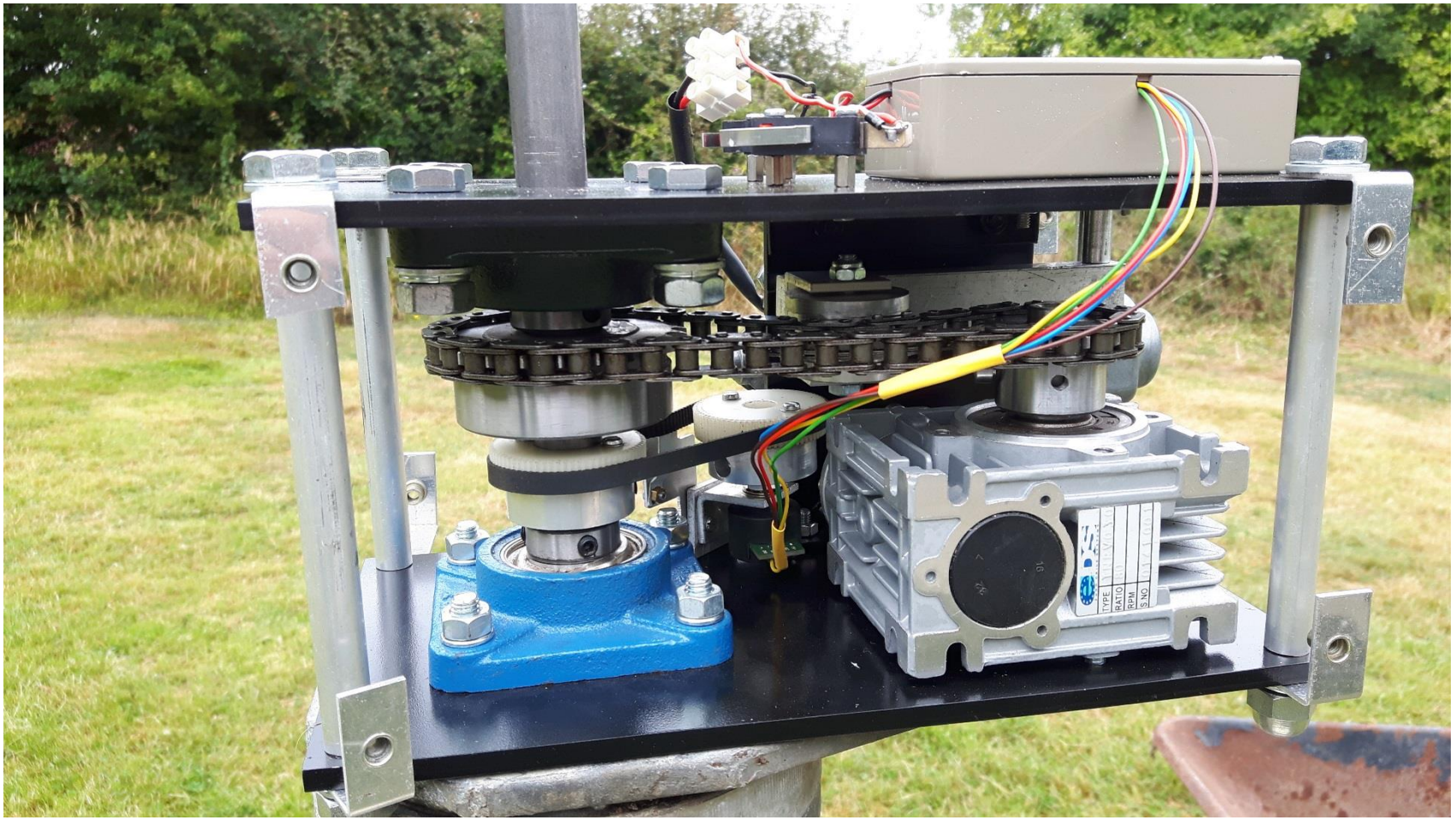
Complete Gearbox assembly



Mounted on head unit



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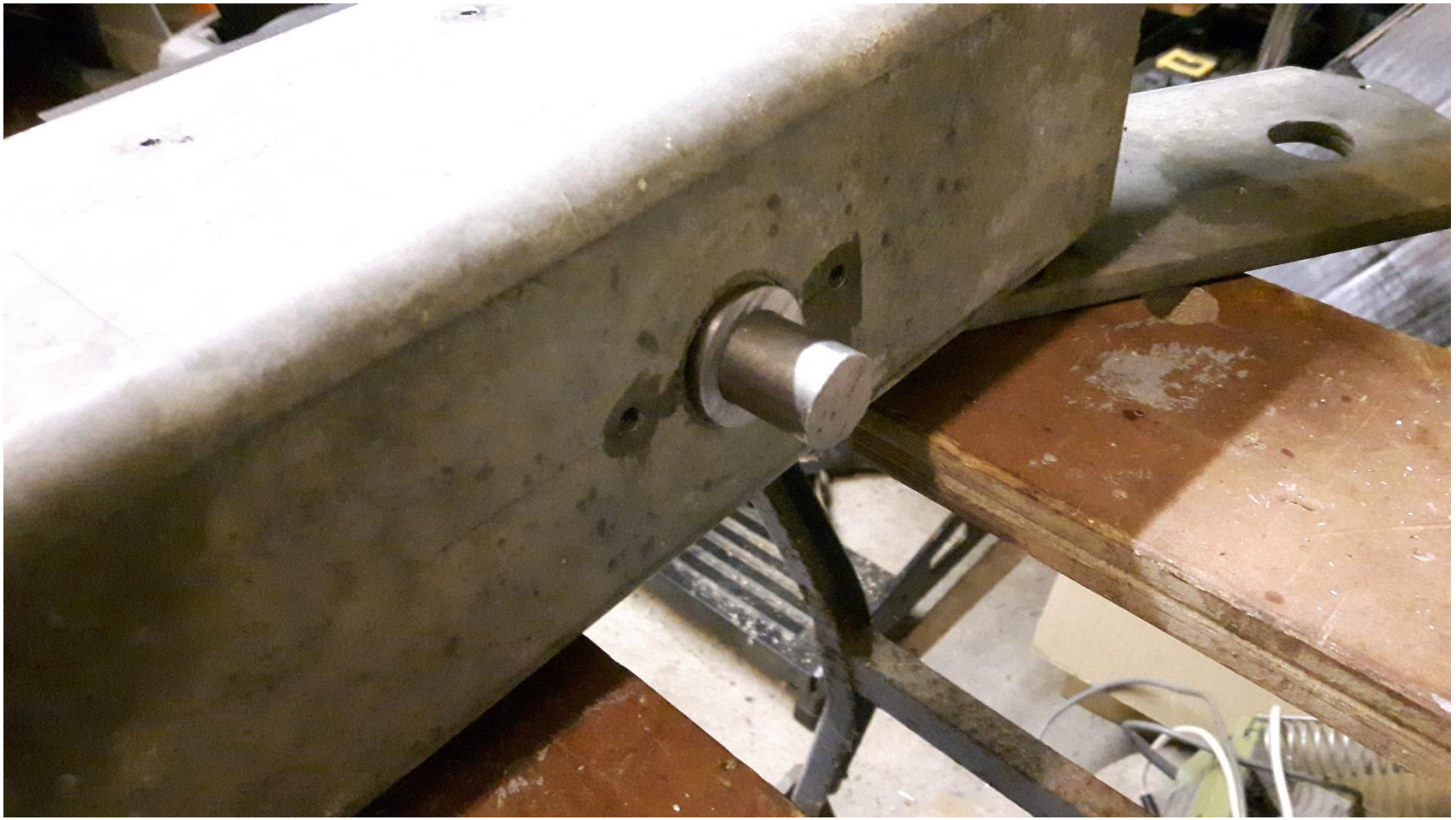
Sleeves to centre drive shaft



Complete frame

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Dish mounted (tnx G4DDK)

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Tracking Moon

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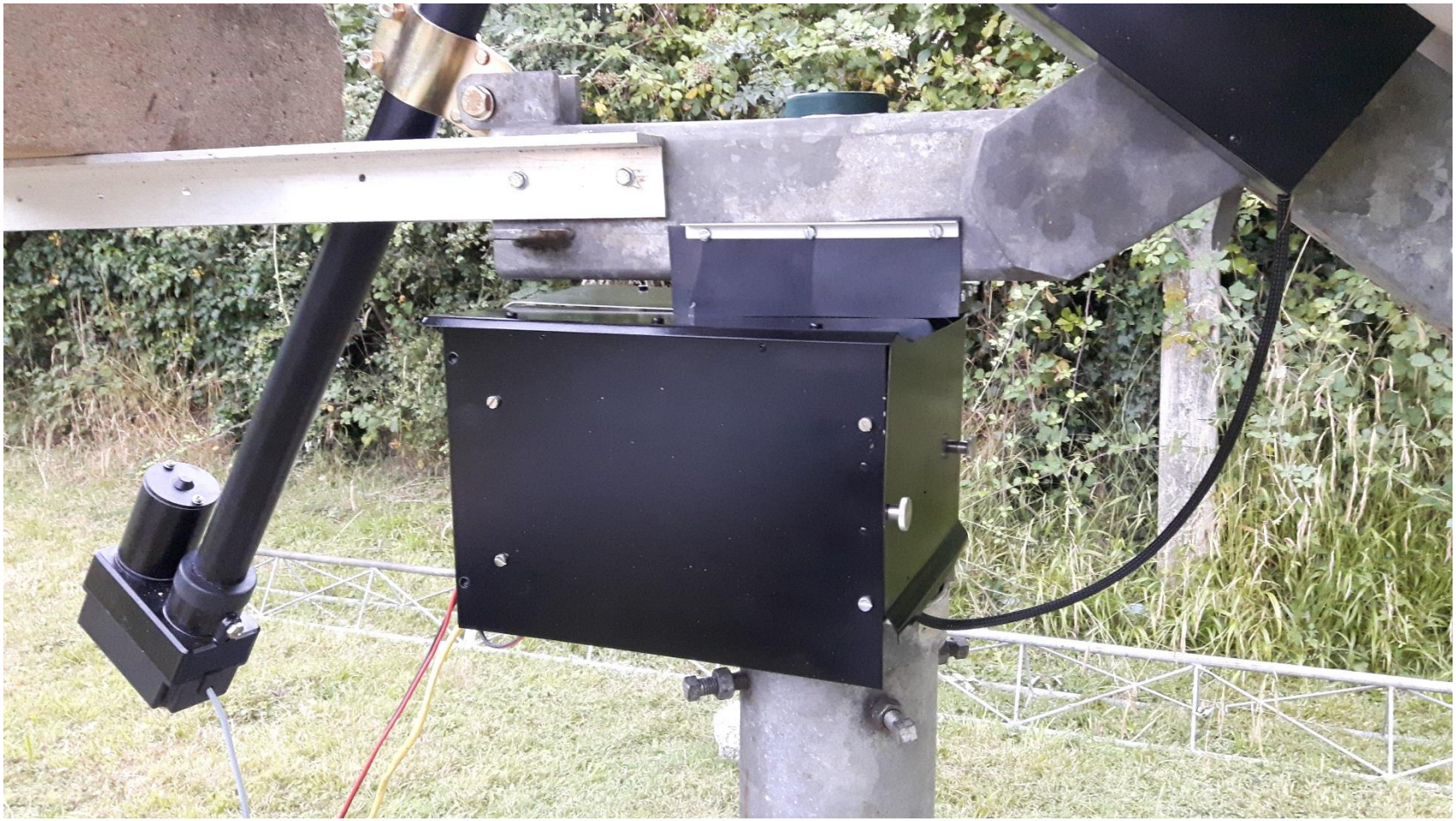
Final touches



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Current status

- Dress cables and connect to shack
- Check Sun Noise and feedpoint
- Then ‘just’ do the RF bit!

Conlcusions

- Lots of mechanical learning points
- Drive solutions are mostly individual
- Next project – 2.4m offset dish drive