Newtonian™ 3 Setup & Care Manual

Mirror projection system setup, positioning, alignment and Go-Vex™ mirror care

Note: IMPORTANT: The Go-Vex™ first-surface optical mirror is delicate. Never touch the optical surface. Blow loose dust off gently with a clean photographic air blower. Never rub the mirror dry, and never use paper products. Contact Go-Dome™ for approved cleaning guidance before attempting further cleaning. Handle only the protected edges with clean cotton gloves.

Basic setup

1. Remove the protective cloth cover: separate the Velcro strips along the bottom edge and lift the cover off.



Newtonian™ 3 closed, showing the lid buckle and logo badge.

2. Release the buckle just below the Newtonian™ 3 logo badge and lift the lid. Listen for a click that confirms the lid is locked upright.
3. Remove the back plate (held with Velcro to the inside back wall) to open the large cable opening for the projector.
4. Push the side walls outward to expand them. This improves air circulation to cool the projector.



Lid open with the primary mirror up and the secondary mirror drawer pulled out.

5. Pull open the front sliding drawer. The secondary mirror lies flat inside, covered.
6. Raise the secondary mirror to horizontal by pulling the mirror support shaft toward you, then remove its protective cloth bag. On first use, carefully peel the pink protective film off the secondary mirror.
7. Place your projector in the Newtonian™ 3 cavity with the lens centered, and push it back against the back wall.
8. Plug the power cord into the projector and connect it to power.
9. Plug the video cable into the projector and connect it to your computer.



Newtonian™ 3 set up with projector and laptop (front view).

10. Turn on the projector, then the computer, and confirm you are projecting an image.
11. Connect your separate sound system to the computer.
12. Place the Newtonian™ 3 on a small table about 0.8 m to 1 m tall, along the back wall of the dome, generally just to the right or left of the doorway. This layout is known as stadium seating, the dominant seating arrangement in most

planetariums.

Image adjustments

- The projector image should land on the secondary mirror without spilling past it. Start with the projector at minimum zoom and no uptilt. When aligned correctly you should not need keystone or left-right adjustments.
- If the image is too large for the secondary mirror, slide the drawer in toward the projector. You may need to move the drawer, tilt the secondary (see below) and adjust the zoom to fit the image on the secondary mirror.
- The secondary mirror reflects the image back to the large primary mirror, which reflects it onto the dome.



The same setup from an angle, with the warped grid on the mirror.

- You must project properly warped video to get a correct image on the dome. Project the warped grid image to focus and position the image.
- Slide the drawer in or out to get roughly the right image size on the mirror, then focus with the projector's focus control.
- Once the image is focused on the dome, three adjustments position it where you want it:

Adjustment	Where	What it does
A. Primary mirror tilt	Knob on the right side as you face the Newtonian™ 3	Sets the bottom edge of the image (the spring line) at the height you want. Generally tilt the mirror slightly forward of vertical (tipped slightly down). If the image is then too high or low on the mirror, use the secondary angle adjustment (C).
B. Secondary vertical	Wing nuts behind the secondary mirror	Raises or lowers the secondary along its shaft so the image sits correctly on both mirrors. Tighten the wing nuts when set. Usually done once unless you change projector models.
C. Secondary angle	Knob at the base of the secondary shaft	Changes the mirror angle to fine-tune the image on the primary mirror.

- A ruler on the bottom of the drawer helps you record the drawer distance for focus. Note the distance; next time, in the same conditions, pull the drawer out to the same mark for a fast setup.
- Every projector is different, so expect some experimenting the first time. After that, setup is quick as long as conditions are the same. A different dome size means repeating the adjustments.

- **Flat or immersive horizon:** tilt the primary and secondary for a level horizon (best for stars) or a tipped-down horizon (best for an immersive feel with video). Fine-tune with the projector's image tilt or the secondary tilt.
- The bottom edge of the image should be at least 0.5 to 1 m above the floor (just above the tubing in a ringed dome), so visitors' head shadows stay off the image.



Image in a 6 m dome. For this group of teachers the horizon was tipped all the way down for a very immersive feel.



Newtonian™ 3 in an 8 m, 5 ring dome. Note the placement near the doorway and how small its shadow is on the dome.

Packing Up

1. Put the protective bag over the secondary mirror and fold the mirror flat toward the Newtonian™ 3 until it is inside the drawer. Gently close the drawer.
2. Turn the projector off and let it cool before unplugging. Then carefully remove it without touching or bumping the large primary mirror.
3. Slide the side walls back in, nested tightly against the back wall so the edge of the top holds them in place.

4. Replace the back plate over the back wall opening. It keeps dust off the mirror in storage. Check that the Velcro is secure: a loose back plate can damage the primary mirror.
5. Pull out the black knob at the center of the primary mirror support to release it and let the lid close gently. Make sure nothing is inside the cavity, or the mirror will be damaged.
6. With the lid closed, fasten the lid buckle so it cannot open.
7. Put the cover back on for storage.
8. Carry the Newtonian™ 3 by the handle on the outside back wall, with or without the cover.

Specifications

Item	Value
Recommended table height	0.8 m to 1 m
Placement	Back wall of the dome, beside the doorway
Image bottom edge	At least 0.5 to 1 m above the floor
Weight and dimensions	Confirm for your ordered system with your distributor
Compatible projectors	Confirm for your ordered system with your distributor
Replacement parts	Go-Vex™ primary mirror, first surface secondary mirror, case: contact info@go-dome.com

Note: Questions, parts and support: info@go-dome.com