Pier-Tech Inc. Dome General Equipment Specifications

PTD1 and PTD2

Bottom Dome Ring.

The Bottom dome ring is made from MDO plywood. The dome ring is 2 ½" thick. It is constructed with a 3/4 "thick layer and a 1 ¾" thick layer. The Layers overlap each other at the seams creating a strong construction. The MDO plywood is also primed with a high quality color gray primer.

Bottom Roller Track Assembly.

The bottom roller track assembly is made from 10 gauge galvanized steel material. It is first formed into a U shape and then rolled to the required dome radius. Attached to the roller track on the bottom side a 10 gauge L shaped piece that overlaps the seam of the upper U shaped roller track. The overlap creates a rigid solid construction. The rollers used are commercial grade 3" rollers with sealed ball bearings. They are galvanized for corrosion resistance.

Dome Skirt Assembly.

The dome skirt assembly is constructed from U shaped 6061 aluminum framing that is rolled to the required dome radius. Attached to the framing is the dome skirt itself. The dome skirt is 20" tall. It is made from 55% Aluminum Zinc coated steel called Galvalume. It is available in a variety of colors. It has a lifetime of 40 years if unpainted. We use a painted version of the Galvalume that increases the lifetime to even a longer time. The paint has a colorfast durability of 40 years also. After that it would have to be painted with commercial grade paint. The thickness of the Galvalume sheet is .035 inches.

Lower Shutter Door Assembly.

The lower shutter door is made from a 1"x1" aluminum frame covered by Galvalume and trimmed with 1/8" thick 6061 aluminum.

Dome Supporting Arches.

The dome supporting arches that support the shutter track are made from 3x3 x 3/16 thick 6061 Aluminum rolled to the required dome top radius. The shutter roller track mounts to these arches.

Dome Upper Shutter Track Assembly.

The upper shutter track assembly is made from 10 gauge galvanized steel material. It is first formed into a U shape and then rolled to the required dome upper radius. The roller tracks

attach to the supporting arches. The rollers used are commercial grade 3” rollers with sealed ball bearings. They are galvanized for corrosion resistance.

Upper Shutter Door Assembly.

The upper shutter door is made from a 1”x3” aluminum bars that are rolled to the required top dome radius. It is stiffened with 1”x1” aluminum framing along the width. It is covered by Galvalume and trimmed with 1/8” thick 6061 aluminum. The upper shutter also supports the door gear track.

Dome azimuth drive track and upper shutter drive track.

Both the azimuth drive track and upper shutter drive track are made from 1/8” thick galvanized steel. The track is 5” wide and has precision teeth slots cut into it for precise dome drive.

Dome roof sheets and connection ribs.

The dome roof sheets and connection ribs are made from 55% Aluminum Zinc coated steel called Galvalume. It is available in a variety of colors. It has a lifetime of 40 years if unpainted. We use a painted version of the Galvalume that increases the lifetime to even a longer time. The paint has a colorfast durability of 40 years also. After that it would have to be painted with commercial grade paint. The thickness of the Galvalume sheet is .035 inches. The dome roof sheets are inserted in between a top and lower rib that interconnect and create a water tight seal when tightened together.

Dome azimuth drive system.

The azimuth drive system is composed of a helical gear reducer attached to a 3 phase motor. The motor is controlled by a variable frequency drive inverter that allows the dome rotation to accelerate and decelerate in a controlled manner. The variable frequency drive inverter also allows the user to increase and decrease the rotation speed of the dome. This is beneficial for dome tracking of celestial objects and also allows better automation setup.

Dome shutter drive system.

The shutter drive system is composed of a bevel gear in line reducer attached to a 3 phase motor. The motor is controlled by a variable frequency drive inverter that allows the dome shutter to accelerate and decelerate in a controlled manner. The variable frequency drive inverter also allows the user to increase and decrease the shutter open and close speed.

Dome Lower shutter drive system.

The lower shutter drive system is powered by and electric actuator and a mechanical link system that opens and closes the lower door. This can be controlled in a manual fashion from our touch screen control panel, or as part of the automated routine.

Dome Operating system (Standard).

The dome comes standard with a control box that allows control of the following:

1) Dome Azimuth rotation and dome at home position switch.
2) Dome upper shutter open and close with position switches.
3) Dome lower shutter open and close with optional lower shutter electric actuator and switches.

Dome Operating Automated system (Optional).

Our dome automation system controls the following:

1) Dome azimuth rotation, synchronized with the users Mount/Telescope.
2) Feedback from sensor at azimuth drive track.
3) Upper Shutter open and close with position switches.
4) Lower Shutter open and close with position switches.
5) Cloud sensor input to close the upper and lower shutter in the event of cloud cover.
6) Control of our height adjustable telescope piers to raise and lower the pier in the event of wanting to reach lower horizon targets.
7) ASCOM compatibility with the following commercial software:
    a) SKY6 professional
    b) ACP
    c) CCDware

Dome Bottom Support Structure (Optional).

The bottom dome structure is a cylindrical assembly that allows the addition of our PTD2 dome. This gives the user the option of having a cylindrical dome building with an entry door that is lockable. The structure is made from an all aluminum structural frame that supports a top dome attachment ring and bottom ground attachment ring. The skin of the bottom structure is made with the same construction as the upper dome and is also available in the same color to match the dome color. The entry door is 38” wide and has a lockable handle. The bottom structure is available in 78” height as a standard, but can also be ordered in a custom height. The dome mounts to the top of the dome supporting ring by (8) ¾” Hex Head Screws that are 6” long