5 Axis Jubilee BOM

Tools:

- 3D Printer with PLA and engineering filaments (ABS, Nylon-CF, etc)
- Soldering iron
- Allen keys, metric
- Deadblow hammer (somewhat optional)
- CNC (optional)

To Purchase:

4 suppliers:
nonplanar.xyz for nozzles
igus for slewing ring
Amazon for sundry
McMaster for specific

- long nozzles, metal or brass
    - I suggest brass, likely you want the Reprap thread (if using E3D V6s) but **check!**
- Slewing ring
    - Only from igus

- 2 x GT2 pulley 20T / 6mm belt / 5mm ID
    - Cheap (amazon)
- 1 x 280mm 2GT belt and 1 x 200mm 2GT belt
    - McMaster (have to scroll down to ultra-quiet section)
- Two spacers: 8 mm OD x 20 mm length
    - On McMaster
- 2 x NEMA17, 38mm body stepper motors
    - Twotrees on Amazon

- 1 x 80-teeth, 2GT, 10mm bore pulley
  - $11.50 for 1x on Amazon
  - $17 for 2x and random stuff on Amazon
- 1 x 10mm-diameter shaft, 72mm long
  - Amazon
- 2 x Flanged Sleeve Bearing (McMaster 6659K118)
  - Link
- 1 x 10mm Universal Mounting Hub
  - $10 but more reviews here
  - $6.50 but less reviews here

  Budget: parts about should run about $175. Depending on the cost of machining and which filament used in printing, **below $300** is reasonable.

To Print

Print in rigid engineering filaments that can take some beating. I used Markforged ABS / Fiberglass reinforced. These parts are from Garth42's Jubilee-Open5x-assembly.step on the Open5x Github:

- Main body
- 100 mm bed
- 1x left bed coupler
- 1x right bed coupler
- Wiring holder
- 72T shorter c-gear (can be printed in SLA)

To Machine

Can use a service like sendcutsend or cut on any CNC available to you -- it is a very simple, flat piece, and any type of metal 1/8" or thicker should do.

- Z-axis bridge plate

Nuts and Bolts

- 8x bolts to affix to linear rails (M3 I think)
- 8x M4 bolts to affix to Z-axis bridge plate
- 4x M4 bolts
- 4x M4 nuts
- M3/M4 Heat Set Inserts
- M3/M4 Fasteners

> (from Brendon Build's mechanical-parts.jpg on the Open5x Github)