



**SIRIUS OBSERVATORIES
AUSTRALIA Pty Ltd**

**3.5 metre SCHOOL Model
Observatory**

ASSEMBLY INSTRUCTIONS

(Manual and motorised models)

Revised October 2006

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3.5 METRE 'SCHOOL' OBSERVATORY (Manual and motorised models)

ASSEMBLY INSTRUCTIONS

- Thank you for choosing a Sirius Observatory.
- The following instructions will provide you with the easiest method of installation.
- Your new observatory has already been preassembled and operated at our factory. Adjoining parts have been numbered or lettered to assist with assembly.
- Important: The observatory must be placed on a perfectly level and firm base. Any deviation from level will produce poor dome rotation and affect the weatherproofing seals. The base should be at least 100mm (4") thick and the diameter should be at least 100mm (4") larger than the diameter of the observatory.
- Numbered or lettered parts must adjoin during assembly.

FOR 'DOME ONLY' UNITS - DISREGARD ALL REFERENCES TO WALL PANELS

DOME ASSEMBLY

- a) The dome assembly should be carried out on your level base.
- b) Place the dome sections together, matching numbers. Insert and tighten the supplied bolts and nuts.
- c) Do not put the shutters on at this time.
- d) When the dome is assembled, lift it off the ground and support it, to enable the wheels to be inserted onto the pre-installed bearings.
- e) Should you choose to use the lifting eyes provided, screw them into the threaded holes near the top of the dome. The lifting eyes should be removed and replaced by the original bolts after the dome is in position on the walls.
- f) With the dome suspended above the ground, press the red plastic wheels onto the wheel bearings and attach, with the screws and washers provided.

INSTALLING THE (UPPER) SLIDING SHUTTER

- a) Lay the shutter onto the dome opening with the arrow pointing upward.
- b) Lower the shutter until the lower end wheels engage with the tracks (one wheel above the track one below).
- c) Carefully roll the shutter up over the dome until the wheels at the arrow (upper) end of the shutter have run over the end of the aluminium track. Pull the shutter back up the track so that the wheels engage with the track, one on each side.
- d) Slide the shutter up the track approximately 250mm (1') and clamp vice-grips or similar onto the track to hold the shutter in this position.
- e) Using the bolts in the holes provided, attach the internal spreader bar to the inside leading edge of the shutter.

OPENING MECHANISM (Manual Operation)

- a) Attach the push rod end of the winding mechanism to the spreader bar using the bolts provided.
- b) The vice-grips or clamp holding the shutter in position can now be removed.

OPENING MECHANISM (Motorised Operation)

- a) Remove the black motor box cover at the top of the main aperture.
- b) Unpack the limit switches which are in a plastic bag attached to the dome.
- c) Attach the limit switches to the top of the shutter aperture using the screws provided.
- d) Run the black electrical wire through the back of the motor mounting plate and attach to the terminal on the mounting plate as marked.
- e) Remove the white nylon keeper block from the drive cog (it has three mounting screws).
- f) Engage the serrated drive track with the drive cog and then replace the keeper block to maintain the track in mesh with the cog.
- g) The vice-grips of the clamp holding the shutter in position can now be removed.

WALL PANEL ASSEMBLY

- a) Stand the door on the base/slab, in the position where it is to be located.
- b) Adjoin the wall panels to the door panel assembly.
- c) Secure the wall panels, at the top and bottom, with the bolts and nuts provided, but DO NOT fully tighten the nuts at this stage.
- d) When the walls are assembled into a complete circle, insert the remainder of the bolts and nuts.
- e) Begin tightening these bolts from the TOP down making sure that the top wheel track flange is perfectly aligned (level) with each adjoining panel.
- f) There could be very slight discrepancy in the total length of the wall panels. This is normal.
- g) It is important NOT to fasten the walls or mounting ring to the concrete slab or other base material until such time as the dome has been placed onto the walls and rotated several times.

WATERPROOFING THE TOP OF THE WALL PANELS

- a) After fitting the wall panels together on the slab or floor it is necessary to seal the top of each adjoining panel.
- b) Apply the 'Wall top waterproofing adhesive label' (supplied) to the return flange at the top of the wall panels on the outside face. Cover the joint from the top return corner and approximately 25mm (1") up the riser where a 6mm (¼ inch) gap is seen. (This tape will remain in place at the completion of installation).
- c) Once the dome has been fitted onto the walls, apply a small amount of sealant (supplied) to fill this joint from the inside of the observatory. This sealant is applied against the adhesive side of the label. Smooth out with a palette knife or similar.
- d) The sealant will be covered by the grey vertical trim and the black fibreglass dome wheel cover trim, on the finished observatory.

LUBRICATING THE WALLS

- a) The dome wheels run along the horizontal surface on the top of the wall panels. The wheels may also touch the vertical section at the top of the wall panel. Smear generous amounts of the supplied lubricant on both the horizontal and vertical surfaces. You can use silicone spray in place of the lubricant if desired. Top up as required.

ASSEMBLY OF DOME ONTO WALLS

- a) Using manpower (six or more) or a small crane, lift the dome onto the walls. Lifting eyes are provided if a crane is used.
- b) Making sure that ALL of the wheels are outside the top flange of the wall panels, lower the dome into place. BE CAREFUL NOT TO PLACE FINGERS UNDER THE EDGE OF THE DOME PANELS.

ALIGNING THE WALLS

- a) Rotate the dome and if necessary move the walls in and out slightly until the dome rotates easily. (In the unlikely event that the rotation is difficult, it could be that the slab or base structure is not perfectly level. If this is so, shims will be required under the wall sections to level the wheel track.)

WEATHER SEALING PLATE – EXTERNAL DOME FITTING

- a) Six small white Weather Sealing Plates with two holes and foam backing are within the assembly box. This plate is fitted on the outside of the dome where the sections join, (at the lower point near the walls) and functions to prevent any dribbles of water getting under the weather strip.
- b) Place the Weather Sealing Plate on the outside of the dome so it overlaps the weather strip. Insert the two screws so that the plate is fitted hard against the dome and the weather strip.

INTERIOR DOME WHEEL COVER TRIM (BLACK)

- a) Position the trims in place, inside the dome, at the top of the observatory walls so that they cover the dome wheels.
- b) Bolt the cover panel to the wall first (middle holes) then screw each adjoining cover panel together.

VERTICAL TRIMS (GREY)

- a) These trims hide the inside wall joints and the nuts and bolts.
- b) Carefully slide the trim up under the black cover trim and attach the bottom with the two screws provided.

ATTACHING THE LOWER HINGED SHUTTER - MANUAL OPERATION

- a) Two hinge points will be seen on the lower lip of the dome, below the aperture. Each of the hinge points will be complete with three bolts and nuts. Hold the lower hinged shutter in the open position and place the bolts through the hinges provided.
- b) Take the two chains that are attached to the lower shutter and attach them to the anchor points on each side of the aperture. A cord is provided to assist with opening and closing the lower shutter.
- c) Attach the cleat on the inside dome flange below the aperture. This cleat, in conjunction with the cord, is used to secure the shutter in the closed position.

ATTACHING THE LOWER HINGED SHUTTER - MOTORISED

- a) Hold the lower hinged shutter in the open position and place the bolts through the hinges provided.
- b) Inside the dome release the cable tie holding this drive mechanism.
- c) Power the push rod out approximately half way, then connect the push rod to the shutter using the hole provided.
- d) With the shutter in the closed position attach the right hand side spring.
- e) The lower hinged shutter can now be operated using the switch on the inside of the observatory.

ATTACHING THE OBSERVATORY TO THE SLAB OR FOUNDATION

- a) Using 12mm (3/8") masonry anchors or similar, drill two holes of the appropriate size through the fibreglass flange at the bottom of each wall panel, and into the concrete. The holes should be drilled approximately 150mm (6") from the outer edge of each wall panel and in accordance with the masonry anchor manufacturer's instructions.
- b) In the event that the observatory is to be assembled onto a timber platform then coach bolts should be substituted for the anchor bolts.
- c) Where the dome is assembled onto a mounting ring (DOME ONLY) the ring should be fastened every 600mm (2') using the methods detailed above.
- d) If a gap exists between the base of the wall and the slab at the anchor point, then the gap should be filled with a solid shim.
- e) All fastenings should be tightened to manufacturer's instructions.

WEATHER SEALING THE OBSERVATORY

- a) All the panels are equipped with their own integral panel to panel weather seals.
- b) A quality sealant should now be applied to the outside of the wall panels where they make contact with the slab/base. We recommend a bead of 3M 4200 sealant or similar.
- c) You may want to lightly sand the gel coat at the base of the wall panels to ensure the bonding of the sealant. The use of 'masking tape' to mask up the external lower section of the walls will provide a neat finish. Remove the masking tape before the sealant has cured.

MOTORISED UNITS

ATTACHING DRIVE TRACK AND DOME ROTATION MOTOR

- a) The black metal serrated drive track is attached to the inside of the dome with the teeth facing downwards. Matching attachment points are labelled (this is important) and bolts and nuts are provided. Bolt into place.
- b) At the back of the drive box you will see a white nylon keeper block. To position the drive box, hook the nylon keeper block over the top of the drive track. Swing the bottom of the drive box in towards the wall panel so that you engage the motor drive gear with the serrated track.
- c) Bolt the drive box to the wall panel in the position drilled and marked with the bolts and nuts provided.

ATTACHING THE DOME DRIVE (LOWER) SOLAR PANEL

- a) Attach the mounting bracket to the outside of the wall panel at the point marked, using the screws provided. Apply a small amount of sealant to the screw heads.
- b) Feed the wire from the solar panel through the hole provided.
- c) Clip the solar panel onto the pre-sprung mounting bracket.
- d) From inside the observatory, feed the solar panel wire through the hole in the motor drive box.
- e) Attach the wires from the solar panel to the two outer most connectors of the circuit board.
- f) Use sealant to seal the wire where it passes through the stainless bracket and observatory wall.

MOUNTING BATTERY IN DOME ROTATION DRIVE BOX

- a) The battery is a maintenance free sealed lead acid type.
- b) The black battery holding bracket needs to be removed (2 screws) to enable the battery to be put in place on the horizontal plate.
- c) Place the battery into the drive box with the battery terminals to the left.
- d) Connect the battery wires to the battery. Red + (positive) Black – (negative)
- e) Apply a small amount of lubricant (supplied) to the top and bottom of the serrated track.
- f) The dome rotation mechanism will now be operational and can be controlled using the pendant switch attached to the drive box. NOTE: There is a one second delay in the operation of the dome drive motor.

CONNECTION OF THE MOTOR TO THE (UPPER) SLIDING SHUTTER

- a) Unscrew the black motor drive cover at the top of the shutter aperture.
- b) Unpack the limit switches which are attached to the inside of the dome inside a plastic bag.
- c) Mount the limit switches to the top of the dome using the screws and holes provided.
- d) Run the black electrical wire through the back of the motor mounting plate and attach it to the terminal on the mounting plate as marked.
- e) Remove the white keeper block from the drive gear (three screws).
- f) Engage the serrated drive track with the motor shaft gear and replace the keeper block to hold the gear and teeth in mesh.
- g) Replace the motor drive cover.

ATTACHING THE SHUTTER DRIVE (UPPER) SOLAR PANEL

- a) Attach the mounting bracket to the lower outside of the dome at the point marked, using the screws provided. Apply a small amount of sealant to the screw heads.
- b) Feed the wire from the solar panel through the hole provided.

- c) Clip the solar panel onto the pre-sprung mounting bracket.
- d) From inside the observatory, unscrew the cover box to the shutter drive mechanism.
- e) Attach the wires from the solar panel to the two lower most connectors of the circuit board.
- f) Use sealant to seal the wire where it passes through the stainless bracket and observatory wall.

MOUNTING THE SHUTTER BATTERY

- a) Use the same method as with the dome drive battery.

RETROFITTING MOTORISED DOME ROTATION TO EXISTING NON-MOTORISED UNITS

- a) With the observatory completely installed. Determine which wall panel faces the sun. This will determine the location of the solar panel and motor (inside adjacent to solar panel)
- b) Remove the interior, black dome wheel cover, from this wall section.

Fitting the track

- a) The 3 timber spacer blocks are used to position each track section above the wall before drilling the bracket holes.
- b) Make a mark on the dome, 270 mm to the left of the dome join at the lower shutter.
- c) Place the timber spacer block (lined up with the mark), on top of the wall where the wheels run, with the small lip of the block facing you.
- d) Position the track with the teeth resting on the block and the bracket pressed against the dome wall. Line up the hole in the bracket with the vertical mark you have made. Mark the hole position in the bracket on the wall, move track out of the way, and then drill the 6mm (1/4") hole through the wall, in line with the 270mm mark. (It will be necessary to move the track out of the way on each occasion to be able to drill horizontally).
- e) Bolt the bracket and track to the dome and proceed to the next bracket. Ensure that a stainless steel washer is under the head of each bolt when the bolt is inserted from outside the dome.
- f) To complete the fitting of the track it will be necessary to cut the last track section (using a hacksaw) to the required length. Ensure that the position of adjoining teeth maintains the continuation of the tooth pattern.
- g) The track must be drilled and mounted at each joint so that it aligns correctly.

The Drive Box

- a) To gain access to the bolt holes for attaching the drive box to the wall of the observatory, it will be necessary to remove the circuit board and battery. The circuit board can be easily removed by depressing the locking edge of the circuit board and sliding it out.
- b) The motor drive box must be positioned with the left hand side of the box approximately 75mm (3") to the right of the vertical wall flange. At the back of the drive box you will see a white nylon keeper block. To position the drive box, hook the nylon keeper block over the top of the drive track. Swing the bottom of the drive box in towards the wall panel so that you engage the motor drive gear with the serrated track. (May need a little force)
- c) Position the box so that the opening for the motor and drive shaft is centred allowing clearance for the moving parts. Drill four 6mm (1/4") holes through the observatory wall using the existing holes in the drive box as a template.
- d) Bolt the drive box to the wall panel, using the bolts and nuts provided.

Fitting the Solar Panel

- a) There are two components (i) Solar Panel (ii) Bracket
- b) On the outside of the observatory locate the bolts used to mount the drive box.
- c) Place the solar panel bracket with the pre drilled holes towards the observatory between the drive box and the wall joint. The top of the bracket should be positioned in line with the black rubber weather strip.
- d) Mark and drill 2 x 5mm (3/16") holes and 1 x 6mm (1/4") hole and bolt the bracket to the dome using the 2 x 5mm (3/16") bolts and nuts.

- e) Clip the solar panel onto the pre sprung bracket.
- f) Push the wire through the 6mm (¼") hole into the observatory and connect in the position marked in the drive box.
- g) Seal the 6mm (¼") hole on the outside with sealant.

Warranty

Sirius Observatories warrants the product against defective workmanship and faulty materials for a period of 12 months from the date of purchase.

Sirius Observatories undertakes, at its option, to repair or replace free of charge, each product or part thereof on the condition that the product or part in question is returned to Sirius Observatories, or one of its agents freight pre-paid, and on examination is found to be suffering from a material or construction defect.

Sirius Observatories cannot be held responsible for any repairs other than those carried out by the manufacturer or one of its agents.

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Packing List

3.5m School Model Observatory Manual Version

- 6 Dome Panels
- 1 Upper Shutter
- 1 Lower Shutter
- Wall Panels (maximum 7 depending on number of storage panels)
- Storage Panel (s) (if ordered)
- 1 Door Panel
- Dome and wall bolts and nuts
- 18 screws for grey vertical trims
- Bolts and washers for black dome retaining ring
- Retaining screws and washers for dome wheels
- Weather sealing plates and screws
- 9 Wall top waterproofing adhesive labels
- 2 Lifting eyes
- 2 Door keys
- 1 tub of dome wheel lube
- 1 tube grey sealant
- 12 dome wheels
- 1 Assembly Instruction Manual

3.5m Dome ONLY

- 6 Dome Panels
- 1 Upper Shutter
- 1 Lower Shutter
- Mounting Ring
- Dome and ring bolts and nuts
- Black dome retaining ring bolts and washers
- Dome wheel retaining screws and washers
- Weather sealing plates and screws
- 4 Ring top waterproofing adhesive labels
- 2 Lifting eyes
- 1 tub of dome wheel lube
- 1 tube black sealant
- 12 dome wheels
- 1 Assembly Instruction Manual

OPTIONS

If Dome Rotation fitted:

- Dome rotation motor / box
- Drive box mounting screws, nuts and washers
- Drive track screws and nuts
- Solar panel

If Motorised Shutter Operation fitted:

- Motor and ancillaries for Upper Shutter
- Actuator motor and ancillaries for Lower Shutter
- Solar panel

High Wind Kit Option

If you have ordered the High Wind Kit, the following items will be installed:

- 2 x stainless steel rigging screws (turnbuckles), one on either side of the observatory. These function to add extra strength in holding the dome onto the walls.
- 2 x dome tie down plates
- 2 x wall tie down plates
- 2 x stainless steel latches on shutter to secure shutter

Connect when required but remember to disconnect before attempting to rotate the dome.

Day and Night Solar Vent

If this option was ordered with your observatory it will have been fitted in the factory and tested. Before shipping the actual vent was removed and placed back in the original box. A plastic plug has been placed in the hole for shipping purposes only. Remove this and insert the solar vent.

Mains Battery Charger

There are 2 choices:

Mains Battery Charger 110-240v, **Single** - used for motorised dome rotation only

Mains Battery Charger 110-240v, **Double** - used for motorised dome rotation and shutter operation

The motors for the dome rotation and shutter operation are each powered by a 12v battery. The motor units are attached to the internal walls - dome rotation box on the wall panel and shutter operation box on the dome itself. The 12v battery in each of these motor boxes is charged by a solar panel, one on the outside wall corresponding to the position of the inside battery box, and the other on the dome corresponding to the shutter battery.

An alternative source of charging the batteries is via a 110-240v mains battery charger which can be installed within the existing dome rotation motor box and connected to 110-240v mains power. This unit can also be connected to the shutter battery box (on dome) via a self disconnect plug and is used to charge the shutter battery when the dome is not in use, and therefore not rotating. If the dome is rotated while the shutter battery charging lead is connected, the plug is designed to simply pull apart without causing any damage.

It must be remembered that neither of the charging units i.e. solar panel or the 110-240v charger, are designed to charge a flat battery. They are designed to keep the battery topped up.

MaxDome

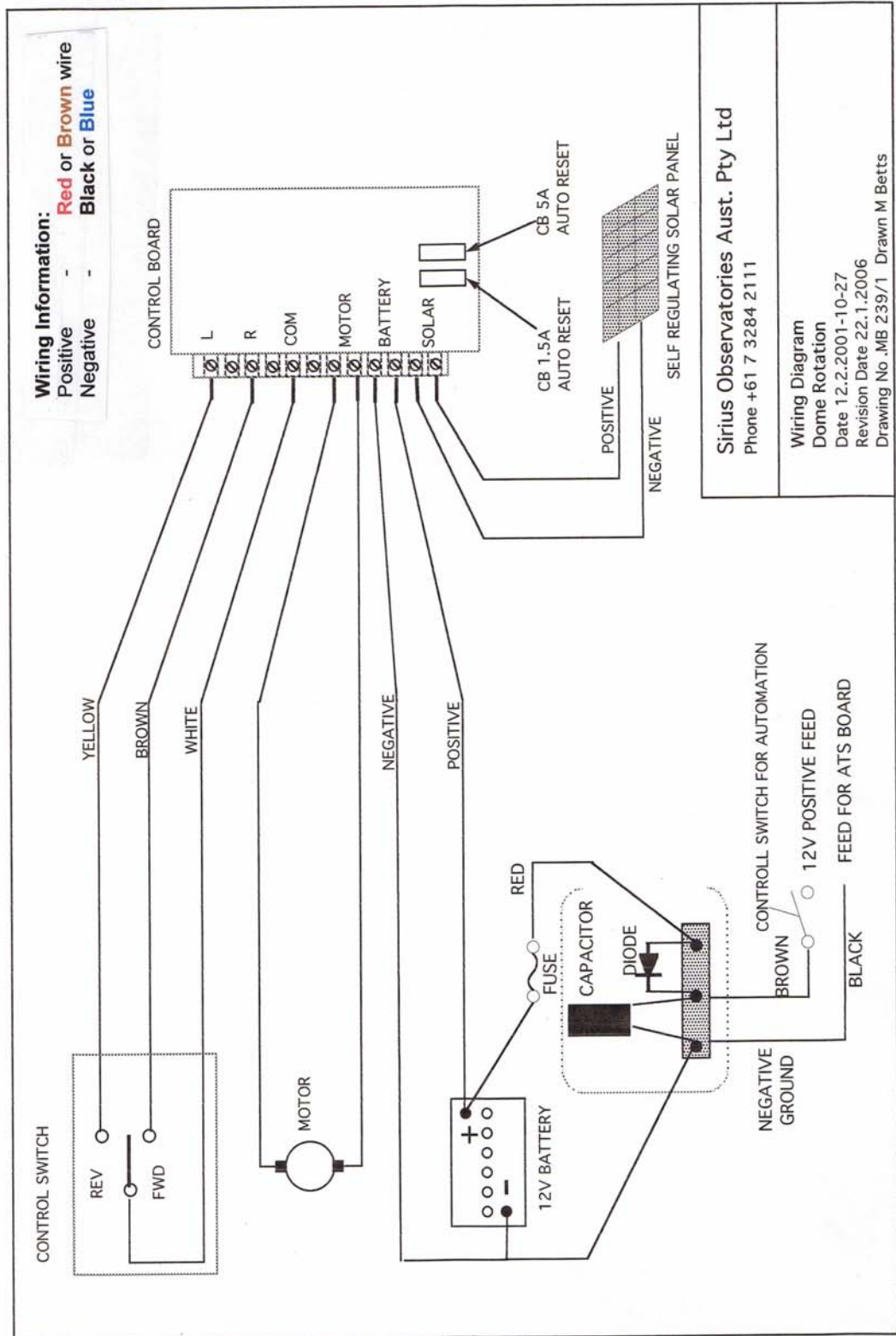
See MaxDome documents

Maintenance

1. To maintain the high quality gel coat finish on your observatory, once per year you should:
 - Wash the observatory with a good quality household detergent
 - Polish the gel coat with a marine gel coat polish or a good quality silicone car polish

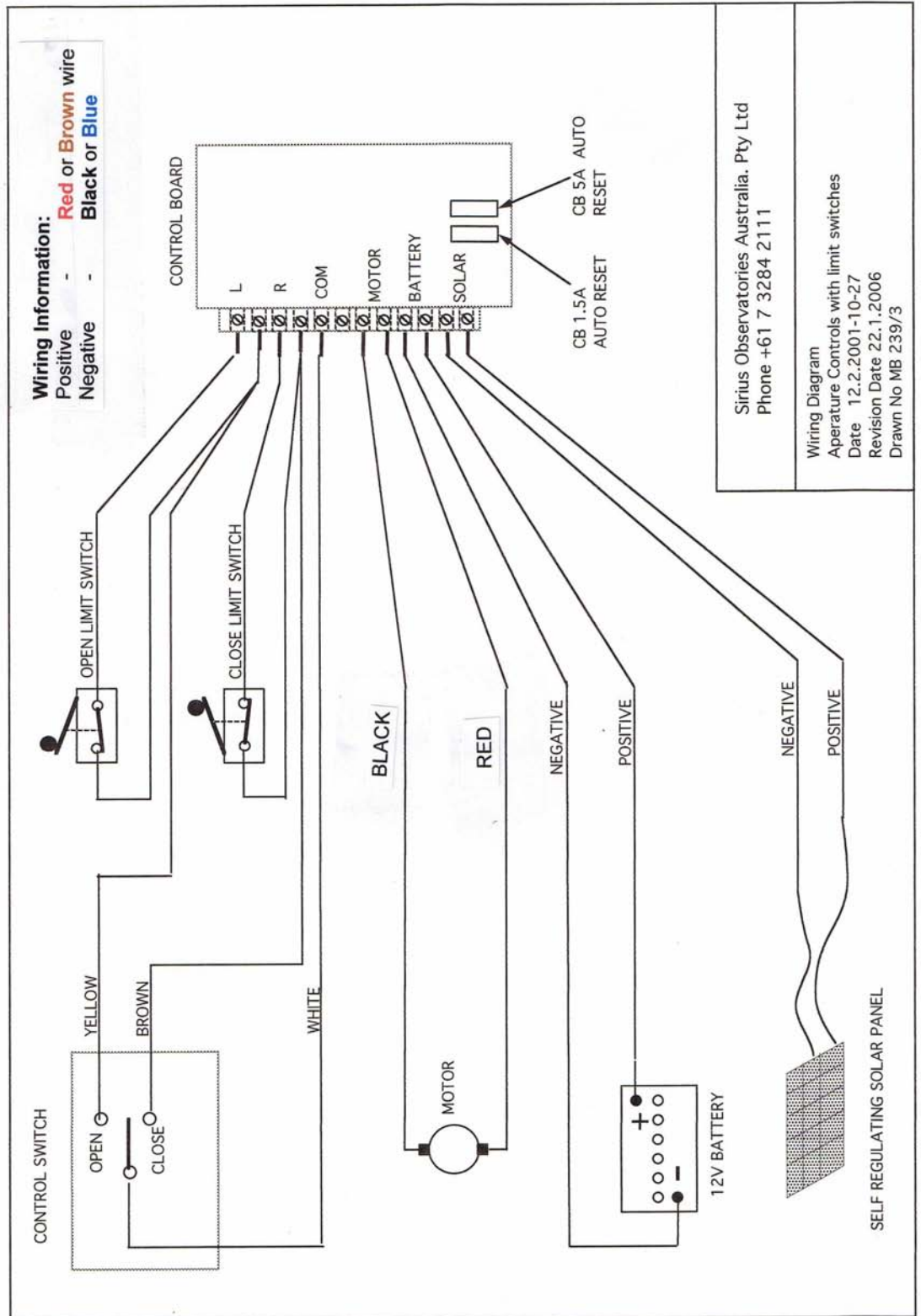
2. Dome rotation lubrication.

The supplied lubricant is designed to operate at temperatures down to – 30 degrees C. When lubricating the tops of the walls for the red dome rotation wheels to run freely, make sure you also apply generous amounts of lubricant to the vertical sides where the wheels may also touch. An alternative to the supplied lubricant is to use silicone spray. Ensure that all old lubricant has been removed and that the surfaces are clean before changing to silicone. Spray liberally onto horizontal and vertical surfaces when required.



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Wiring Diagram
 Dome Rotation
 Date 12.2.2001-10-27
 Revision Date 22.1.2006
 Drawing No. MB 239/1 Drawn M Betts



Photos to help you with the dome assembly



Where to start?



Upper Shutter – motorised version



Upper Shutter Manual Operation



High Wind Kit – Rigging Screws



Solar Panel



Dome Rotation Motor Box