EQ3 Hypertune

The EQ3-2 from Sky-Watcher and CG-4 from Celestron are great little beginner mounts for lightweight setups. Their performance is acceptable for how little they cost, but there are ways to improve things. It is recommended to regrease the internals every once in a while (use "wet" grease such as white lithium grease), but you can also change out the bushing rings with high quality thrust needle bearings. This reduces the periodic error and to prevent the axis from "sticking" when the motor tells it to move.

The Upgrade

> It is recommended to watch the entire video before buying or doing the upgrade.

Petter Åström created an excellent video showing how change out the cheap bushing rings in the EQ3-2 (sold as CG-4 by Celestron) with high quality thrust needle bearings to reduce the periodic error.

https://www.youtube.com/embed/SKZT5tiFX_s?si=ZWIeA-7G9EIBSBjC

You will need the following bearings:

Type	Example part	Amount	in. diameter (mm)	out. diameter(mm)	thickness (mm)
Thrust Needle br.	AXK1024-A	1	10	24	2
Thrust Needle br.	AXK2035-A	1	20	35	2
Thrust Needle br.	AXK2542-A	1	25	42	2
Thrust Needle br.	AXK3047-A	1	30	47	2
Thrust Needle br.	AXK3552-A	1	35	52	2
Ball bearing	BO440460	4	6	13	4-5

> The brand doesn't matter a whole lot, most brands are fine. The quality of the absolute cheapest parts from AliExpress cannot be guaranteed. Buy from local stores that sell known brands like SKF if you want to be safe.

> The ball bearing upgrade isn't strictly needed. The worm gear aasembly already uses ball bearings, but they are low quality. They don't matter as much because they are not on the output stage.

And the following washers:

Example part	Amount	in. diameter (mm)	out. diameter (mm)	thickness (mm)
AS1024	1	10	24	1
AS2035	2	20	35	1
AS2542	1	25	42	1
generic	4	5	10	0.5

> Some of washers are specifically for use together with bearings. Normal washers don't work for this purpose. The generic washers can be normal ones, but they do have to all be the same thickness.

Revision #3
Created 18 January 2025 20:57:26 by Admin
Updated 19 January 2025 12:59:15 by Admin