DM-6

TECHNICAL MANUAL

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The DiscMounts Alt-Azimuth DM-6 (02-03-17)

DM-6 DiscMounts mounting specifications

•Azimuth axis (Tripod) mounting hole: 3/8”-16 centered on 6” disc.
•Altitude axis mounting holes: 5/16” - 18 spaced 3” apart
•Weight (no options, no saddle plate): 16.2 lbs.
•Dimensions: Head only: 7 1/2” long, 6” wide, 8 3/8” high
•Load weight: approximately 40 pounds (load weight can very up or down depending on the length and diameter of telescope tube assembly).
• All aluminum is Hard Coat Type-3 anodized, and machined to close tolerance from sold blocks of aircraft grade aluminum.

DiscMounts Saddle and Dovetail System

3” wide dovetail compatible with the Losmandy “D” series (G-11) dovetail system. The 8” Tilt-in Saddle can be used as a conventional slide through, or the more user-friendly tilt in!
With the optional 8” Converter (8” Tilt-in Saddle-3 or above) Vixen Style Dovetail Plates and Astro Physics (AP) SB Series Dovetail Plates may also be used.

Top and rear cover plate installation.

The cover plates slide into channels on the top and rear of the DiscMount. Note that there is a small indentation on one side of the top cover plate (Automatic Lock); this must align with the plunger on the side of the DiscMount (Sky Commander cover plates have indentations on each side).

Adjusting the DiscMount

You should take a moment and skim through the adjustment procedures and also the hints.

The balance procedures seem complicated but are actually simple. This is probably the first time that you have used a mount with total friction control. When heavy eyepieces and higher powers are used, more care should be taken when using the balance procedure. The first time the DiscMount is adjusted, make the adjustments in the daytime using terrestrial objects. After the adjustments are completed you may find yourself playing with the friction adjustments until your new DiscMount settles in. After the friction system settles in, adjustments will only be needed if your heaviest eyepiece is replaced or if the telescope configuration is changed.

Friction Adjusting Wrench

The friction-adjusting wrench is stored on a magnet strip, located under the top cover, on the left side, near the Azimuth disc.

Preliminary friction adjustments

Note: The purposes of the preliminary adjustments are: 1) to insure some friction exists between the disc, 2) to become familiar with the location of the friction-adjusting nuts, 3) and to become familiar with the direction to turn the friction-adjusting nuts.

Mount the DM-6 to the tripod using the captive knob provided with the DiscMounts tripod. Do not install the telescope.

For the initial setup, it will be easier if the top and rear covers are removed. (If the Sky Commander option is installed, disconnect and remove the Sky Commander and push the cable into the DiscMount.) Slide the top cover plate off first, followed by the rear cover plate. The friction-adjusting nuts are the large nuts located on the end of each axis shaft.

Using the adjusting wrench provided, tighten the nut on the Azimuth (AZ) axis so some tension is felt as the mount is rotated about the axis. Now tighten the nut on the Altitude (Alt) axis so friction is felt as the axis is rotated. The altitude friction should be tightened so that it is just barely able to rotate.

Using the Saddle and Dovetail System

The dovetail system, is divided into two separate assemblies: the 8” Tilt-in Saddle, which mounts to the Altitude disc of the DM-6, and the dovetail plate which is mounted to the telescope rings (dovetail plates are available to fit most ring mount configurations).

On DiscMounts dovetails there is a ¼-20 hole at each end that can be fitted with an Allen Head Cap Screw (one is supplied with the optional DiscMounts 9” Dovetail Plates) to be used as a slide through safety stop.

Installing the telescope

On the outside disc near the top of the Altitude axis there are two small screw holes. These holes can be used with the optional Starbeam Angle Adapter for mounting accessories, such as pointers and unit digit finders. There are also two additional holes used to mount the 8” Tilt-in Saddle. If you are standing and looking at the blue logo, the telescope can be arranged so that the saddle is mounted on the left side or right side (mounts with the Optional Sky Commander Push-to system are shipped with for the saddle to be installed on the left side). This is a personal preference. If you use your right eye for looking through the telescope, try placing the telescope on the left side. If you use your left eye mount the telescope to the right side. This option places the body on the outside

of the tripod. Having the telescope to the side may seem awkward at first, but it is actually more convenient, even more so when an observing chair is used.

Mount the telescope mounting rings to the dovetail plate (CAUTION make sure the screws do not go all the way through the rings and damage the telescope). Tilt or slide the dovetail with rings into the tilt-in saddle so that the telescope ring knobs or screws will be on top. Tighten both saddle locking knobs down onto the dovetail plate. Make sure the clamps are in the top and bottom dovetail V. Next, place the telescope in the mounting rings. Adjust the telescope in the rings so that it is balanced (altitude axis not rotating). Continue tightening the rings to prevent the telescope from sliding out. Keep in mind that best balance will be completed below.

Best balance (Altitude (Alt) axis)

Balance should be performed first with the telescope set up with no eyepiece (worst case light), then again with the heaviest eyepiece (worst case heavy).

The Disc Mount will handle approximately 21/2 pounds' weight difference. The weight spread can be larger or smaller depending on the weight, length of the telescope, the height the heaviest eyepiece is above the center of gravity, and the highest power being used. My 5.5" diameter, f-7, 24lb., refractor works well when adjusted with a 0-21/2 pound differential. The movement at 250 power is still smooth.

Worst case light balance

Install the telescope onto the DiscMount. Remove the front telescope dust cover. Pull the dew shield out and rack the focuser all the way in. Install your right angle diagonal (if it will stay in place when eyepieces are changed). If a camera used for terrestrial photography will be used, then leave the diagonal out. The idea is to set up the telescope in the lightest configuration that will be used.

Using the adjusting wrench provided, loosen the friction-adjusting nut on the Altitude axis about ¼ turn, Now slide the telescope in the rings until it is balanced (note the telescope does not abruptly fall like most mounts when slight imbalance occurs. If the DiscMount has friction between the disc, the telescope will slowly rotate). Now mark the position of the telescope in the rings (a small piece of masking tape on the tube in front of the ring will work fine).

Worst case heavy balance

Keep in mind that if a right angle diagonal (etc.) is used with heavy eyepieces, the center of gravity moves up (the tilt-in saddle mounting holes are slightly off center to help compensate). Install the heaviest eyepiece (or camera for terrestrial photography). Rack the eyepiece out to approximate infinity focus

or a little past. Rebalance the telescope and mark the tube. Now slide the telescope in its rings so it is positioned half way between the two marks. Tighten the telescope mounting rings so the telescope cannot slide out. Add friction by tightening the friction-adjusting nut on the altitude axis. Add enough friction so the telescope stays in place (doesn't move up or down). Now add a little more friction to compensate for minor focus changes.

The DiscMount will work very well in this configuration. Some slight friction adjustments might be needed until the mount breaks in.

Personally I like a lot of friction! I have gotten use to it and like the feel! I have found that extra friction helps over shooting the object. When you stop the telescope stops.

Binocular viewers!

Bino's generally use two light eyepieces so are not a problem, if the bino is left in when the adjustments are made. It is also possible to adjust the telescope so that the bino can be removed and a diagonal be put in it's place. It all depends on what the total amount of weight is and how much friction you as the observer are satisfied with.

Final tweak (if you want)!

The idea is to go back and forth from the heaviest and lightest configuration to find the best balance and the least amount of friction required keeping the telescope from moving.

With the telescope in worse case heavy and the telescope positioned half way between the marks. Position the focuser at infinity or a little further out. Loosen the friction-adjusting nut until the telescope just starts to rotate (A very slight adjustment is all that is required.). Now slowly slide the telescope in its mounting rings until the telescope is balanced (not moving). Don't touch the friction adjustment.

Change the telescope back to worst case light. If the telescope does not move, loosen the friction very slightly until it starts to move. Back to worse case heavy. Does the telescope move? If no, loosen the friction very slightly until it starts to move. Slide the telescope in its mounting rings until balanced. Than back to worse case light.

With the friction slightly loosened you will reach a point where the telescope will slowly rotate at the same speed in worse case heavy and worse case light. This is the balance point where the least amount of friction is needed to keep the telescope from moving.

Tighten the telescope mounting rings so the telescope can't slide out. Adjust the friction-nut only tight enough to keep the telescope in place wherever it is placed.

Azimuth axis friction adjustment

The Azimuth axis should be adjusted with a little more tension then the Altitude axis! There should be enough tension to insure the disc are pulled together and not held in place just by the weight of the mount. To little friction will result in vibration caused by the axis jumping, rather then sliding on the friction disc.

You will find that as you become familiar with the mount, adjustments will only be made if you change your heaviest eyepiece or telescope configuration. While the DiscMount is new you may also see minor changes, until the friction system settles in.

Install the rear cover plate and top cover plate. The azimuth axes can be adjusted from the front by sliding the wrench under the Altitude axis disc. The Altitude axis can be adjusted by sliding back the top cover plate about a ¼".

Make sure the ring knobs or screws are tight. Don't forget to put the wrench back on the magnet located under the top cover!

Some hints

1- Once the balance and friction are close, only very slight adjustments are required. The patent pending variable friction adjustment system will stay wherever you set it.

2-Keep the weight spread down. If the diagonal is always being used. Do the adjustments with the diagonal installed. As long as there is friction between the disc the telescope will not take off and crash. If a slight imbalance occurs the telescope will slowly rotate.

3-Focus on a star in the worse case heavy configuration and measure the position of the focuser tube. Use this position for worse case heavy adjustments.

4-I use my telescope for astronomical, nature viewing/photography, with and without bino's! So I have marked several positions on the dovetail with a pencil or tape depending on the configuration to be used, then it's easy to slide the telescope in the saddle for each configuration. Friction seldom needs to be adjusted!

5-Art and drafting supply stores sell a masking type tape that will not leave glue on your tube when making initial adjustments and it's easy to write on. It's made to tape paper down and be removed without damage.

6-If you're using one eyepiece such as a zoom eyepiece, or the camera is staying in, a rough balance is all that's needed.

7-The capability of the mount is limited to the smoothness required at the highest power (low power is more forgiving) and the maximum friction that is comfortable to use!

8-The DM-6 has extremely high rigidity. Vibration originates from the tripod and the mounting system used to couple the telescope to the disc. The closer the telescope tube is mounted to the altitude disc the less tripod vibration will be felt.

Also the more rigid the ring system is the less vibration will be noticed. Two rings are better than one. Low profile rings are better than tall rings.
9-If you're taking terrestrial pictures and using low powers to scan, try adding a little extra friction. Sometimes a little extra friction reassures the mind.
10-This is your mount. Experiment with the friction system! If you have marked or measured the balance point it's easy to go back.

Sky Commander Installation

Note: When the Sky Commander is ordered at the same time as the DM-6 mount head the encoders and cable are installed and tested at the factory.

The Sky Commander shelf:

The Top Shelf assembly is installed at the factory with the cable end tucked inside the top of the Sky Commander mount. Unless otherwise requested the shelf is mounted so the telescope will mounted on the LEFT side. The shelf may be pulled back to allow friction adjustment.

Attach the Velcro strip to the back of the Sky Commander and to the top shelf. Make sure the Velcro does not cover the battery compartment of the Sky Commander. I have found that installing the Velcro in a cross works best. Place the Velcro vertical on the shelf and horizontal on the back of the Sky Commander.

The automatic locking pin can be adjusted by inserting a small flat blade screwdriver in the hole at the top of one side plate near the logo. Adjust the tension so the top plate locks when pushed all the way in and releases when pulled out. Only slight adjustments are needed. When the spring pin is operating properly you can hear a click as the ball locks in place.

For detailed Sky Commander operation please refer to the Sky Commander Manual.

Setup parameters (See Sky Commander manual for details):
Hold "Up" and "Down" Arrows while powering up. Use Up/Down arrows to scroll, Left/Right arrows to select. Use reversing arrow button to enter into memory on each selection. CAPITAL letters mean the item is selected!
Scope Mount---DOB germn
Set Hemisphere---NORTH south
RA Direction---NORM rev (REV for Sky Commanders with white face)
DEC Direction---NORM rev (telescope mounted on left side)
RA Encoder Res---04000
DEC Encoder Res---04000
FasTrk ON/OFF---OFF on (can be on if optional external power is used)

Sidereal Clock---ON off
RS-232 Baud Rate---user selected if RS-232 port is used
SiTech Mode---OFF on

Ash Tripod

Specifications

Top plate: 6” diameter with captive 3/8”-16 mounting knob. All aluminum is Hard Coat anodized, and machined to close tolerance from sold blocks!

Height:
•Standard Tripod: from ground to base 43” to center of Alt axis 47.5” (optional DM-6 8” Extender adds 8” to height of tripod)

Legs: 3” wide, 1 1/4 thick, solid Ash, non-adjustable.

Leg spread circle: approximately 37” to 39” adjustable.

Weight (aprox):
•Standard Tripod: 16.2 lbs.

Maximum load weight including mount head: 50 lbs. (with spreader braces installed).

Installing the Tripod Brace Straps

The tripod brace straps should be used at all times; they stop the legs from sliding out and add to the rigidity of the tripod. Install each brace loosely at first, and then adjust the legs. Now go back and tighten each knob. When not in use the legs can be stored on the tripod legs using the hole in the center of each brace.

Ash Wood Tripod Care

Ash is a very hard and durable wood but some care is needed to keep the finish looking new. Before putting your tripod away wipe the moister off with a clean soft cloth. If you have one of the older standard tripods with the Water Clear lacquer finish then occasionally wipe it down with a good grade of non-pigmented furniture wax. For the hand rubbed oil finish tripods, use a 30% boiled linseed oil and 70% turpentine mixture (available at most hardware and building product stores such as Home Depot). Please follow the warnings on each can, and apply the oil in a well-ventilated area. Wipe on with a soft rag, let dry for about 20 minutes, and wipe off with a clean lent free rag (such as an old tee shirt). About every 6 months is all that is needed, but you can add coats of oil at any time, if you get it on the aluminum wipe it off with a rag. The bottom of the legs will get

marks and dings (so do metal legs) just oil them from time to time (make sure the oil on the legs is dry before you put them on carpet).

Warranty

The DiscMounts and DiscMounts accessories come with a one-year warranty from date of shipment on parts and labor to the original owner. If the DiscMounts or its associated parts fail due to defective material or workmanship within one year of shipment, the unit or parts will be repaired or replaced free of charge. The unit or parts will be shipped free of charge 1 way (USA customers only). Damage done due to incorrect installation or abuse is not covered by this warranty. All returns must be approved prior to shipping back for this warranty to remain in force. Pleased call (954) 475-8574 for return authorization.

Patents

The DiscMounts' are manufactured under the following Patent:
Disc-Based Alt-Azimuth Telescope Mount Number US 7,382,533

How to Contact DiscMounts if you have Question

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Alt-Azimuth DiscMount

side view

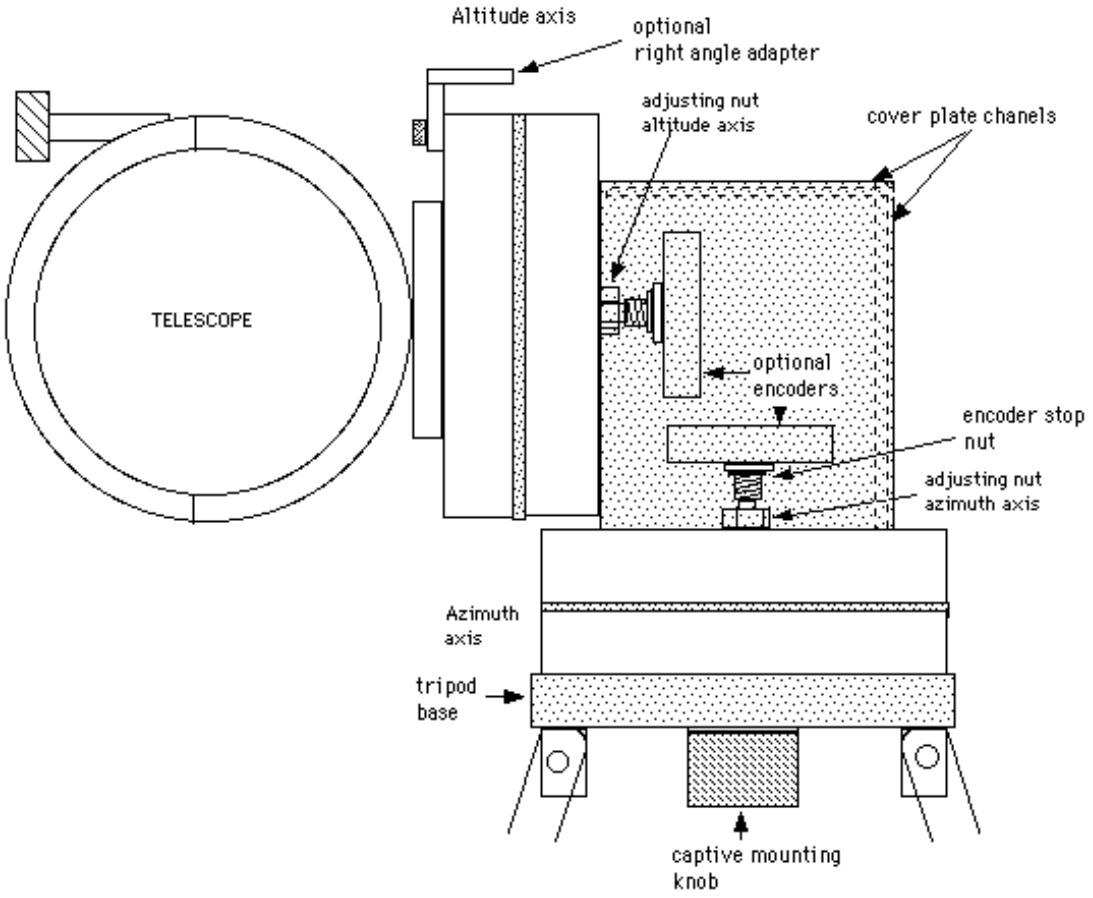

figure 1