

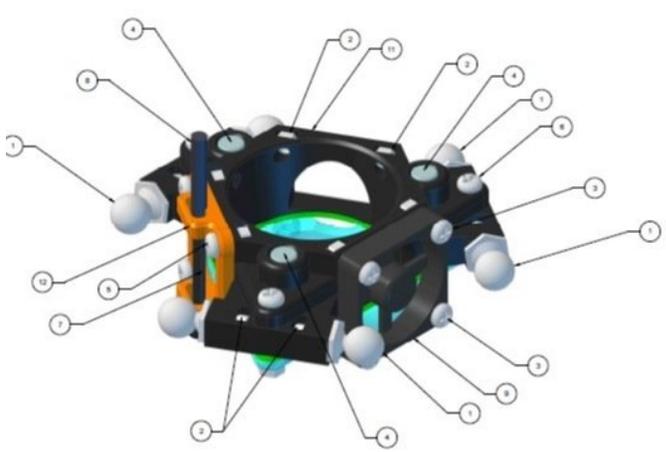
firepickdelta

Assembling the End Effector

Written By: Neil Jansen

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Part Number	Quantity	Description	Unit Name
000-075-05-001	8	Ball stud, 3/16 dia, 1/2" L	000-075-05-001
000-075-05-002	20	Fastener, M3x2	000-075-05-002
000-075-05-003	4	Fastener, pan-head hex-head screw, M3, 1.5mm L	000-075-05-003
000-075-05-004	8	Ball stud, 3/16 dia, 1/2" L	000-075-05-004
000-075-05-005	4	Fastener, pan-head hex-head screw, M3, 1.5mm L	000-075-05-005
000-075-05-006	8	Fastener, pan-head hex-head screw, M3, 1.5mm L	000-075-05-006
000-075-05-007	1	End effector ATC hub	000-075-05-007
000-075-05-008	1	ATC hub	000-075-05-008
000-075-05-009	1	ATC hub	000-075-05-009
000-075-05-010	1	End effector ATC hub (top)	000-075-05-010
000-075-05-011	1	End effector ATC hub (top)	000-075-05-011
000-075-05-012	1	End effector ATC hub (top)	000-075-05-012
000-075-05-013	1	End effector ATC hub (top)	000-075-05-013
000-075-05-014	1	End effector ATC hub (top)	000-075-05-014
000-075-05-015	1	End effector ATC hub (top)	000-075-05-015
000-075-05-016	1	End effector ATC hub (top)	000-075-05-016
000-075-05-017	1	End effector ATC hub (top)	000-075-05-017
000-075-05-018	1	End effector ATC hub (top)	000-075-05-018
000-075-05-019	1	End effector ATC hub (top)	000-075-05-019
000-075-05-020	1	End effector ATC hub (top)	000-075-05-020
000-075-05-021	1	End effector ATC hub (top)	000-075-05-021
000-075-05-022	1	End effector ATC hub (top)	000-075-05-022
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000-075-05-024	1	End effector ATC hub (top)	000-075-05-024
000-075-05-025	1	End effector ATC hub (top)	000-075-05-025
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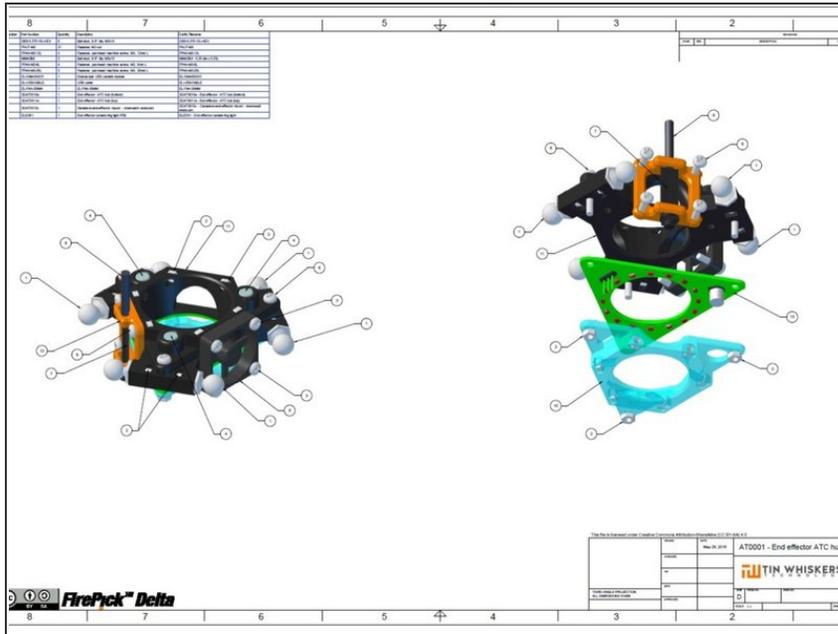


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DATE	May 26, 2015	AT0001 - End effector ATC hub
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Step 1 — Use PDF as reference



● [PDF link](#)

Step 2 — Gather parts



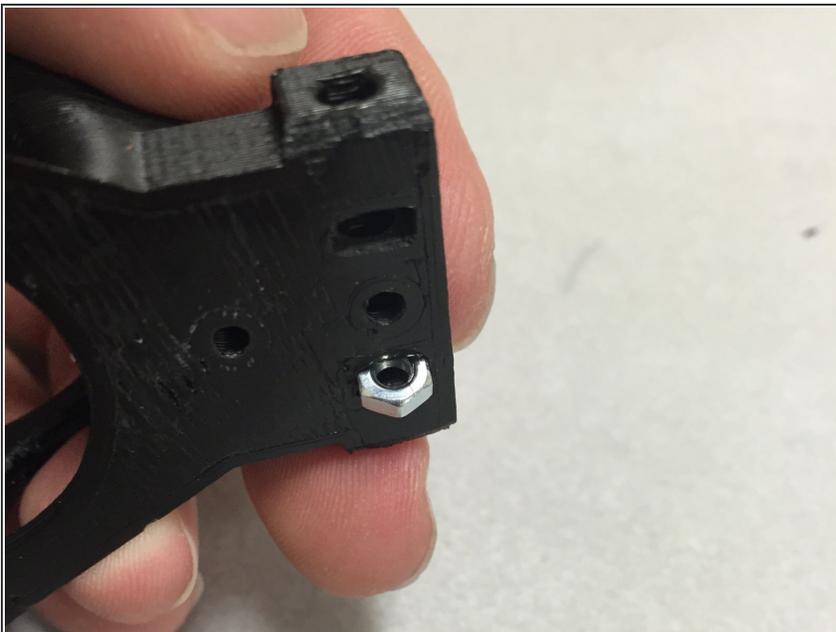
● Gather these parts

Step 3 — Insert magnets

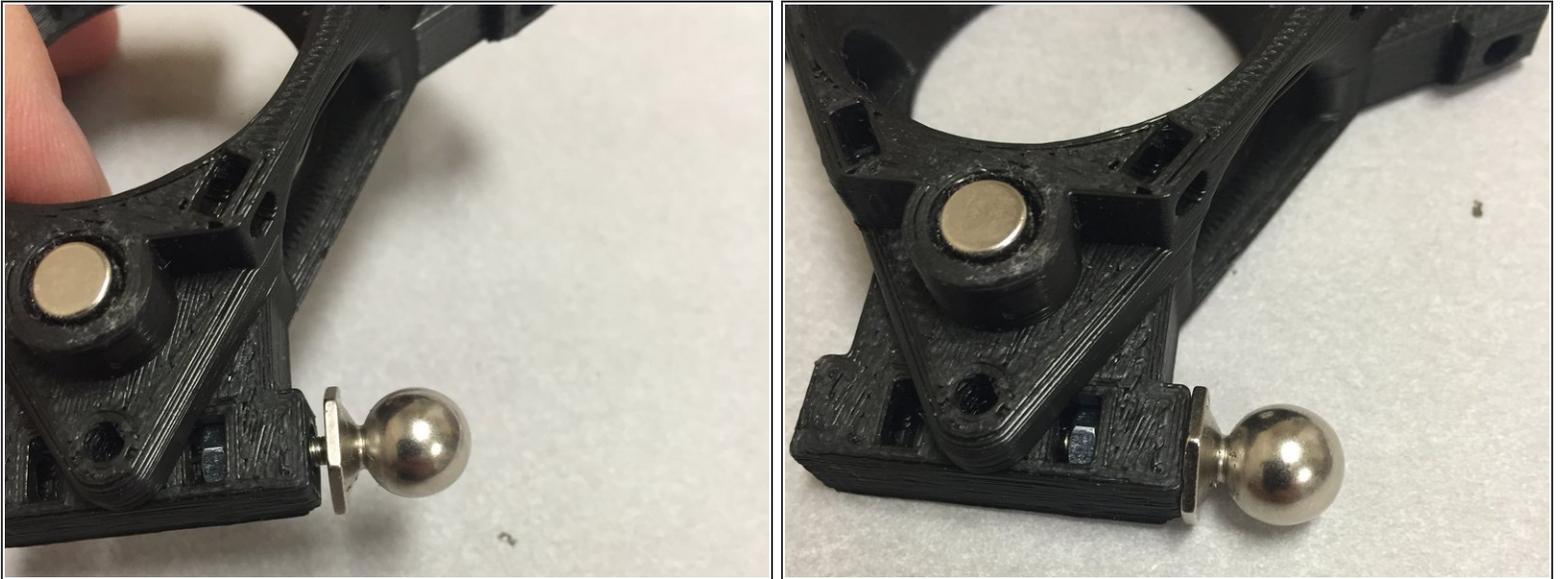


- Use cyanoacrylate glue or 2-part epoxy if they're too loose to press-fit.
- NOTE: Polarity of the magnets doesn't matter. Line them up in the same direction if you're OCD or anal retentive.

Step 4 — M3 Nuts for Ball-Studs



- Do these one at a time. Otherwise the others may fall out. Insert the first M3 nut and then move onto the next step.

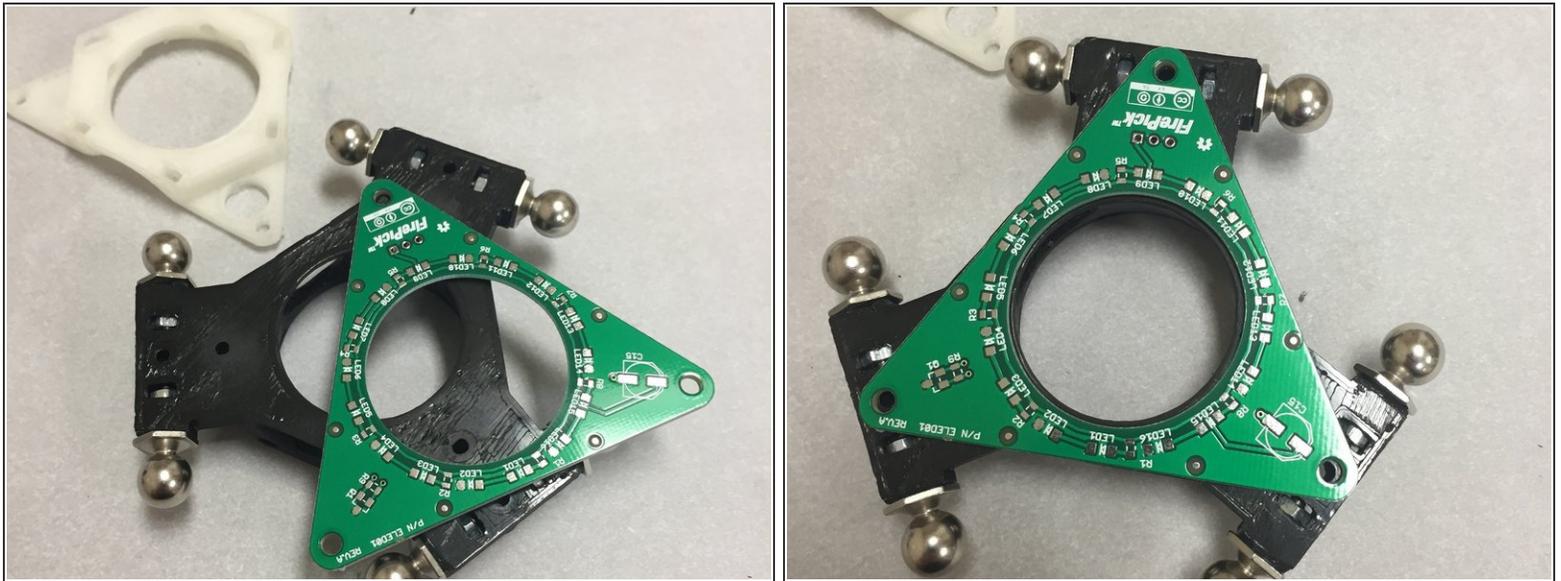
Step 5 — Install DBS-0.375-10L-HEX ball-studs

- Insert the ball-studs into the ATC hub. Screw them down until they are tight, but not so much where the plastic deforms.

Step 6 — Repeat 5x

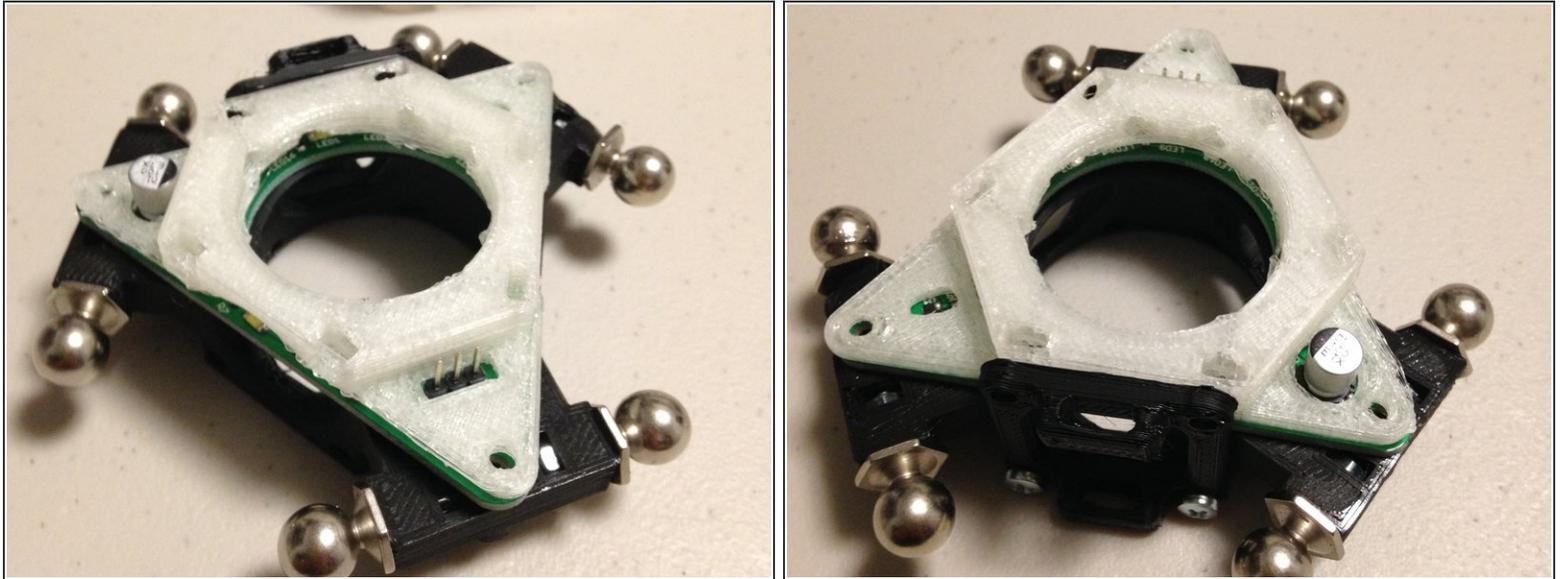
- Do this step five more times, so that all six ball-studs look like the picture.

Step 7 — Install Ring Light PCB



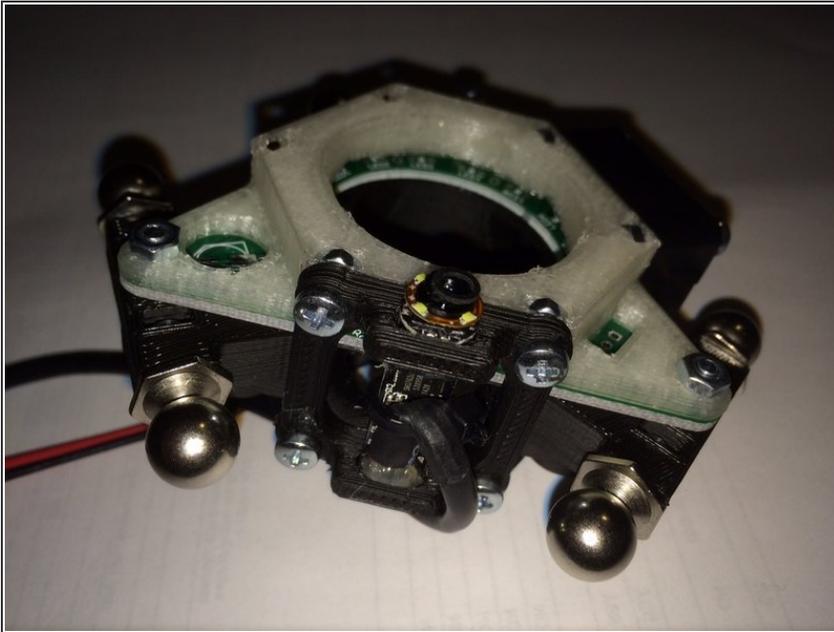
- Locate the ELED01 ring light PCB and place it on the 3DAT0011a ATC hub.
- NOTE: We intended the ELED01 PCB to be an **SMT practice kit**. If you're building your machine for the first time, **it is recommended to just assemble the camera with the blank PCB**. You can always remove it later and use the SMT capability of the FirePick Delta to assemble the PCB, after you've commissioned the machine.
- Note that the 3-pin connector will protrude from the bottom of the PCB when the board is assembled. Remove some material from the 3-d printed base to allow the PCB to sit flush.

Step 8 — Install Ring Light Diffuser



- Install the 3DAT0011a ATC hub diffuser, over the LED ring light. Use three M3 x 20mm pan-head screws, and three M3 nuts to hold the diffuser to the assembly.
- ☞ Note that it's not 100% necessary at this point to have the ring light board built and installed. **The down-looking LED ring light board was provided in kit form to be used as a PnP SMT practice kit.** Therefore, it's OK if you don't have it installed at this point,

Step 9 — Attach Camera Module



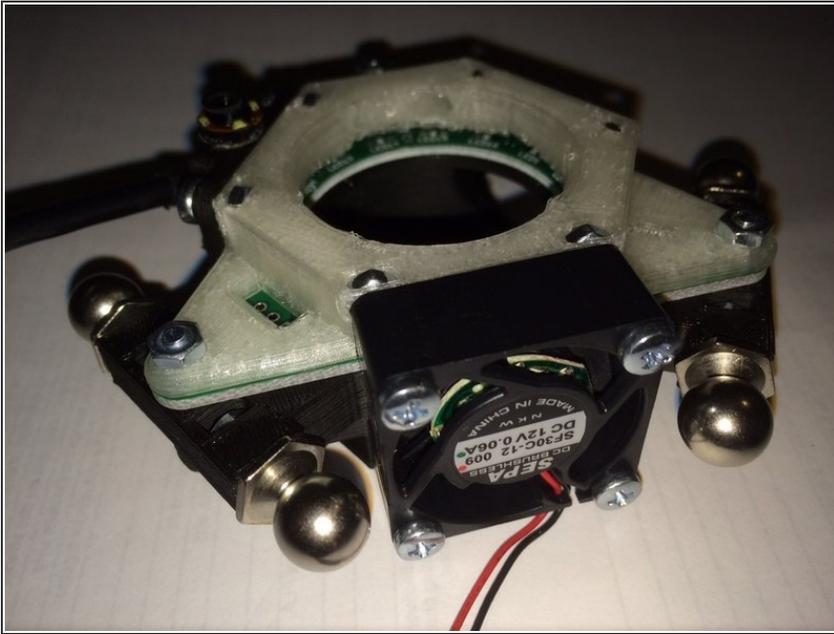
- Attach the camera module to the end effector.

⚠ NOTE: The camera should be complete per the [Camera Module Assembly Guide](#), before attaching it in this step.

- Insert 4x M3 nuts on one of the three sides of the end effector. Two will go in the diffuser, and two into the black 3D printed housing.
- Use 4x M3 x 8mm pan-head machine screws to attach the camera module to the side of the end effector.

★ Note that the camera will be oriented to the FRONT of the machine.

Step 10 — Attach Fan Module



- Attach the fan module to the end effector.
- Insert 4x M3 nuts on one of the three sides of the end effector. Two will go in the diffuser, and two into the black 3D printed housing.
- Use 4x M3 x 16mm pan-head machine screws to attach the fan to the end effector. May not be in kit.
- ⓘ Orient the fan so that the wires exit the fan on the bottom part of the end effector.

Step 11 — The ATC hub is now complete! (sorta)



- The end-effector / ATC hub is now complete.