Three Axis CNC Machine Assembly Instructions
1. Bolt (0.25"x2") x16
   Cross Nut x16
   Belt Holder x4
   Belt Holder Brace x4

2. Y-Axis Rail (24") x2
3. Bolt (8mmx55mm) x24
   Skate Bearing (8mm ID 22mm OD) x24
   Nut (8mm) x24
   Washer (8mm) x48

Note: Repeat this step 12 times once for each end of each bearing block

4. Bolt (0.25”x2”) x4
   Nut (0.25”) x4
   Imperial Bearing (0.25” ID 0.875” OD) x1
   Spacer x4
   Left Cart Inside x1
   Left Cart Outside x1
5. Bolt (0.25" x 1.25") x5
Cross Nut x4
Nut (0.25") x5
Beam Bottom x1
Beam Middle x2

6. Beam Top x1
Imperial Bearing (0.25" ID 0.875" OD) x1
Right Cart Inside x1
7.

- Bolt (#8 x 3") x4
- Pulley (MXL 20 Tooth) x1
- Nut (#8) x4
- Motor Spacer x1
- Motor (w/shaft coupler) x1
- Y-Axis Shaft (0.25" x 30" rod) x1

8.

- Bolt (0.25"x2") x4
- Nut (0.25") x4
- Pulley (MXL 20 Tooth) x1
- Spacer x4
- Right Cart Outside x1
9.

- Bolt (0.25"x2") x16
- Bolt (0.25"x1.25") x4
- Y-Block Holder x4
- Cross Nut x16
- X-Axis Rail (26") x2
- Skate Bearing (8mm ID 22mm OD) x8
- Imperial Bearing (0.25" ID 0.875" OD) x1
- Beam Cap x2
- X-Axis Rail (26") x2
- X-Axis Rail (26") x2
- X-Axis Rail (26") x2
- X-Axis Rail (26") x2
- X-Axis Rail (26") x2

10.
11. Y Axis Runner (13") x2

12.
13. Bolt (№8 x 3")
   4
Nut (№8)
   4
Bolt (0.25"x2")
   6
Cross Nut
   16
Bolt (8mmx55mm)
   2
Nut (8mm)
   2
Motor Spacer
   1
X Cart Cap
   1

Pulley (MXL 20 Tooth)
   1
X-Axis Shaft (0.25" x 2" rod)
   1
Motor (w/shaft coupler)
   1
Skate Bearing (8mm ID 22mm OD)
   4
Imperial Bearing (0.25" ID 0.875" OD)
   1

14. X Cart Connector 3 (Inner)
   1
X Cart Connector 2 (Middle)
   1
X Cart Connector 1 (Outer)
   1
X Axis Runner (Long) (7.5”)
   1
15. Bolt (0.25"x2") x8
Nut (0.25") x8
X Cart End Left x1
Z Rail Runner x1
Z Rail Spacer x1
Z Rail Back x1

Note: There are several hidden bolts in this step

16. Bolt (0.25"x2") x6
Cross Nut x8

Note: There are several hidden bolts in this step
17. Bolt (0.25''x2'') x8
Cross Nut x4
X Cart Cap x1
X Bearing Block (Short) x2

18. Bolt (0.25''x3.5'') x4
Cross Nut x2
X Bearing Block (Short) x1
19. Bolt (0.25"x3.5") x4
Bolt (0.25"x1.25") x2
Z Cart End Nut x2
Z Cart End Spacer x2
Nut (0.25") x6
Coupling Nut (0.25") x1
Z Cart Holder x2

20. Bolt (0.25"x2") x4
Nut (0.25") x4
21. Z Bearing Block x2

Z-Axis Rail (0.25" x 11" rod) x2

22. Bolt (#8 x 3") x4
Nut (0.25") x1
Motor (w/shaft coupler) x1
Nut (#8) x4
Skate Bearing (8mm ID 22mm OD) x1
Z-Axis Shaft (0.25" x 12" threaded rod) x1
Note: Drawing the belt threading step exceeds my AutoCAD abilities therefore I shall end with a rather wordy explanation

1. Attach belt clamp to the end of each of the three lengths of belt

(For the Y Axis) (x 2)
2. thread belt through the hole in the front belt holder
3. thread the belt through the gap in the front Y-block holder
4. thread the belt under the front shaft of the bearing’d bolt
5. run the belt up and over the pulley attached to the Y-axis drive shaft
6. run the belt down and around the back bearing’d bolt
7. thread the belt through the gap in the back Y-block holder
8. Loop the belt through an eye bolt and clamp it with a belt clamp
9. put the eye-bolt through the hole in the back belt holder and attach a nut
10. Tighten the nut until the belt is taught

(For the X-Axis)
11. Use a similar threading path for the X-axis except start by running the belt through the holes in the cart just behind the Y-axis motor