



# Pulsar Observatories

## 2.7 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 2.6 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 gel coat 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 sliding aperture lid, using the M6x40mm countersink bolts, place 2 washers **BETWEEN** each PTFE guide and the shutter side, 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 aperture lid, as it can damage the rear of the observatory dome if allowed to slide back unaided!**

Before lifting the dome on to the base wall, carefully apply a bead of sealant to all external dome joints. This will give a pleasing finish and also help to seal the dome.



The front, hinged aperture lid can now be installed using the M8 socket screws provided. Place 3 washers either side of the lid, between the lid and the dome wall up stand, or secure with an M8 nyloc nut on the inside. Do not over tighten the nyloc nut, as this will prevent the lid from operating smoothly.

Use the cord provided to allow the hinged aperture lid to swing down to a horizontal position. Cut the rope to size and attach to the lid and dome walls using the M6 socket screws provided.



There is a length of cord with rubber stopper which can be attached to the top, middle of the hinged aperture lid to allow the lid to be pulled closed. Cut the cord length to suit your preference. The pulley system for the sliding shutter can be installed once the dome is in place on the walls.

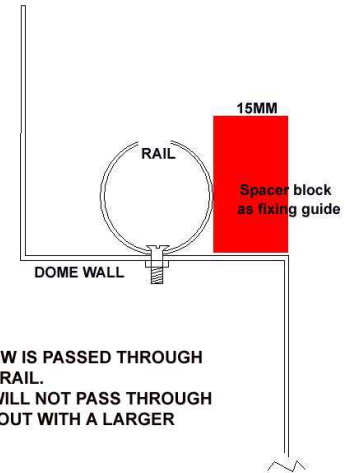
- **FIXING THE BASE WALLS**

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 metal sections around the dome wall joining them together with the connectors supplied. The 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.



**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 hinged aperture lid.

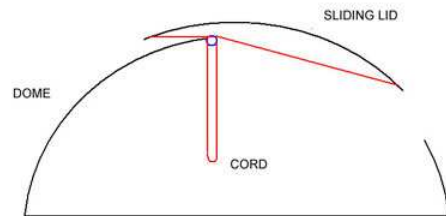
Close the sliding aperture lid carefully, and position the handle. Check the distance the handle needs to be positioned, from the centre, before carefully drilling 2 x 8mm holes 35mm up from the bottom edge, spaced 177mm (7 inches) apart. Never drill from inside as this will damage the gel coat.

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



- **FITTING THE SLIDING APERTURE LID PULLEY SYSTEM**

*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 sliding aperture lid, at the centre, as shown in the picture.*



THE CORD ATTACHES TO THE FRONT AND REAR OF THE SLIDING LID  
SEE THE INSTRUCTIONS FOR HOW TO DO THIS.

THE REAR HOLE HAS TO BE DRILLED WITH THE LID FULLY OPEN, FROM THE BACK

*With the sliding aperture lid 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 sliding lid fully closed. The sliding lid will need to be fully open so that the hole can be drilled and rope attached from the back of the dome. For the rear rope fixing, place the nut to the outside of the sliding lid.*



*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 sliding aperture lid is easily opened and closed by pulling on the ropes. Hold the ropes with each hand to control the lid, 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](http://www.pulsarobservatories.com) or call 01353-886139***

*Installation of the Pulsar 2.7m 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 – 2.7 NEW DOME**

<b>TYPE</b>	<b>QUANTITY</b>	<b>USED FOR</b>
M8 X 30MM HEXBOLT	60 (30)	FOR FIXING DOME PANELS
M8 NUT	60 (30)	FOR ABOVE
M8 LARGE FLAT WASHER	120 (60)	FOR ABOVE
ALUMINIUM RAIL	4	FOR TRACK
20MM X 150MM PLASTIC TUBE	4	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 HINGED APERTURE LID
APERTURE LID HANDLE	1	FOR SLIDING APERTURE LID
M8 X 20MM SOCKET SCREW	2	FOR SECURING SLIDING LID HANDLE
M8 WASHER	2	FOR ABOVE
WHITE PTFE WHEEL	4	FOR SLIDING APERTURE 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 SLIDING APERTURE LID
M8 X 10MM SOCKET SCREW	2	FOR ATTACHING ROPE TO SLIDING APERTURE LID
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 SLIDING APERTURE LID
M8 RAWLBOLTS	8	FOR FIXING OBSERVATORY TO CONCRETE BASE
ROPE AND BOLT KIT	1	FOR HINGED APERTURE LID

- **TIPS AND TRICKS**



*Once the quadrants are bolted together, remove any excess mastic 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.*