



Pulsar Observatories

2.2 METRE OBSERVATORY INSTALLATION GUIDE

Thank you for purchasing your Pulsar Observatory, a checklist of parts included is attached.
PLEASE READ THROUGH THIS GUIDE BEFORE STARTING YOUR INSTALLATION

- **PREPARING THE BASE**

You may find it useful, but not essential, to find the centre of your base and mark out a circle approximately 2.1 m in diameter to use as a rough guide to positioning your dome base walls. This will also assist you if you are installing a pier. If you are also installing a wedge you may want to offset your pier by moving it off centre by about 4" - 6" towards the South. The pier should be installed after you have secured the base wall sections. Use a compass to mark a north to south line. If you are installing a roof-mounted dome, mark the inside of the dome track wall before cutting the hole in your roof.

- **ASSEMBLY OF WALL PANELS**

Place the wall panels on to a flat, level surface. Apply 2 beads of silicone sealant to one surface only, down the length of the flange, approximately 12mm in from the outer edges, and bring the 2 panels together. Use M8 bolts and washers supplied (1 either side), and bolt together the panels, starting from the top, making sure that the outside wall surfaces, particularly the track joins, where the dome wheels touch, are perfectly aligned. This is important to allow smooth rotation of the dome top. Insert a second bolt halfway down the wall, again, making sure that the panels are correctly aligned. Then insert a third bolt at the base of the panels, and then immediately fix the remaining bolts. Wipe off excess sealant if necessary, with white spirit. Complete the assembly of the wall panels.



- **ASSEMBLY OF DOME TOP**

Fit the 2 track rollers to each dome quadrant. This is easier done with the dome panels laying face up on the floor (use some protection under the panels to prevent damage to the gelcoat finish). Place an M8 x 20mm socket screw and M8 penny washer from the outside, place the aluminium sleeve through the wheel, and use another M8 penny washer between the wheel and the dome wall. Secure the wheels in place but do not over tighten the bolts.



Place the dome sections onto a flat surface, in the order they are to be assembled. Apply silicone sealant either side of the line of holes and bolt together 2 dome quadrants (as detailed above), one front quadrant and one back, that will form half a dome top, on one side of the aperture opening. Repeat for the other side. Use the method as described above, bolting from the top first, making sure that all outside surfaces are aligned, particularly where the dome aperture lid wheels locate and run. Bolt the two dome halves together at the **back** only, so that the aperture lid can be installed next.

- **APERTURE LID ASSEMBLY**

Fit the 4 PTFE guides to the aperture lid, using the M6x30mm countersink bolts, securing the guides with an M6 nut and washer on the outside of the lid. Overlap the dome quadrants at the front (see picture below) and position the lid on to the dome top and carefully locate the guides into the recessed track. When all 4 guides are in place on the track, silicone and bolt together the front section of the dome quadrants. **Care must be taken with the sliding or opening the aperture lid, as it can damage the rear of the observatory dome if allowed to slide back unaided!**



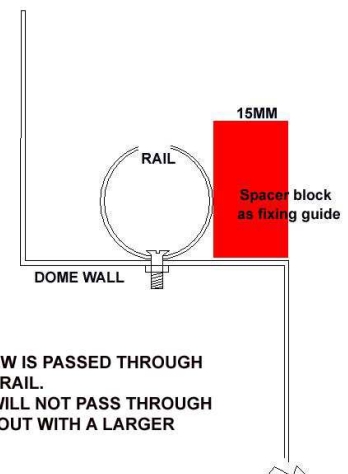
- **FIXING THE BASE WALLS**

Position the assembled base section onto your concrete hard standing, making sure that you have positioned the door opening in your preferred position. **Check the diameter of the dome base to ensure it is perfectly round**, then bolt the base to the concrete using 8 suitable rawlbolts (M8 x 75mm long-not provided). A silicone seal can be applied around the base when the installation is complete provided the concrete is dry. Do not apply if wet or damp, as the silicon will not adhere to the concrete.

- **INSTALLING THE ALUMINIUM TRACK**

Place the 3 x metal sections around the dome wall joining them together with the connectors supplied. The 3 x metal sections should butt together with no gaps. Make sure the metal track is positioned so that no hole can be drilled over a wall seam.

To drill the first hole, a 15mm spacer (anything solid 15mm thick) should be positioned to the side of first hole and flush with the outside wall and the outside of the metal track. Hold the spacer and track in position, place the 6mm bit through the metal track holes and drill into the wall. Present a 6mm bolt through the holes and tighten underneath with the 6mm nut and washer. Do the same for all the remaining holes in turn, working around the dome from the starting point. If necessary, the last length of track may need to be trimmed with a hacksaw to fit.



THE RAIL FIXING SCREW IS PASSED THROUGH THE TOP HOLE IN THE RAIL. IF THE SCREW HEAD WILL NOT PASS THROUGH THE TOP HOLE, OPEN OUT WITH A LARGER DRILL SIZE.

Note: The metal track is already supplied drilled but make sure the larger hole is showing uppermost.

- **FINAL ASSEMBLY**

With assistance (at least 2 more able bodied persons), lift the dome top into position on the base wall, ensuring that the structure is correctly in position over the base before lowering down. Check on the inside, that all the wheels are positioned correctly on the track.

Fit the rubber strip along the front opening edge of the dome aperture. You will need to make a cut in the middle to allow it to fit over the dome quadrant flange.

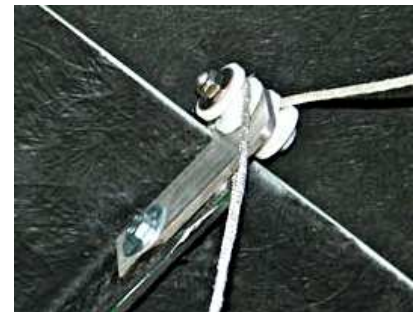
Close the aperture lid carefully, and position the handle. Check the distance the handle needs to be positioned, from the centre, before carefully drilling 2 x 8mm holes 35mm up from the bottom edge, spaced 177mm (7 inches) apart. Never drill from inside as this will damage the gel coat.

Secure the handle using the M8 hex bolts and washers provided. Fit the eye plate on the inside below the handle, on the aperture wall, as shown in the picture. You will need to supply a long reach padlock for locking the aperture lid handle to the eye plate.



- **FITTING THE PULLEY FOR SHUTTER OPENING**

Fit the pulley assembly to the very top hole on the back of the dome with the 8mm x 30mm bolt and nut. Thread the rope through the pulleys as shown in the picture and attach each end of the rope to front and rear of the aperture lid, as shown in the picture.



With the aperture fully open, mark the front hole 30mm from the edge, directly in line with the pulley wheel. Attach the rope as shown, using the M8 x 10mm socket screw, placing the rope under the M8 flat washer, making sure that when tightened, the rope is in line with the pulley. Mark the position for the rear rope fixing with the shutter fully closed. The shutter will need to be fully open so that the hole can be drilled and rope attached from the back of the dome.



The cleat should be positioned half way down the back wall Pictured above. This allows the rope to be held back out of the way of the telescope when the shutter is open. See picture.



- **FINALLY...**

The shutter is easily opened and closed by pulling on the ropes. Hold the ropes with each hand to control the shutter, preventing it from crashing down with force.

The door lock has an internal handle, do not leave keys in the outside door lock when inside the observatory. Shutting the door on the inside could result in the key turning in the lock and locking the door!

To give a pleasing finish to the observatory interior, use Matt Black aerosol paint and carefully spray over the dome top joins and bolts, and any other interior marks. The only maintenance required for your observatory is an occasional wash down of the exterior gel coat with a mild detergent.

Your observatory will give you many years of good service, treat it with respect and look after it!



YOU ARE NOW READY TO INSTALL YOUR EQUIPMENT!

FOR TECHNICAL SUPPORT CALL +44(0)1353 886128

Visit us at www.pulsarobservatories.com or call 01353-886139

Installation of the Pulsar 2.2m Observatory takes approx 4 hours for 2 persons. Extreme care should be taken when aligning the dome panels, as once they have been joined with silicone sealant; it is very difficult to separate them. The door, with lock, is pre-installed in the wall panel.

| DOMES FIXING KIT: PARTS CHECK LIST – 2.2 NEW DOME | | |
|--|-----------------|--|
| TYPE | QUANTITY | USED FOR |
| M8 X 30MM HEXBOLT | 50 (30) | FOR FIXING DOME PANELS |
| M8 NUT | 50 (30) | FOR ABOVE |
| M8 LARGE FLAT WASHER | 100 (60) | FOR ABOVE |
| ALUMINIUM RAIL | 3* | FOR TRACK |
| 20MM X 150MM PLASTIC TUBE | 3* | FOR JOINING ABOVE |
| M6 X 20MM SOCKET SCREW | 12 | FOR SECURING BOTTOM ALUMINIUM RAIL TRACK |
| M6 NUT | 12 | FOR ABOVE |
| M6 WASHER | 12 | FOR ABOVE |
| RUBBER SEALING STRIP - 600MM | 1 | FOR APERTURE OPENING |
| APERTURE LID HANDLE | 1 | FOR SLIDING LID |
| M8 X 20MM SOCKET SCREW | 2 | FOR SECURING SLIDING LID HANDLE |
| M8 WASHER | 2 | FOR ABOVE |
| WHITE PTFE WHEEL | 4 | FOR SLIDING LID |
| M6 X 30MM C/S BOLT | 4 | FOR PTFE WHEELS |
| M6 NYLOC NUT | 4 | FOR ABOVE |
| M6 WASHER | 4 | FOR ABOVE |
| BLUE NYLON WHEELS | 8 | FOR DOME TOP |
| ALUMINIUM SLEEVE | 8 | FOR WHEELS |
| M8 X 20MM SOCKET SCREWS | 8 | FOR WHEELS |
| M8 LARGE FLAT WASHERS A2 | 16 | FOR WHEELS |
| SECURITY FIXING BRACKET KIT | 2 | FOR DOME TOP (Not Currently Available) |
| SILICONE SEALANT | 2 | FOR SEALING DOME JOINTS AND BASE |
| EYE PLATE | 1 | FOR SECURING SLIDING LID |
| M5 X 20MM BOLT | 4 | FOR ABOVE |
| M5 NYLOCK NUT | 4 | FOR ABOVE |
| M5 X WASHER | 4 | FOR ABOVE |
| PULLEY WHEEL ASSEMBLY | 1 | FOR CLOSING DOME SHUTTER |
| M8 X 10MM SOCKET SCREW | 2 | FOR ATTACHING ROPE TO SHUTTER |
| M8 NUT, | 2 | FOR ABOVE |
| M8 LARGE FLAT WASHER | 2 | FOR ABOVE |
| CLEAT | 1 | FOR SECURING NYLON ROPE |
| 5MM BRAIDED NYLON ROPE | 12 FT | FOR SHUTTER |
| M8 RAWLBOLTS | 8 | FOR FIXING OBSERVATORY TO CONCRETE BASE |

20/08/10

Note: In some instance 4 aluminium rails may be provided.

- **TIPS AND TRICKS**



Once the quadrants are bolted together, smooth down any excess silicon, which may come out of the joints with your wetted finger to achieve a nice finish to the joint. Any excess mastic can be removed using white spirit and a cloth, or alternatively it can be peeled away once dry.

Before fitting the dome top to the base apply a small bead of mastic to the joints on the dome top that you will not be able to reach once the dome is assembled.



If the dome base is perfectly dry, cut the nozzle on the tube of silicon to give you a wider bead of mastic and apply carefully around the base of the dome.

Do not bother to attempt this if the concrete is damp or wet as the mastic will not adhere to a damp surface.

It is advisable to fit some sort of plastic membrane inside your dome before laying any other covering.

The concrete base will act like a sponge and absorb water when it rains which may produce moisture inside the dome, even when sealed round the base.



The use of a setsquare can aid correct measurement when fitting and drilling the holes for the guide rail.

It is essential to have an extra person assist you in this task to avoid movement of the rail whilst drilling the holes.

Avoid fitting the rail joints so they coincide with the joints of the base quadrants. They should be placed 15"-18" away from the base quadrant joints.

Using a tape measure, ensure that the dome is perfectly round before securing to the base.



It is recommended that you fit the handle to the lid before opening and closing the shutter. After fitting the rubber strip to the front lip of the dome opening, check the distance the handle needs to be positioned, from the centre, before carefully drilling 2 x 8mm holes 35mm up from the bottom edge, spaced 177mm (7 inches) apart. Never drill from inside as this will damage the gel coat.

The handle will make it easier to open and close the shutter and act as a "stop" when the shutter is fully open. Note which way round the shutter fits on to the dome top. An accessory kit is available for easier shutter opening and closing.