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APM's MaxLoad Alt-Az Mount

Knowing Something Special When You See It!

By Mark Reik

Have you ever had one of those moments where you knew instantly you were dealing with something special? When it comes to astronomy gear, those special moments have happened to me several times, which actually isn't much, since I'm a true equipment junkie. I had another of these moments this past December when I got my first chance to use the new MaxLoad Alt-Az mount from APM.

It wasn't just that odd sensation in my gut or head that cued me to the presence of something special. A telltale sign that also accompanies such experiences is being compelled to spend a lot of time just sitting down and analyzing. I'm not sure why this happens, but will speculate that it's simply the result of natural curiosity – the need to understand what I'm experiencing.

What makes this piece of equipment special? How did the designer and manufacturer do the things to set it apart? In the case of the MaxLoad mount, I didn't come up with any revolutionary departure from the conventional. What I did find was extremely precise machining and a well conceived and implemented design.

Alt-Az Mount Design

Alt-az observing is nothing new, but as

with all the equipment we use to meet our ends, the alt-az class of mounts has seen many phases in its evolution. The first popular design used a cradle to support the scope. These were very intuitive to use, but had to employ offset axes to insure clearance when pointing near the zenith. Because of that, balance points could change and therefore became an issue to some.

Other designs utilizing a single vertical or diagonal arm have also seen widespread use. Like many amateurs, I've tried them all. Like many others, I've found designs that utilize intersecting axes to best suit my needs. Some even offer the capability of using two or more scopes at the same time, which I find very handy.

The APM MaxLoad Alt-Az Mount

APM Telescopes' Markus Ludes realized there was a void in the alt-az marketplace and has addressed it with an all new, from-the-ground-up design. Focusing on both the pros and cons of previous and current mounts, the MaxLoad was conceived.

Load on the azimuth axis is easily distributed by using a large surface area; hence the MaxLoad's large bearing. Doing



the same on the altitude axis would result in a very large mount, along with further distancing the two axes, which has consequences of its own. A roller bearing on the azimuth axis would result in too free of motion, resulting in uncontrollable movement with even the lightest touch. The elegantly simple solution for the altitude axis utilizes a 50-mm axial needle bearing that is preloaded by the weight of the beefy altitude housing and shafts. As payload is increased, so is the torque that can be applied at the instrument, since distance from the axis usually increases incrementally. In short, the forces oppose each other, resulting in remarkably linear ease of motion.

The APM MaxLoad mount features the intersecting axes design. The azimuth axis utilizes an amazingly large, 180-mm (7.1-inch) PTFE bearing to provide maximum payload capacity, as well as a 45-mm needle bearing where the mount halves attach. I have seen mounts that rely on precision machine metal surfaces and lubricant for the bearing interface, as well as mounts that rely on PTFE bearings for load distribution. The former can be extremely smooth, but regardless of the shear strength of the lubricant, ultimate payload capacity is limited by the design.

APM'S MAXLOAD ALT-AZ MOUNT



The latter design can increase payload, but is subject to roughness or wear over time if machined surface tolerances are not exacting. Ultra-precise machining, when combined with a PTFE bearing, is simply hard to beat. Payload goes way up, while motions remain smooth and predictable. In the case of the APM MaxLoad mount, the small bearing where the mount halves attach provides an appropriate method of

reducing friction where load cannot be distributed - a nice touch.

Testing the MaxLoad Mount

I opted not to play fair with the mount during my initial evaluation. That was done by not using any counter-

weight at all while installing a 30-pound Intes-Micro MN76. I'll be honest - I expected to feel a bit of stiction when first applying pressure to induce movement in the azimuth axis. Many mounts may seem to move smoothly after motion is already under way, but getting them started often results in a 'jump,' requiring more initial force than that needed to continue motion. This often results in a tendency to

overshoot the intended target.

I ended up trying the motion of the azimuth axis several times, because I wasn't feeling what I had expected to feel. Not only was there no jump or 'stiction' to begin a motion, there was also no 'stick' to end it! I moved on to the altitude axis and experienced the same results. To me, that's a characteristic that's consistent with every really nice alt-az mount I've had the pleasure of using. What I had not seen before was that result with zero counterweights and at 30 pounds no less!

At the Eyepiece

I thought that was nice, but know full well anything less than the smoothest of motions will rear its ugly head most clearly at the eyepiece's tiny field of view. I had to wait a couple of weeks for clear skies before a chance to give the same mount/scope combination a run for its money in a real world application. Initial testing had been performed



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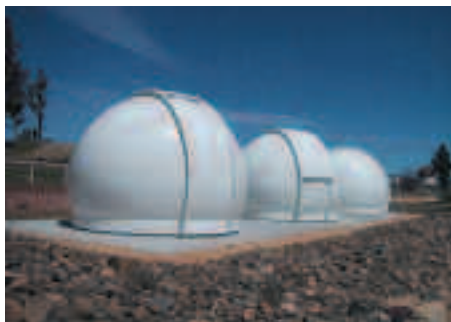
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indoors on carpet.

The concrete surface I selected for the at-the-eyepiece test was going to be more demanding. I thought about adding vibration suppression pads under the tripod (an Oberwerk HD surveyor tripod), but opted not to in order to continue with the 'testing under the most adverse conditions' theme.

The most remarkable comment I can offer about that observing session is that there were no singular, remarkable moment – the mount simply got out of the way and allowed me to enjoy the viewing experience. After about half an hour of concentrating on the motions of stars before, during, and after a slew, I found myself fully absorbed with enjoyment of the quality of images that the Intes Micro MN76 is capable of providing. The MaxLoad mount is one of those rare pieces of astronomy equipment that reveals its quality by doing what it does while never bringing attention to itself. I can't think of any higher praise.

Conclusion

As proprietor of Teton Telescopes, I was already very proud to be a full service dealer of APM's unique line of premium astronomical products. My experience with the MaxLoad mount satisfies me that our customers will share my appreciation

of its performance and value. Indeed, I was so excited about this new product that I asked *ATT* to permit me to share my experience in these pages, until such time as it can publish the independent impressions of a fellow astro-gear enthusiast. Clear skies! 

Specifications:

MOUNT:

Base diameter 180 mm/7.1 inch.

Horizontal axis: 50-mm shaft diameter
Stainless Steel V2A, 50-mm ID axial needle bearings.

Vertical axis: 180 mm/7.1 inch on PTFE bearing. Mount halves attached via preloaded 45-mm /1.772-inch axial needle bearing.

Telescope attachment arm: diameter 60 mm/2.362 inch AlMgSi1.

Distance from center of mount to end of arm: 200 mm/7.874 inch.

Height from base to top of alt adj/lock screw: 160 mm/6.3 inch.

Length from side of counterweight shaft attachment to end of telescope arm: 305 mm/12 inch.

The telescope arm features two M6 threaded holes with center to center spacing of 35 mm.

Weight: 8.15 kg/17.93 lbs.

COUNTERWEIGHT SHAFT:

Stainless Steel V2A.

Diameter: 30 mm.

Length: 277 mm/11.9 inch.

Weight 1600 grams/3.52 lbs.

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