

## Building a Clamp assembly (1002145)

2/13/07

### Parts

- Main parts

| Description                      | Item                                  |
|----------------------------------|---------------------------------------|
| Clamp - support                  | Drawing 1002145-001                   |
| Linear ball bearing track, 110mm | Drawing 1002145-002, LWLF18R110BH     |
| Clamp – Motor Mount              | Drawing 1002145-003                   |
| Clamp – Ballscrew Nut mount      | Drawing 1002145-004                   |
| Hall Effect Sensor Flag          | Drawing 1002145-005                   |
| Clamp – Spring Mount             | Drawing 1002145-006 & -008            |
| Clamp – Gripper Contact          | Drawing 1002145-007                   |
| Thermal Sensor Mount             | Drawing 1002145-009                   |
| Clamp – Retaining Rod            | Drawing 1002145-010                   |
| Clamp – Pressure Sensor Mount    | Drawing 1002145-012, Collection Clamp |
| Clamp – Gasket Mount             | Drawing 1002145-013, Processing Clamp |
| Motor                            | Maxon 279523                          |
| Nordex 4mm bearing               | ABS-A7-40 (x2)                        |
| Flexible coupler                 | W7C 15-3mm-3mm                        |
| Nook 6 x 2mm Ballscrew Assy      | Drawing 1002098-002                   |
| Small Slide Car                  | LWLFC18C1BPS2                         |
| Large Slide Car                  | LWLF18C1BHS2                          |
| Large Wave Spring                | C056-L1-S17 or C112-H8-S17            |
| Hall Sensor                      |                                       |
| Pressure Sensor                  |                                       |
| Thermal sensor                   |                                       |

- Small parts

| Qty | Size                 | Item                        |
|-----|----------------------|-----------------------------|
| 1   | 4mm                  | External retaining ring     |
| 3   | 3/16"                | External retaining ring     |
| 2   | SS1-104              | W.M. Berg shaft spacers     |
| 1   | SS1-25               | W.M. Berg shaft spacers     |
| 1   | SAIPO4-15 (not used) | Spring Anchor - Misumi      |
| 2   | M2x5                 | SHCS                        |
| 2   | M2x6                 | SHCS – Grade 12.9           |
| 8   | M3x10                | SHCS                        |
| 2   | M3x12                | SHCS                        |
| 2   | M3x16                | SHCS                        |
| 10  | M3                   | Lockwasher spring Hi Collar |
| 2   | #4-40 x 3/16"        | Pan Cross Head              |

|   |               |                             |
|---|---------------|-----------------------------|
| 4 | #4-40 x 1/2"  | SHCS                        |
| 4 | #4            | Lockwasher spring Hi Collar |
| 2 | #5            | Nordlock washers            |
| 7 | #5-40 x 3/8"  | SHCS                        |
| 4 | #5-40 x 1/2"  | SHCS                        |
| 2 | #5-40 x 5/8"  | SHCS                        |
| 7 | #5            | Lockwasher spring Hi Collar |
| 1 | 3/32" x 1/4"  | Dowel Pin                   |
| 2 | 1/16" x 3/16" | Dowel Pin                   |
| 2 | 2-010         | O-Ring, BUNA-N,             |
| 1 | 2-020         | O-Ring, BUNA-N,             |

## Tools

- #2 Phillips screwdriver
- External snap-ring pliers for 3/16" shaft
- Loctite 222 MS
- Hex keys—sizes:

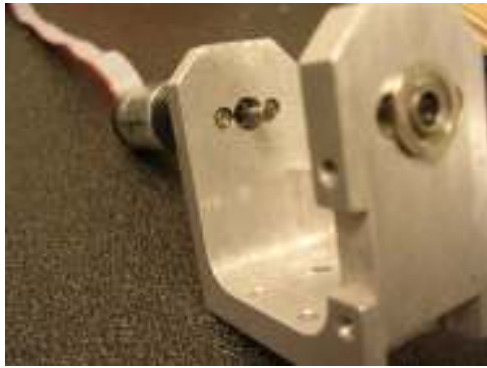
|        |
|--------|
| 3/32"  |
| 5/64"  |
| 9/64"  |
| 1.5 mm |
| 2.5 mm |

## Assembly

1. Press the two Nordex 4mm bearings onto the Clamp – Motor mount, so that their mounting flanges are opposite each other.



2. Mount the motor to the motor mount using two M2x5 SHCS. NOTE: Motor leads aimed away from mount surface.



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3. Loosely place the flexible coupler onto the motor shaft.



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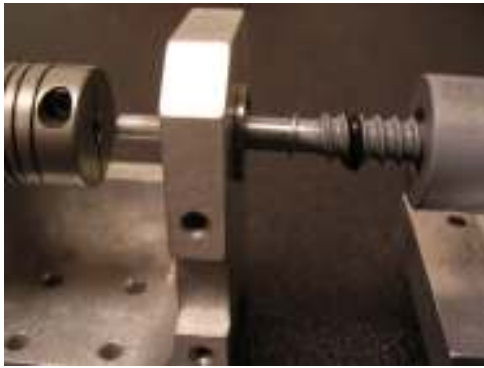
4. Screw the Ball-screw Nut assembly onto it's mount.



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3. Place a SS1-104 shaft spacer onto the narrow end of the shaft and insert it into the 4mm bearing on the motor mount.

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4. Place another SS1-104 shaft spacer and 4 mm retaining ring on the other side of the bearings. Slide the ballscrew shaft through the 4 mm bearing and into the flexible coupler. Position the retaining ring into the shaft groove.

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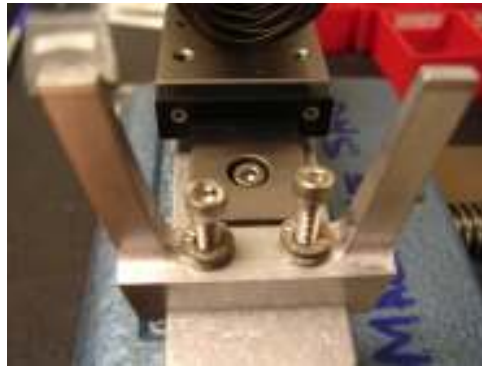
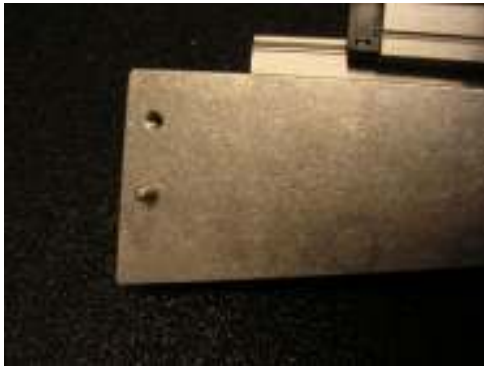
5. Attach the Linear slide track to the Clamp-Support using four (4) #5-40 x 3/8" SHCS with split washers.

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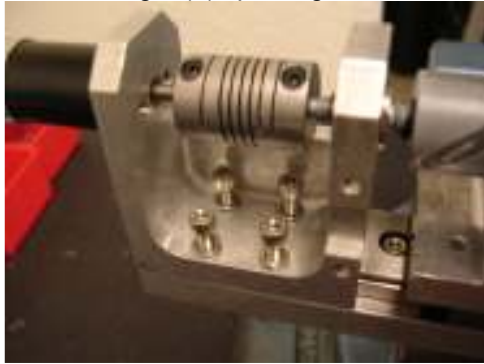
6. Press the 3/32" Dowel pin into the Clamp-Support. Attach the Clamp Gripper Contact using two (2) NordLock #5 washers and two (2) #5-40 x 5/8" SHCS.

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7. Attach the Motor mount to the Clamp – Support using four (4) #5-40x1/2" SHCS and eight (8) split-ring lockwashers.

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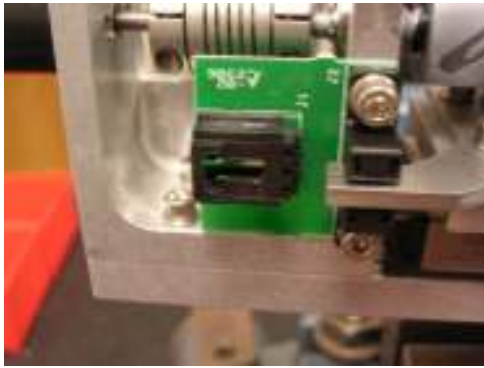
8. Attach the Hall Effect Sensor Flag and the Ballscrew Nut mount to the small slide car using two (2) M3x12 SHCS and two (2) M3 split-ring lockwashers.

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9. Mount the Hall Effect sensor using two (2) #5-40 x 3/8" SHCS and two (2) split-ring lockwashers.

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10. Insert the retaining rod into the ballscrew nut mount and secure with two (2) 3/16" external retaining rings. Formatted: Bullets and Numbering

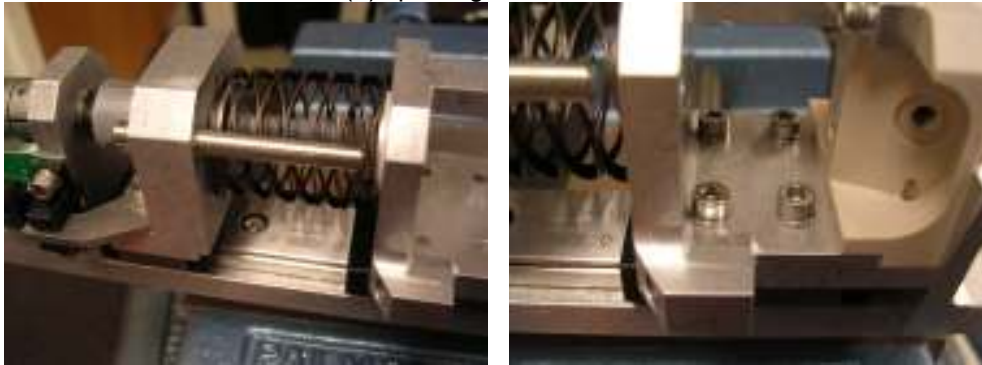


11. For a Collection Clamp assembly, attach the Pressure sensor mount to the Spring mount using four (4) #4-40 x 1/2" SHCS with four (4) split ring lockwashers. Install one (1) 2-010 O-ring. Formatted: Bullets and Numbering



12. For a Processing Clamp assembly, attach the Gasket mount to the Spring mount using four (4) #4-40 x 1/2" SHCS with four (4) split ring lockwashers. Install one (1) 2-010 O-ring, and one (1) 2-020 O-ring. Formatted: Bullets and Numbering

13. Insert the wave spring over the ballscrew shaft and position the spring mount on the linear track. Attach the Spring mount to the Large sliding car using four (4) M3x10 SHCS with four (4) split ring lockwashers.



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14. Cinch the two (2) grade 12.9 M2x6 SHCS on the flexible coupler so that the ballscrew can be used to compress the spring and allow the retaining rod to pass through the spring mount. Place the SS1-25 shaft spacer onto the retaining rod and secure with a 3/16" external retaining ring.



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15. Press the two (2) 1/16" x 3/16" dowel pins into the Thermal sensor mount. Attach the thermal sensor mount to the Clamp support using one (1) #5-40 x 3/8" SHCS with split ring lockwasher.

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16. Mount the Temperature sensor board to the Thermal mount using two (2) #2-56 x SHCS's with Spring Lockwashers.
17. Mount the Clamps to the ??? using three(3) #8-32 x  $\frac{3}{4}$ " SHCS's with Spring Lockwashers and two (2)  $\frac{3}{16}$ " x  $\frac{3}{4}$ " dowel pins.