**22  M8 nut 22 M8 washer 49 M3 nut 40 M3 washer 8 M3x10 bolt 15 M3x16 bolt**

**8 M3x20 bolt 4 M3x40 bolt 2 M4x25 bolt 3 624zz skate bearing 2 M4 nut**

**6 M4 washer 8 M5 nut 12 M10 nut 12 M10 washer 2 plastic tubing for z**

**4 bulldog clips 50 cable ties**

**- Threaded rods for y and z-axes**. Lengths are accurate to a couple of mm (fine tolerance for construction of Prusa frame), threads have been checked and sharp edges filed. Included are:

|  |  |  |  |
| --- | --- | --- | --- |
| 2 | M10×380mm | Threaded rod | long y-axis |
| 4 | M8x210mm | Threaded rod | short y-axis |
| 2 | M5×290mm | Threaded rod | z-axis leadscrew |
|  |  |  |  |

- **Smooth rods for axes.** This is precision (0.03 mm tolerance) rod. Included are:

|  |  |  |  |
| --- | --- | --- | --- |
| 2 | M8×370mm | Smooth rod | x axis |
| 2 | M8×350mm | Smooth rod | y axis |
| 2 | M8×320mm | Smooth rod | z axis |

- **Hardwar**e (vitamins) for Greg's Hinged Accessible Extruder, including hobbed bolt. See the first half of <https://www.youtube.com/watch?v=mx6TRCO7JLM> for assembly instructions, but note that ours is slightly different: the hobbed bolt goes in other way around; the idler hinge has a nut trap on the inside - the M3x25 bolt head should be on the gear side, with nothing protruding the other side; M4 nuts, bolts and washers are used with the springs for tightening the idler).

- **10x LM8UU bearings** for the x, y and z axes

- **GT2 timing belt and** aluminium pulleys. The belts are glass-fibre-reinforced rubber with a semicircular 2mm tooth cut; 6mm width. The pulleys are aluminium with 20 teeth, a 5mm bore to suit NEMA 17 stepper motors, a flange to stop the belt slipping off and a 2x M3 grub screws fitted to tighten to the motor shaft. The set includes an alan key (M2) for tightening the grub screws.

- **Laser cut frame** and print bed support in 6mm aluminium. This is for a printer with a build area of 200 x 200 x 200 mm (= 8" x 8" x 8").

- **Threaded rods for y and z-axes**. Lengths are accurate to a couple of mm (fine tolerance for construction of Prusa frame), threads have been checked and sharp edges filed. Included are:

|  |  |  |  |
| --- | --- | --- | --- |
| 2 | M10×380mm | Threaded rod | long y-axis |
| 4 | M8x210mm | Threaded rod | short y-axis |
| 2 | M5×290mm | Threaded rod | z-axis leadscrew |
|  |  |  |  |

**Hybrid Stepping Motor**

42 mm Series (NEMA 17 size) 1.8Degree High Torque Type

Step Angle           1.8deg (+/-5%@ full step, no load)

Resistance Accuracy     +/-10%

Inductance Accuracy     +/-20%

Temperature Rise      80DegreeC MAX.

Ambient Temperature    -20 ~ +50 DegreeC

Shaft Radial Play       0.02MAX @ 450g-load

Shaft Axial Play        0.08MAX @ 450g-load

MAX Radial Force      28N @ 20mm from the flange

MAX Axial Force       10N

Dielectric Strength      500VAC for one minute

Insulation Resistance    MIN 100Mohms, 500VDC

Rated Voltage      2.8 V

Current/Phase      1.68 A

Resistance/Phase    1.65 ohms

Inductance/Phase    3.2 mH

Holding Torque      3.6 kg.cm

Leads number      4

Rotor inertia       54 g.cm2

Approx. weight      0.28 kg

Detent torque      150 g.cm

Body length       40 mm

**The mechanical positioning resolution** of the printer is 0.0125 mm in X and Y and 0.00025 mm in z. Feature size and layer height for prints is dependent on nozzle-size, but in the range of 0.1-0.5 mm. Calibration after assembly is needed for best results.

**Here's a comprehensive list of what's included in this kit:**

* Fully Assembled & Tested Electronics
  + Ramps 1.4
  + Arduino Mega 2560
  + Pololu Stepper Drivers
* Grained, Anodized, & Tapped Aluminum Frame
* Grained, Anodized, & Tapped Aluminum Bottom Plate
* NEMA 17 Stepper Motors (5.5KG-CM)
* J-Head Hot End (0.5mm 1.75mm)
* J-Head Aluminum Mounting Plate
* 30mm 12v Fan
* GT2 Timing Belts
* GT2 Aluminum 16-20 tooth Pulleys (5mm bore)
* MK1 PCB Heat Bed
* Heat Bed Thermistor with PTFE
* Tempered Glass Print Plate
* LM8UU Linear Bearings
* 608ZZ Bearings
* 624ZZ Bearings
* Hyena Hobbed Bolt with Locknuts
* Hot End Thermistor with PTFE
* Hot End Heater Resistor
* 30 Amp Power Supply
* AC Power Cord
* USB Cable
* 24 AWG Wire - End Stops
* 22 AWG Wire - Hot End, fan & Thermistors
* 18 AWG Wire - PCB Heatbed and PSU
* Mechanical End Stop Switches
* Extruder Springs
* Heat Bed Springs
* Wire to Board Crimp Housings and Receptacles
* Paper clips
* Zip Ties
* Z Couplers
* Splice Connects
* M3 & M4 Hex Keys
* Wire Wrap
* Prusa Mendel Iteration 3 Plastic Parts
  + X End Motor Mount
  + X End Idler
  + X End Idler Arm
  + X Carriage
  + X Endstop Holder
  + Y Frame Corners
  + Y Motor Mount
  + Y Idler
  + Y Belt Holder
  + Y Endstop Holder
  + Z Axis Motor Mounts (2 Parts)
  + Z Axis Top Supports (2 Parts)
  + Z Endstop Holder (2 Parts)
  + Electronics Back Plate
  + Extruder Body
  + Extruder Guidler
  + Extruder Large Gear
  + Extruder Small Gear
  + Extruder Adapter
* Rods, Nuts and Bolts
  + M5 Threaded Rods (Z-Axis) (295mm)
  + M8 Threaded Rods (Frame) (208mm)
  + M8 Smooth Rods (X-Axis) (370mm)
  + M8 Smooth Rods (Y-Axis) (357mm)
  + M8 Smooth Rods (Z-Axis) (320mm)
  + M10 Threaded Rods (Frame) (380mm)
  + M3 10mm Bolts
  + M3 14mm Bolts
  + M3 16mm Bolts
  + M3 18mm Bolts
  + M3 20mm Bolts
  + M3 25mm Bolts
  + M3 30mm Bolts
  + M3 50mm Bolts (Extruder Guidler)
  + M3 Lock Nuts
  + M3 Nuts
  + M4 20mm Bolts
  + M4 25mm Bolts (Timing Belt Idlers)
  + M4 Lock Nuts
  + M4 Nuts (Timing Belt Idlers)
  + M4 Washers
  + M4 Fender Washers (Timing Belt Idlers)
  + M5 Nuts (Z Axis)
  + M8 O1 Smooth Rod E-Idler 18mm
  + M8 Nuts
  + M8 Washers
  + M10 Nuts
  + M10 Washers
  + M10 Fender Washers