



Screws M8, on carriage n, axis n
 Lg 50 : 4 X Cr.X, Y
 Lg 55 : 17 X Cr.X, Y - Cr.Z, Y-
 Cr.Z, X- nuts
 Lg 65 : 1 X Cr.Z, Y
 Lg 100 : 10 X, Cr.X, Z - Cr.Z, X
 Lg 110 : 2 X, Cr.Z, Y
 Lg 140 : 2 X, Cr.X, Y
 Lg 160 : 3 X, Cr.Y, Z - Cr.Z, Y
 Lg 175 : 1 X, Cr.Z, Y
 Lg 200 : 6 X, Cr.Y, Z - Cr.Y, X
 Lg 210 : 1 X, Cr.Z, Y

Transmission screw M8
 Lg 1000 : 3 X, axis X, X', Y
 Lg 210 : 2 X, axis X, X'
 Lg 100 : 2 X, axis X, X'
 Lg 322 : 1 X, axis Z

Screw M10, for beam support
 Length 325 : 6 X, Cr.X, Z

Ball bearings D 8 x 22 L 7: 89
 Nuts M8 : around 200

Ply/medium panel size
 Ply thk. 3mm : ? x ? cm
 Ply or medium thk. 10mm: ? x ? cm
 Ply or medium thk. 16mm: ? x ? cm
 Ply or medium thk. 22mm: 5 x 5 cm

1 aluminium bar 25mm x 25mm x 400 mm
 Mason rulers 100mm x 18mm : 4m
 Steel angles 20mm x 20mm : 4m
 Steel tube 40mm x 80mm : 6m
 Plastic or aluminium U L25 x h20 : 1m

2m of chain carry-cables L18xh15, +
 4 ends, at Radiospares ref. 599-623
 and 599-639 for the ends.

Aspiration :
 PVC tube diameter 50mm x lg. 2000 mm
 4 elbows at 90° for tube diam 50mm
 5 closed collars diam 50mm
 1 flexible tube 40/50, length env. 200
 mm, to be plugged on vacuum cleaner.
 1 vacuum cleaner flexible tube lgth
 1000 mm

Mason rulers are glued with epoxy.
 sand, well clean with alcohol and
 fabric and glue rapidly after the
 cleaning.
 Two templates inside the beam will
 help positioning. Don't tight too much.

Glue steel angles 20x20 on mason rulers,
 similarly to hereabove description.
 Round the aluminium corners with a plane
 and glue angles with epoxy after
 surface preparation.

X carriage bottom : Tubes A, B
 X carriage top : Tubes C, D
 Y carriage : Tubes E, F, I
 Z carriage : Tubes G, H

Screw movement transmission
 This will be done with ordinary screw, but the
 screw length is limited to 1 meter.
 Nuts will be threaded in brass or aluminium bars
 20mm x 20mm.
 It will be probably needed to hone your screw by
 doing many empty runs.
 Well grease.
 Screw is run by plastic gears. Minimise the plays.

As alternate, you can replace ordinary screw by
 trapezoidal screw but you will have to made boxes
 to contain the nuts.

Exchange sprockets to have a reduction instead of
 a multiplication. Beware, on Z axis, it will hinder
 dismounting. You will also have to modify the
 position of the steppers (nut axis will be modified).

Movement transmission BOM, Radiospares references
 Axis X, X', if common stepper :
 4 sprockets 15 teeth L050, RS ref : 350-8333
 2 belts 420L050, 112 teeth, RS ref : 338-8145

Axis X, X', if separated steppers :
 2 sprockets 15 teeth XL037, RS ref : 350-8068
 2 sprockets 22 teeth XL037, RS ref : 350-8131
 2 belts 70XL037, 35 teeth, RS ref : 338-7776

Axis Y, Z :
 2 sprockets 15 teeth XL037, RS ref : 350-8068
 2 sprockets 22 teeth XL037, RS ref : 350-8131
 axis Z, 1 belt 100XL037, 50 teeth, RS ref : 338-7805
 axis Y, 1 belt 70XL037, 35 teeth, RS ref : 338-7776

Cables to steppers and accessories :
 if bipolar : 4 x 0.22 mm², shielded, flexible type, diam.
 4 mm

With that section, max current is around 2.5 A
 Length of cables :

-Steppers, laser pointer supply: ?? m
 -End switches : ?? m

For unipolar motors, you will need 6x0.22 mm²
 but this cable is bigger diameter, so the
 cable-carrying chain must be larger and will began to
 take some room.

Ball bearings are glued in their holes. Well deoil the
 peripheral area of the bearing, without deoiling the
 internal of the bearing.
 Add cyanoacrylate glue on the internal angle to
 well block.



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