



Z-Upgrade 3.1a for VCORE 4.0



BRS-ENGINEERING

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Summary

BRS-Engineering Ballscrew conversion for Vcore 4.0 1st revision

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Tags: [oldham](#) [idex](#) [ballscrew](#) [vcore](#) [wobblex](#)

Adaptation of the production grade "Z-Upgrade" for VCORE 4.0

Upgrade to replace the original Z with a ballscrew system.

More precise, very reliable over time, offers a very high repeatability in the Z movement compared to a trapezoidal screw.

Maintenance-free*. Made to last in a production line. No wobble over Z. Proofed design over 2021. More than 350+ users since 2021.

A lot of things has been reworked on this iteration compare to the previous Z-Upgrade 2.0:

- **Simplification of parts list, easier implementation. direct bolt in upgrade.**
- **Directly bolted to the VCORE 4.0 frame and underplate. Re-use the Stock VC4 top retainers + bearings.**
- **No need of surelevation; the Stock VC4 feet will only need to be adjusted to the height. (+17mm)**

- **Compatible natively with Wobble X, Oldham V3 proofed printed rings compatible too**
- **Dense integration of the Oldham/Wobble X in the Arms**
- **Motor reduction for a very high holding torque, even when the motor aren't active. Proofed for heavy future custom bed, or bigger custom print volume machines. Vcore 500 can now run standard Nema 17 without risks of fall when the motor are powered off**
- **Motor reduction + ballscrew allowing an insane precision over the Z-Motion, extreme consistencies, allow thin and repeatable layer over time**
- **No maintenance needed (cleaning+thin lubrication once a year is enough)**
- **Z-motors easy tension over the 6mm timing belt with 1x M6 screw**
- **Add +10mm of Z distance (Oldham V3), or +15mm with Wobble X**
- **All included, no self sourcing to do.**
- **Only SFU1204 compatibility for now, A SFU1605 version will come soon**

Revision 1, Some adjustments:

- For ease of installation**
- SPI join adaptation from regular BK10 unit**
- Notches for NEMA connector**
- Bolting pattern from M6 to M4 to a fare easier instalation**

Manual in the making...

BOM

Github project page

Can be bought on the **BRS-ENGINEERING STORE**

Credits:

- @Ratrig for the VCore-4.0 amazing design**
- @MirageC / EVOMOTO Oldham/Wobblex magical design**

Model files



For Oldham V3

2 files



oldham-v3-middle-ring.stl



under-ring.stl



For Wobble X WS12

1 file



wobble-x-under-nut-1204.stl



Common

9 files



drive-tensionner-x3.stl



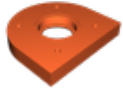
rear-arm-v2.stl



rl-arm-v2-x2.stl



bottom-common-x3.stl



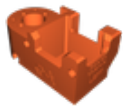
top-x3.stl



main-r.stl



main-rear.stl



main-l.stl



middle-x3.stl



STEP

3 files

wobble-x-v2.step

z-upgrade-31a-for-vcore-40-v12.step

rat-rig-v-core-40-300-hybrid-zu31a.step

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