Telescope Stability Systems StableMax Tripod

Craig Stark

For about a year now, I've been considering upgrading the tripod on my Takahashi EM-10 mount. I love the mount and the stock Tak tripod does have a lot going for it. It's got nice wood legs and is quite sturdy, especially given its weight. But, I've got a decent amount of imaging gear on the mount and I've got wind to deal with at my club's dark sky site. While fairly stable, I'd not consider it rock-solid and this has had me scouring the Web for possible solutions. I spent a long time considering various portable pier options, but kept coming back to two basic problems: 1) While very nice portable piers exist, they cost a lot and 2) I know that the gear I have today won't necessarily be the gear I have tomorrow, much less next year. It wasn't at all clear that a portable pier I buy for my EM-10 would be easily modified to fit whatever mount I may have down the line.

This year at NEAF, Tim Ray of Telescope Stability Systems (TSS) had a booth and was showing off his new StableMax series of tripods. "Huh – let's go give those a quick look", I said to myself, not really expecting to end up buying one. At first glance, these were beefy tripods. He had on display both the short and tall fixed-height models (36" and 60" respectively) and his adjustable model (36-60"). I gave a push to one. It didn't budge. I gave it a knock. It gave a dull thud and didn't budge. I grabbed hold of the top plate and tried to torque it or move it in any way shape or form. It didn't budge. "Hmmm", said I, "this is something worth looking at more closely."

In chatting with Tim, I got to hear his philosophy on the design of the tripods (and all of his gear). He freely acknowledged that there were some magnificent portable piers on the market, some of which were "real works of art that looked like they were almost ready to land on the moon." But, if one sat down to engineer what is really needed in a support system for the mount, one could do that job just as well with simpler designs that were therefore more affordable. If one carefully analyzes and engineers the problem and keeps tolerances tight during manufacture, a very stable support could be made more affordably. In addition, realizing that people change gear quite often in this hobby and that a number of users have more than one mount, a great feature for any support system would be the ability to easily adapt to more than one mount head.

This is certainly a philosophy I resonate with, as it's one that I try to employ in all my software and this common ground led to a good amount of chatting there at his booth. It turns out Tim is a big fan of my freeware PHD Guiding program and came up with a great way of saying "Thanks" for it; try one of the tripods out and if I don't notice a real improvement, I could return it. Tim, of course, knowing his product, knew this was actually a very safe offer. He knew that once I was out with it in the field, there'd be no way I'd return it. He was right. There's no way I'm returning this.

The Basics

The StableMax series variations: short, tall, and adjustable, all use 2.5" 6061 aluminum (3/16" thick) for the legs and have a 3" center column. The legs are joined to the nice, long center column by solid 1" x 3/8" aluminum bars. Where many tripods have rivets or bolts on the joints in this spreader assembly, the StableMax has machined brass bushings. As you look over the mount, you see every joint is machined to a tight tolerance and every component is impressively solid and beefy. Pushing, prodding, twisting, etc. typically yields no effect as the tight fittings and tight tolerances make for a very solid unit.

The tripods are not lightweight devices one might consider taking on a backpacking trip. The short version clocks in at 33 lbs, the tall and adjustable at 47 lbs. That said, for the level of stability they offer (they are rated to carry a 400 lb payload), they're quite portable.

Each tripod consists of two main parts: the main tripod itself (complete with nice details like a built-in bubble level) and a detachable mounting plate (called the MountMate Adapter). The mounting plate is a disk about 4-5" in diameter and 2" tall that sits inside a recess in the top of the tripod and is held in place by three beefy brass knurled knobs. It's this plate that varies from mount to mount. The one shown here is for the Takahashi EM-10 and EM-11. Not shown, but a nice feature are four detents on the bottom of the plate that provide index marks so you can get the orientation the same each time if you so choose (you can freely rotate the adapter to any position you like, however). Telescope Stability Systems has adapters available for a wide range of mounts and if one isn't available for your mount, they can make one based on measurements you provide. The only other thing you might need to mate your mount head to a StableMax tripod is a different bolt. Telescope Stability Systems can help you out here as well, getting you setup nicely (even if your Japanese mount uses an obscure British Whitworth thread known these days only in the world of classic British cars).

In addition to these basic features, TSS offers pads that can be placed beneath the tripod for greater stability on uneven ground. These are a very clever design. The disks have holes in them that are chamfered such that they can pivot around the pointed tips of the tripod legs and self-adjust to bumps and ruts in the ground. They also work to distribute the weight over a wider surface area – a must if you're setting up on soft terrain. As of this writing, TSS is also releasing an eyepiece tray that can be easily bolted to the center column.

In the Field

While it looks and feels sturdy, the true test comes from how it performs in the field. To assess what kind of effect it has on the overall stability of my rig, I performed several controlled versions of the "knock" test both visually and with a camera recording the vibrations. In one, the camera/eyepiece was tapped a dozen times in an identical manner and the settling time was observed / recorded. In a second, a padded weight was tied to the mount and allowed to fall onto the head from the same distance to the same spot and again, the amount of time to dampen the effect of this impact was observed / recorded. Each test was done several times using the TSS tripod and using the original Takahashi tripod with the load and position of the telescope identical across tripods.

The differences were substantial. For example, tapping the camera led to a typical settling time of just under 1.5 s with the TSS tripod under the mount and about 4 s with the stock tripod under the mount. Likewise, the deflection upon impact of the padded weight was far smaller and damped out a lot faster with the TSS tripod than with the stock tripod. Numbers and text don't do the results justice and they are perhaps best seen on the videos I have placed on my website (http://www.stark-labs.com/blog/files/TSS.php). While we don't typically have to deal with impacts of blunt, padded objects, we do have to deal with the impact of wind and many of us have to deal with the impact of touching the focus knob. In watching the effects of both of these, there again were clear differences between the two setups, with the TSS tripod offering a noticeable improvement.

Verdict: It's a Keeper

One of the best things I can say about any product is that after the review, I decide to use my own cash to buy it. For me, this fell into the "no brainer" category as it wonderfully addressed a real issue I had in my system. With the ability to swap in new adapters should I change to a new mount head (e.g., to be able to carry heavier scopes), I know I've got a tripod that is up to the task and that can be easily configured to handle the new mount. Despite being someone who moves through a lot of gear, there are some things in my arsenal that stay. This will be one of those items.

Is it perfect? Not quite, but for all intents and purposes, it might as well be since the only "cons" are small and don't affect performance. For example, I've found that despite being powder coated, the adapter plate is prone to picking up scratches (that you never really see since it slides inside the tripod.) I've also found that while finding the detents as I rotate the adapter is trivial without the weight of the mount on there, by the time the mount and counterweight are on, the small detents are tougher to find. They're there, but it helps to know about where you'll find one. If you get the feeling I grasping at straws to find something negative to say, you're right.

But Wait, There's More!

While the StableMax tripod is the focus of this review, TSS offers a lot more than the tripods. For example, they offer tune-up services for Atlas (HEQ6) and Sirius (HEQ5) mounts and for LXD-55 and LXD-75 mounts. The former is a service they have offered since the company's inception and the latter stems from their acquisition of lxd55.com and their Hypertune business. While the latter has been well known to owners of these Meade mounts for years, the former is relatively new. The tuning services on the HEQ mounts goes far above and beyond the standard clean, align, and regrease. Bearings can be replaced, worms stabilized, etc. I've not seen any of these in action, however, so cannot comment on them directly.

One thing I have seen in action is their tandem dovetail assembly. As you can see in the photo of my mount, I like to be able to have two OTAs mounted in tandem. Both OTAs use Vixen-style dovetail bars, but the mount has a Losmandy-style saddle. Any configuration is available from TSS, mixing and matching dovetails and saddles from their "V" and "D" series to suit your needs. Tandem arrangements like these have a few real advantages. One is that the weight of your guide rig isn't hanging so far off your mount. That lightweight guide scope's weight gets amplified when sitting atop your main imaging OTA piggyback style (in effect you have a longer lever). In a tandem rig, the load it places on your mount is a good bit less. A second advantage is that it's just easier to swap around various OTAs with them independent from each other. A real downside, however, is that you've introduced a clear option for differential flex (the bane of autoguiding). As the mount slowly turns, your two OTAs can flex relative to each other if their attachments to the mount aren't perfectly solid. If the main tube flexes here more than the guide tube (owing to its greater weight), you have differential flex between your main camera and your imaging camera. Even if guiding is perfect in the guide rig, the stars "drift" in the main imaging rig as a result of this differential flex. If you mount the guide tube atop the main tube, any flex in the mounting of the main tube appears in both the images. It's flex, but not differential flex, and is therefore far less of a problem.

Thus, if you're going to do the tandem route and are doing so for imaging purposes (and not visual purposes), you need to make sure it is rock solid. The TSS tandem rig is rock solid. Or, at least I should say, that it's now rock solid. You can tell a lot about a company by how well its products work out of the box. When everything works, it's great, the product is great, and the

company is great. In my book, though, you can tell even more about a company by what happens when everything doesn't work.

New products will have bugs. It's going to happen. When users start using products in the field, things will come up that didn't come up in in-house testing. I hit one such bug with the Vixen-style (V-series) dovetail saddles. TSS had taken measurements on a number of dovetails, but specifically matched the Losmandy V-series of dovetails for these saddles. With those dovetails, the setup is and always has been rock solid. With one of mine, however, it was not. The "Vixen dovetail" is interpreted rather loosely across makers, it seems. Actual dovetails from Vixen have a dovetailed section that is cut at 75 degrees and are flanked by squared-off sections at the end (this squaring off makes actual Vixen dovetails incompatible with a number of saddles, including those from TSS). Looking at a few dovetails I had on hand here, I found a decent range of angles used. While that's not a problem for many simple systems that use an angled receiver on one end and a single screw on the other to press the dovetail into this side, this was a problem for the TSS dovetail that grips the edge of both sides of the dovetail. In its original form, the TSS saddle had issues dealing with non-standard angles making it grip them insecurely. The last thing you want is to have your expensive scope mounted insecurely several feet in the air over a slab of concrete.

So, I dropped Tim a line explaining the situation and showing him photos of what was going on. I could imagine several reactions a manufacturer could have to this. Some might suggest that one really should only use the dovetail bars they provide in their system and that the customer's use of any other bars that aren't to their specifications would be the customer's problem not theirs. Others might look at the problem and reply that they will "get right on it" only to see the solution at best some long way down the line and for those who purchase new saddles. Others might fix them for the one "problem customer" and call it a day.

Then, there's the reaction you'd hope the manufacturer would have. After examining the problem, TSS engineered and tested a solution within a few days. I was asked to send my saddles in (they picked up the shipping tab) and they cross-shipped a pair of new saddles with the fix in place. What's more, they've alerted all existing customers about the issue and are offering to retrofit every saddle out there.

With their dovetail bars and with most others, this was always a tandem rig ready for imaging. Now with the fix in place, it's suitable for imaging no matter what bar you throw at it. The main plate is a monstrous ¾" thick, 4" wide, 15" long piece of aluminum with the TSS logo nicely milled into it. Flex? Yea, right. The saddles, likewise, are wonderfully solid, also machined out of ¾" thick stock and providing 6" of clamping surface on both sides of the dovetail. While the traditional Vixen-style setup using a single main screw (and at times a second, "safety" screw) to secure the dovetail is effective at keeping your scope attached to the mount, the system used here (and by several other makers, I should note) acts as a vise and is a lot more effective at eliminating all chances of flex.

Conclusions

Like the StableMax tripod, the tandem dovetail rig has displaced some of my existing gear and is a keeper. My previous, home-brewed tandem rig worked well and wasn't prone to huge amounts of flex, but this setup is more solid and will handle whatever load I throw at it without complaining. What's more, as my gear evolves (and yes, I know it will continue to do so), the TSS tandem rig, like the StableMax tripod can evolve with it too. If I put the main OTA on a Losmandy-style dovetail but want to keep the guide rig on a Vixen-style dovetail, all I need to do is order a "D" series saddle and it will bolt right on. Given the strength of this rig, I doubt I'll be doing that any time soon, but I know the option is there should I need it.

I'm a big fan of well-engineered products. As the name of the company, Telescope Stability Systems suggests, their products are all about giving your telescope a solid, stable platform. They do it by solid engineering. While elegant and attractive, the products aren't laden with bells and whistles and their simple lines may not look like objects of art to some. They're not designed to be put on display in a museum. They're designed to go out in the field and support a bunch of heavy telescope gear without budging so that your mounts and telescopes can perform their best. They do that job exceptionally well. ♦

By day, Craig Stark, Ph.D. is a professor whose research involves trying to pull faint signals out of noisy, moving images of people's brains. By night, he is an amateur astrophotographer and operates Stark Labs. Stark Labs provides software to help users pull faint signals out of noisy, moving images of the heavens. http://www.stark-labs.com