Paramount MyT – Part 1 – Physical Setup

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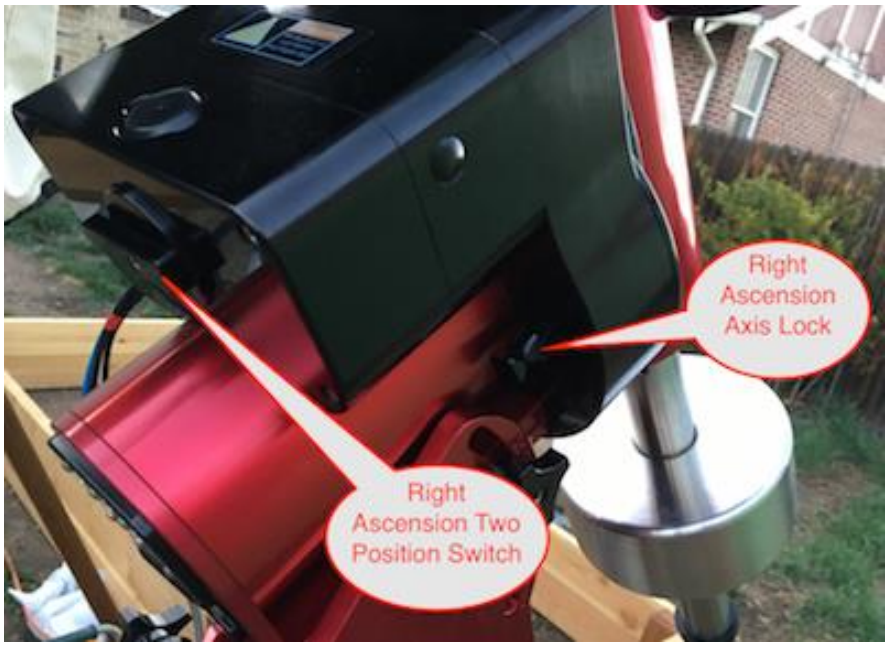
I recollect a night of broken clouds
And underfoot snow melted down to ice,
And melting further in the wind to mud.
Bradford and I had out the telescope.
We spread our two legs as we spread its three,
Pointed our thoughts the way we pointed it,
And standing at our leisure till the day broke,
Said some of the best things we ever said.
-Robert Frost

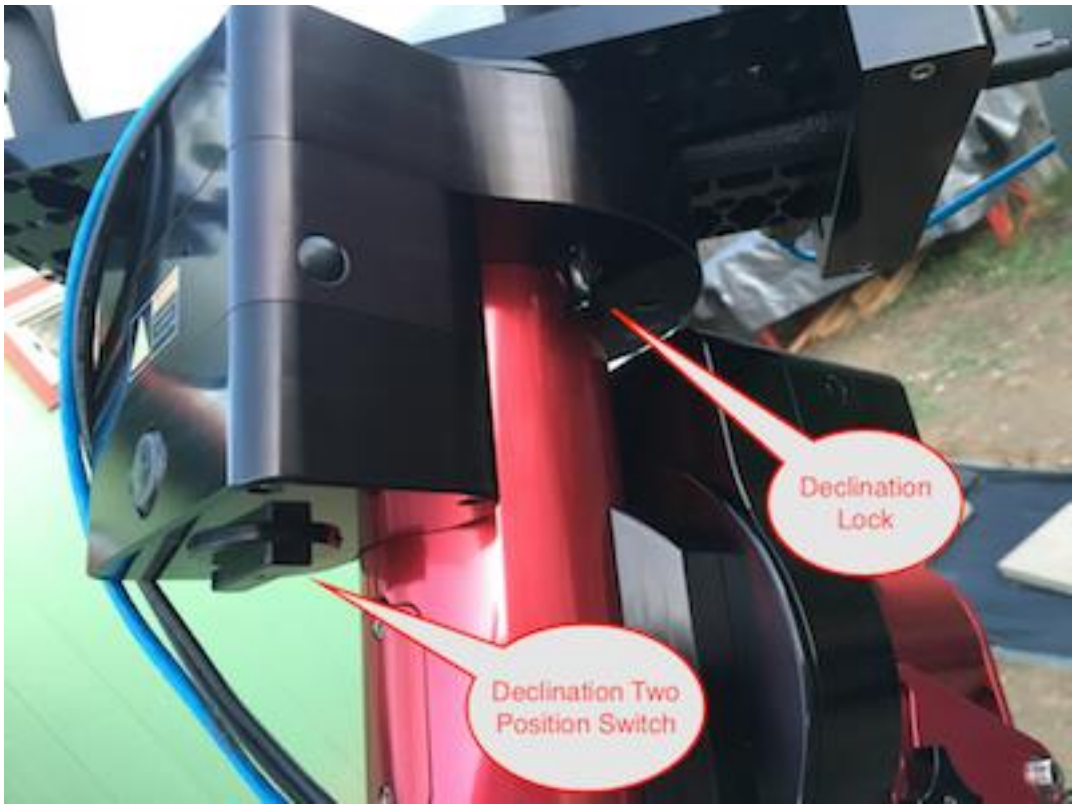
This series of articles is meant to offer additional perspective for the new Paramount MyT owner. While much that I have to say was taken directly from the comprehensive owner's manuals and other sources, this is not an attempt to replace them. Rather, it is an attempt to consolidate information in an approachable way.

The first thing to understand about the Paramount, before lifting it out of the box, is that the mount does not have axis clutches as often used by other mounts. Rather than a lever that can loosen or tighten a clutch, the MyT has a "two position" switch for each axis that puts that axis into either "balance" or "tracking" mode. Operating the switch disengages the drive gears for balancing or re-engages them for tracking.



The second fundamental controls to understand are the axis locks. The axis locks are captive pins that engage with holes inside the mount and serve to lock the mount in set positions for servicing or (un-) loading of equipment. On the MyT, there are three lock positions: upright and 90-degrees to each side. To engage, the axis locks, you will gently pull and rotate them clockwise a quarter of a turn and allow them to slide inward. You may have to wiggle the mount on the appropriate axis to allow the lock to slide into a hole. To disengage the lock, pull the lock knob away from the mount and rotate it clockwise another quarter turn until it stays out.

Always rotate the lock knob in the clockwise direction lest the knob head "unscrew" itself from the engagement shaft. Also, always retain positive control of the mount with one hand while you adjust an axis lock.



It is important to keep these controls in mind at all times when you work around the mount. If, for example, you disengage the locks and put the switches into "balance mode" then there is nothing to prevent the mount from rotating freely around the axes. If the mount is unbalanced, or struck, then the mount will swing uncontrolled unless have your hand on it. Likewise, if the axis switches are in tracking mode then the only thing holding the mount in position are the gears. If you have an unbalanced mount or strike the mount, it is possible that the spring loaded gears will disengage under force and skip, or chatter, across each other as the mount swings on its axis. Cables, as depicted above, could be damaged. Moreover, if your

finger is in the “wrong” location, it could be crushed. The Paramount is a serious mount for serious users. It is not a toy and there is a reason why the packaging, the manual and the Paramount itself have so many safety warnings!

The MyT is shipped inside the box with both the worm gears and the axis locks disengaged. This allows the mount to rotate and absorb shocks in transit, but it makes removing the mount from the box both awkward and potentially dangerous. Before you remove the mount from the box, you must follow the instructions on the packaging material and engage the axis locks.

Now that the basics about not severing your fingers or smashing your payload have been covered, we can attach the MyT to the pier or tripod with the four corner bolts. Although the Paramount has azimuth adjusters, it is usually a good idea to try to have the pier top or tripod as close to true (not magnetic) north as possible.

To point the mount towards north, you should first try to center the mount’s azimuth adjusters by loosening and tightening the appropriate knobs. You can then use any “gross adjustment” built into the mount or tripod so that the mount faces north. One way to check your work is to place a square-shaped compass, or a mobile telephone with a compass “app” along the side of the mount’s base plate and rotate the mount until the compass needle indicates north. Remember, however, that you really want the mount pointing true north (not magnetic north) so you may have to compensate for magnetic deviation (declination) by using an offset found at a WWW page like this. The starting point for the altitude adjuster is your latitude. In other words, if your latitude is about 39 degrees, then place the altitude adjustment bar in the “slot” that corresponds to 40 degrees as engraved on the side of the mount. Note that the stops are located two degrees apart. At night, you could just go old-school and aim for Polaris. While the altitude adjustment mechanism allows a range of adjustment, there is a limit. Try to get the altitude as close as possible using the course adjustment bar. Moreover, double check to make sure that your tripod or pier isn’t causing the mount to lean forward or backwards – which would further affect the altitude pointing. This would also be a good time to review these steps in the manual, starting on page 94 of the February 2018 edition.

Once the mount is in place and the four corner bolts are secure, you can thread the counterweight shaft into the socket on the bottom of the declination housing. For the moment, you can just slide the counterweight to the top of the shaft and secure it with the captive knob. You should now attach the counterweight safety knob (aka “toe saver”) to the end of the counterweight shaft before you forget it.

The MyT will now start to look like a GEM and the time has come to attach your payload to the top of the mount. The massive saddle plate atop the Paramount is known as the “Versa-Plate”. The Versa-Plate is quite well thought out and includes mounting holes for a variety of rings but also features a slot for a Losmandy-standard “D” sized dovetail plate. You will note that, in addition to the slot and the mounting holes, the Versa-Plate also has a neat channel milled out of the bottom to

allow cables to travel to the Instrument Panel at the back of the plate. The Versa-Plate attaches to the MyT, itself, with four bolts which pass through slots in the Versa-Plate. It is possible to slide the Vera-Plate back and forth with these slots to help adjust for unbalanced loads. It is also possible to remove the Versa-Plate and remount it in a different orientation. For example, if you have a Newtonian reflector and would prefer to have the Instrument Panel at the front of the OTA so that it is closer to the camera and focuser, you can do so. You can also re-mount the Versa-Plate at a 90-degree orientation in case you want to mount side-by-side OTAs (using after market saddles or rings). However you orient your Versa-Plate, make note of the star & arrow engraved into the top of the declination housing. This will help you remember which way the mount considers towards “the stars”.

For the moment, I'm going to ignore the wiring options and concentrate on the mechanics: If you have ever used a Losmandy saddle plate system before, you'll be right at home with the Versa-Plate. One difference to understand, however, is that the knobs that secure the dovetail plate in the Versa-Plate's saddle are unusual. Instead of a simple hand-knob, the three Versa-Plate knobs are smaller. They also have a socket in the handle for a ¼" hex wrench.

The idea is that you will tighten the knobs "hand-tight" with your fingers and then lightly snug the knob with the quarter-inch hex wrench. Note that "lightly snug" is not the same as "tighten down hard". In fact the socket on the knob is designed to be both shallow and "thin walled" so that the knob will strip before you do serious damage to the locking mechanism inside of the Versa-Plate. Contrary to the image above, you may want to consider placing the long end of a standard hex (née Allen) wrench into the knob so that you will tighten it with the shorter arm of the wrench and will, therefore, have less leverage on the knob when tightening it. Please do not tighten the Versa-Plate knobs by means of pliers or vice-grips.

A reasonable approach to balancing the payload is to center the payload's dovetail plate in the Versa-Plate saddle such that at least two of the hand screws make contact with the saddle. Now tighten the screws down hand-tight, without using the hex wrench. After that, go ahead and slide the counterweight about halfway down the shaft and retighten it. Next, ensure that the RA two-position switch is set to "Balance Mode". In other words, make sure that the worm gears are disengaged. Now, firmly place one hand in a safe place on the payload to prevent it from swinging and use the other hand to disengage the RA axis lock (remember to pull the knob and turn it clockwise). The mount should now be free to swing in Right Ascension.

After the mount can move in Right Ascension, rotate the mount in RA so that the payload is to the side. Now, put one hand on the payload to control the mount and use your other hand to loosen and adjust the position of the counter weight until the mount will remain steady in any position on the RA axis. Like other higher-quality mounts, it is not necessary to bias the MyT towards the East. Simply find a position for the counterweight where the RA axis remains balanced.

Once you have balanced the system in RA, rotate the RA axis so that the OTA is placed to the right or left of the mount and the Vera-Plate's saddle knobs are easily accessible. Leave the two-position switch in "Balance Mode" but go ahead and re-lock the RA axis lock by pulling it out, rotating it counter-clockwise and allowing it to slip back into the locking hole. Remember that you may have to move or wiggle the MyT in RA until the pin is aligned with the hole.

Now, place one hand firmly on the payload to steady it and un-lock the Dec axis lock with the other hand. Next, slightly loosen the Versa-Plate knobs to allow the payload to slide back & forth in the saddle. Once the payload is balanced in declination, re-

tighten the Vera-Plate knobs by hand. You can then re-engage the Declination axis locks and snug the Versa-Plate knobs down with a quarter-inch hex wrench.

If you have to slide the payload a significant amount forward or back, remember that you can also loosen and slide the Versa-Plate to help compensate for oddly balanced payloads.

At this point, your mount is assembled and your payload is attached and balanced. Feel free to disengage the axis locks and place the mount back in its “upright” position. You should then engage the worm gears by moving the two-position switches for both axes into “Tracking Mode” such that the handle “points” to the star icon. Remember, in the future, any time that you are going to adjust or work with the payload; it’s always safest to disengage the worm gears with the two-position switch and engage the axis locks. If you are going to transport or store the mount, it is best to move the mount into its container with the worm gears disengaged and the axis locks enabled. Once the mount is safely in its container, unlock the axes.

When you are finished futzing around, put down your tools and breathe deeply and step away from your Paramount. Now stop and look at it. While astronomers are technically minded people, they are usually something of romantics as well. Take a

moment to appreciate the soul of this machine. Like all high-end astronomy products, the Paramount projects not only practicality but also aesthetics. The Paramount is a physically beautiful machine but it also features reliable and high-performance engineering, extreme precision, and attention to detail. The Paramount reflects creativity, determination and passion. The experience of leading-edge astronomers around the world has refined this mount.

Steve Bisque, the founder of Software Bisque, designed the Paramounts. This is the same man whose last name appears on the sign. His family works there as well. The MyT was not slapped together. Rather, your MyT was assembled by a skilled team that appreciates astronomy and the precision use for which these mounts will be applied. From a design standpoint, the Paramount is layered. Beneath the elegant mechanicals, sits a beautifully made MK5000 board designed from scratch for this purpose. Driving the MKS5000 is firmware that, like the mechanicals and the electronics, was optimized over several generations. External to the mount is, of course, The SkyX Professional software, which not only offers full control of the MyT and your other necessary astronomy equipment, but also allows you to run it from your choice of computing platform.

Congratulations. You have chosen well.