LEISURE POOLS

INSTALLATION MANUAL

FOR THE INSTALLATION OF A **LEISURE POOLS** INGROUND FIBREGLASS SWIMMING POOL

Version 1

Note: This guide is intended to provide assistance during the installation of a Leisure Pools in ground fibreglass swimming pool. Be aware that it is to be used in conjunction with Australian Standards AS/NZS 1839:1994 and that should any discrepancy occur between the two then the Australian Standards shall prevail in all instances. Any users of this guide acknowledge that the author and his agents are not responsible for misinterpretation, failure to understand, omission of instruction or information or any accident that may result.

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INTRODUCTION

Welcome to the Leisure Pools Installation Manual. This Installation Manual has been prepared in order to advise you of the correct method of installing a Leisure Pools fibreglass swimming pool. If you have any queries regarding the contents of the manual or wish to seek clarification on an issue please do not hesitate to contact us. Leisure Pools will only guarantee pools that are installed in accordance with this Installation Manual.

TOOLS REQUIRED

In order to install a fibreglass swimming pool the following tools are required:

- String line;
- Long handled shovel;
- Wheelbarrow;
- Spirit level;
- 3 metre screed bar;
- Pair of screed rails;
- 4”angle grinder;
- Hole saw;
- Power drill;
- Extension cable;
- Silicon caulking gun;
- Hacksaw;
- Tape measure;
- 1 metre copper pipe (10-12mm diameter);
- Rope;
- Laser level or dumpy;
- Plastic rake;
- Black medium marking pen;
- 80 to 120 grit sandpaper;
- Common hand tools (screwdriver set, pliers etc).

PLANT & MACHINERY REQUIRED

In order to install a fibreglass swimming pool the following plant and machinery is required:

- A machine to dig the hole for the swimming pool. The machine can be an excavator, backhoe or bobcat. Alternatively, you can always dig the hole by hand if access is an issue for machinery;
- A method of removing the spoil from the hole. Generally, you would use a dump truck if the dump truck can gain access to the dig site. If access is limited smaller equipment can be used such as a mini-tipper. Alternatively, if a mini-tipper cannot access the dig site a bobcat can be used to run the spoil out to a dump truck. As a last resort a wheelbarrow can be used;
- A method of carting to the dig site backfill material. Similar machinery will be used as what was used on the spoil removal;
- A mechanical compacter (“whacker packer”) to compact the base;

- A crane (with spreader bar and chains) for lifting the fibreglass swimming pool shell into place;
- A water hydrant and flat hose to access town water via the fire hydrant in the street. If town water is not available you will require water to be delivered via a water truck;
- A method of supplying concrete to the site for the surrounds. This can be done through either a concrete truck or on-site mixer.

MATERIALS REQUIRED

In order to install a fibreglass swimming pool the following materials are required:

- Base material. The AS/NZS 1839:1994 standards state, "The bedding material selected shall be non-cohesive, porous, evenly graded, readily screedable and of maximum aggregate size of 6mm." Crusher, cracker dust or sand is a popular choice as a base material. You will need enough to provide a 100mm thick layer underneath the pool
- Backfill material. The AS/NZS 1839:1994 standards state, "A suitable backfill shall be used which will not be subject to washaway or slumping behind the pool walls. The choice of backfill will depend on the availability of suitable material, but the backfill shall not include clay or organic soils or other materials subject to seasonal variations, swelling, shrinkage, or deterioration.
  Suitable materials and methods are as follows:
  (a) Premixed cement/sand of minimum ratio 1:16 by volume.
  (b) Premixed cement/fine crushed rock, suitably graded, of maximum size 12mm and of minimum ratio 1:16 by volume.
  (c) Cement/sand (or suitably graded fine crushed rock of maximum size 12 mm) of minimum ratio 1:10 by volume, dry mixed by machine on site.
  (d) Dry hand-mixed cement/sand of minimum ratio 1:6 by volume.
  (e) Other materials and methods as specified."

- You will require enough backfill material to fill the void between the pool shell and the excavated hole. It is recommended that you do not over order backfill material, as it is always easier to order in more as required. You should bear in mind that the more accurate the hole is dug the less backfill material is required.
- ½ m3of 20mm stones;
- Bags of cement. Cement is required to be mixed into the backfill material (not base material). Use the proportions above to determine the amount of cement required.
- Plastic template of the fibreglass swimming pool being installed;
- Bag of lime, flour or spray paint to mark out the pool (flour is good – user friendly and easily available);
- Sufficient lengths of 50mm class 9 PVC pipe with elbows and 45 degree elbows to cover the distance from the skimmer box to the location of the filtration equipment (suction line);
- Sufficient lengths of 40mm or 50mm class 9 PVC pipe with elbows, 45 degree elbows, and a T piece to run from the filtration equipment to the shallow end of the swimming pool (return line);
- Sufficient lengths of 40 mm class 9 PVC pipe with elbows (overflow or backwash connection);
- A tin of red priming fluid,
- A tin of clear (type N) or blue solvent cement;
- A tube of neutral cure silicone sealant;

- 3 metres of 90mm storm water pipe and a 90mm elbow or 3 metres of 65mm slotted drain pipe fitted with a sock;
- Pre-formed concrete slab (600mm * 600mm for cartridge filter system or 600mm * 900mm for a sand filter system);
- Geotextile cloth.

LOCATING THE POOL

The starting point for installing a fibreglass swimming pool is to determine where exactly on the property you wish to have the pool installed. Issues to consider when locating the pool are:

- Size and shape of the property;
- Slope of the ground (fibreglass swimming pools must be installed in level ground so site works may be required);
- Drainage on the property (ensure that the natural drainage of water would not be in and around the pool – drainage works may be required to prevent this from occurring);
- Access to the proposed location of the pool for the excavator, bobcat and fibreglass swimming pool shell as discussed in detail below;
- Aspect of the pool to ensure maximum sun on the pool through the course of the day;
- Location of trees (consider leafs failing into the pool which increases the work load on cleaning and maintaining the pool);
- Location of pool to ensure maximum visibility from the house (a pool is an attractive feature on a property so it should be shown off);
- Council building boundary requirements;
- House and other structure foundations;
- Any underground or overhead obstacles (sewer lines, septic tanks, power lines etc.) as discussed in detail below;
- Location of filtration equipment;
- Power supply to filtration equipment;
- Waste water connection point.

Leisure Pools has available for purchase full size plastic templates of the entire range of fibreglass swimming pools. The template can be laid out on the property to enable you to identify the ideal location for the pool and address the issues raised above.

Obstacles

Once the proposed location for the swimming pool has been identified the first step is to obtain the site plans of the property and locate all the pipes that run under the ground to see if you may have to either relocate the pool or move a pipe. Talk to the local council to ensure that you are locating the pool the correct distance from the house boundaries and existing buildings.

Don't be too concerned about storm water pipes and house sewer lines as they are usually fairly easy to re-route around the pool once the hole has been dug. Make sure you stay away from main sewer lines and the connection point where the house line connects to the main sewer line. If there is a septic system it would be advisable to call the local council to find out how close to the system you can excavate. Take great care with ascertaining the location of any underground power lines or phone lines that may affect the excavation.

In addition to considering what obstacles there are below ground it is just as import to ascertain what obstacles exist above the ground. In that regard, are there power lines that may go over the top of the proposed swimming pool site? If so, it will be necessary to speak with the local power board as the proposed pool location may have to be varied as it is not suitable to locate a pool underneath power lines in case of the power lines falling to the ground.

In addition to the location of the swimming pool, consideration needs to be given to the location of the filtration equipment and the various obstacles that may effect the locating of the filtration equipment. The typical pool pump is a high volume pump that can push a large volume of water, however for the pump to work at maximum effectiveness the suction line should be as short as is practicable and the pump should not be situated substantially higher than the level of the pool. The power supply to the filtration equipment will need to be considered and whether there are any obstacles for the trenches that will run from the filtration equipment to the pool.

It is preferable to contain the filtration unit inside an enclosure to protect it from the elements ensuring that you get maximum life from the equipment as well as cutting down any noise it might make.

Access

Once the proposed location for the swimming pool has been identified the next step is to work out how you are going to get access to the proposed pool location.

You will require access for the following:

- Machinery to excavate the hole;
- Machinery to remove the spoil;
- Swimming pool shell;
- Machinery to bring in the backfill material;
- Concrete.

Machinery to excavate the hole

In regards to the access required for machinery to excavate the hole, the selection of machinery can vary depending upon the available access. A popular choice for pool hole exactions is a 5 – 7 tonne excavator, which requires approximately 2.5 metre wide access. If you do not have 2.5 metres access a smaller excavator can be used. You will select your machinery based on access and cost efficient machinery hire.

Machinery to remove the spoil

When you are excavating the hole you need to have a method of removing the spoil from the excavation. A popular choice for spoil removal is a dump truck where the excavator dumps the spoil into the dump truck. You will require 2.8 metres access to reverse a dump truck into a site.

If a dump truck cannot gain access smaller machinery can be used to run the spoil out from the excavation to the dump truck. In that regard a bobcat can be used or at worst a wheelbarrow.

Swimming pool shell

You will need access to get the swimming pool shell from the road to the excavated hole. In that regard, a mobile crane can be used to lift the pool shell into the hole. The standard mobile crane has a 12 tonne capacity and will be approximately 2.8 metres wide. If you cannot gain access with a mobile crane a larger crane can be used to lift the pool shell over the house and into the hole.

If you are uncertain about what crane to use, you can contact a local crane company and they will come and inspect the lift and advise you of the appropriate crane required. The pool shell will vary in weight from 500kgs on the smaller pools up to 1,300kgs on the larger pools.

Machinery to bring in the backfill material

You will need to be able to get to the hole backfill material. If you have sufficient access this can be done by reversing a dump truck to the site and unloading backfill material. If access is limited, you can run the backfill material in using a bobcat.

Concrete

Similar to the backfill material, you will need to be able to get concrete to the hole. If you have sufficient access a concrete truck can reverse up to the hole. If access is limited, you may need to mix the concrete on site using a mixer.

In addition to access available on the property, consideration should also be given to removing a fence if better access can be achieved or even accessing the site from a neighbour's property. It is quite common to find removing a fence panel at the rear of the property will provide better access than down the side of the house.

MARKOUT THE POOL

Once you have identified where to locate the pool the next step is the markout process. Before marking out the pool it is necessary to clear the area where the pool will be located to ensure the ground is level. This level area should extend all around the pool area to allow for the coping and walkways. If the ground is not level take some time with the excavator to level the site properly.

There are two methods of marking out your pool, using a template or by measurement. We will discuss both methods below:

Template Method

The template method is the preferred method for marking out the pool. Once the site is level lay out the plastic template of the swimming pool being installed. Ensure that the template is right way up. Ensure that the position of the template corresponds with the approved plans.

With the template down mark out the pool by laying a line of paint, lime or flour around the template as close to the template edge as possible, then remove the template. The marked out area is the area to excavate so ensure the excavator removes the line when digging.

The template line shows the overall length of the hole at the ground level but not the length of the floor. The floor is not as long as the top of the pool as the walls of the pool angle inwards. In order to determine the length of the floor refer to the Leisure Pools dig sheet which will tell you the floor length of the pool to be installed. With the correct floor length place a well-defined mark approximately 1 metre away from the pool to show the centre of the pool lengthwise.

For example, if the pool is a Moroccan 9.4 metre the dig sheet will state that the floor length is 8.5 meters. With the correct floor length place a well-defined mark approximately 1 metre away from the pool to show the centre of the pool lengthwise. In that regard, you would place a mark in the centre of the pool, being exactly 4.7 meters from each end of the pool (1/2 of 9.4 meters). You would then measure from the centre point 4.25 meters (1/2 of floor length of 8.5 meters) towards the shallow end and place a mark and similarly measure from the centre point 4.25 meters towards the deep end and place a mark.

You should now have a picture of the pool on the ground with three marks next to the pool defining the floor at the shallow, middle and deep end points. For increased accuracy repeat these floor marks down the other side of the pool. Take care when excavating that these marks don't get obliterated, remark them frequently during the dig if necessary.

Measurement Method

The measurement method can be used in instance where you don't have a plastic template. In order to use the measurement method you will need a Leisure Pools dig sheet for the pool.

The first step is to define the centre line of the pool. Once you have worked out where you intend to locate the pool place a steel pin into the ground at the proposed location of the centre of the shallow and at the proposed centre of the deep end. Run a string line from the shallow end steel pin to the deep end steel pin. Measure the distance of the string line to ensure that is the correct length of the swimming pool. If the pool is a Moroccan 9.4 metre ensure the string line is 9.4 meters long.

Using either paint, lime or flour mark out along the centre line the measure points in accordance with the Leisure Pools dig sheet. On the Moroccan 9.4 the measure points are spaced at 1 meter intervals. Starting from the first mark out point at the shallow end measure out at exactly 90 degrees from the centre line the measurements shown on the dig sheet and place another mark. Continue down the centre line until all the marks on the dig sheet have been transposed on to the ground.

Now connect up the marks to define the external dimensions of the pool. This line shows the pool edge but you will need to scribe a second line approximately 100mm outside this line to use as the excavation line. This allows you room to work when the pool is lowered into the ground.

Now you have the external dimensions of the pool you now need to determine the length of the floor. Remember, the floor is not as long as the top of the pool as the walls of the pool angle inwards. In order to determine the length of the floor refer to the Leisure Pools dig sheet which will tell you the floor length of the pool to be installed. With the correct floor length place a well-defined mark approximately 1 metre away from the pool to show the centre of the pool lengthwise.

For example, if the pool is a Moroccan 9.4 metre the dig sheet will state that the floor length is 8.5 meters. With the correct floor length place a well-defined mark approximately 1 metre away from the pool to show the centre of the pool lengthwise. In that regard, you would place a mark in the centre of the pool, being exactly 4.7 meters from each end of the pool (1/2 of 9.4 meters). You would then measure from the centre point 4.25 meters (1/2 of floor length of 8.5 meters) towards the shallow end

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You should now have a picture of the pool on the ground with three marks next to the pool defining the floor at the shallow, middle and deep end points. For increased accuracy repeat these floor marks down the other side of the pool. Take care when excavating that these marks don't get obliterated, remark them frequently during the dig if necessary.

In all cases you will need to scribe a small semicircle to show the location of the skimmer box as the excavator will need to remove soil from that area. The Moroccan and Tuscany pools have the skimmer box located at the middle of the deep end wall but the Roman pools have the skimmer box located halfway along the right hand wall when standing at the shallow end facing the deep end.

Ensure that the excavator digs out the deep end enough to allow for the stand pipe which will run vertically at the deep end from a small trench which extends back to the main drain pit.

SETTING DATUM

Datum is the name given to define the point at which corresponds to the finished height of the pool shell. This might not be the finished height of the overall job as you may pave over the top of the shell coping later, which will lift the finished height by the thickness of the pavers and the mortar you use to fasten them down. The overall finish should be taken into account when setting the datum.

The water level in the pool should be at least 50mm above the surrounding ground level. You would normally set the top of the pool shell approximately 150mm above ground level as a minimum.

The next step is to set up your dumpy or laser level in a spot that can see the entire pool site but not get in the way of the machinery that will be operating in the area. It is important that you correctly calibrate it and confirm its accuracy. Do not knock it or remove it from this position for the duration of the job. Have a plastic bag handy to cover it in case of rain.

Place a brick or block of wood at the height that corresponds with the proposed top of the pool shell. Take a piece of 40mm PVC pipe approximately 3 to 3.5 meters long (now called a staff) and stand it on the brick. Look through the dumpy or laser level and place a large clear mark on the staff that corresponds to the height given through the dumpy (and label it 'X'). A medium sized black marker works well.

Now transfer the datum point by placing the staff against a shed or house wall. This should be away from the excavation site but still within range of the dumpy. Move the staff up or down until the datum mark is sighted clearly through the dumpy. Once it is sighted mark the wall that corresponds to the bottom of the staff. This mark is the datum point and is the finished height of the pool shell. Should you break the staff or knock the dumpy you can always reset using this mark.

Refer to your dig sheet to ascertain the depth of the pool at the shallow, mid and deep ends and measure these distances up the staff from the datum mark. Mark them off 'S', 'M' & 'D' respectively.

This gives the height of the pool floor, however you will need to dig at least 100mm deeper than this to allow for the base material so make three more marks on the staff each of them 100mm above the 'S', 'M' & 'D' marks and label these 'SE', 'ME' and 'DE' respectively.

You are now ready to dig the pool hole.

EXCAVATION

You should endeavor to keep the site as tidy as possible as this is the part where the real mess starts. Before the excavator starts the dig ensure that the base/backfill material is easily accessible from all around the pool hole. Sometimes you will find that once the hole has been dug you will only be able to get the base/backfill material to one side of the job. If this is the case, get some of the base/backfill material into position before the dig starts. You might feel fit enough at this end of the job but try to shovel as little by hand as possible.

Check with the excavator operator to see if he can dig some of the trenches you will require between the filtration unit and the pool. This will save you a lot of time later. If you intend to fit a subsoil drain (not required in the majority of cases) then have the excavator operator dig a deep (600mm) trench from the pool hole out towards lower ground. This is only useful in areas where excessive ground water can cause a potential problem.

The excavator will normally start at one end of the pool and dig backwards towards the other end. Ideally you will have a truck on hand to accept the excavated material as it is being dug and take it away to a pre-arranged dumpsite.

Keep the marks you made denoting the shallow, middle and deep end clear at all times. If necessary remark the marks during the excavation. Use the staff and dumpy once the excavator operator is getting close on the depths by placing the staff into the hole immediately adjacent to one of the three marks that you placed alongside the pool hole to denote the shallow, middle and deep end floor points.

By looking through the dumpy sights you will be trying to get one of the ‘SE’, ‘ME’ or ‘DE’ marks to line up with the cross hairs in the sight. Use this method constantly throughout the dig to guide the excavator operator on how deep to dig. Get one end right before you instruct the excavator to move back as it will normally be difficult to reach a previously excavated spot. It doesn’t really matter if you find yourself going slightly deeper but don’t go too shallow, as this will affect the base.

Make sure the walls of the excavation are vertical. Carefully check the areas that take any seats, steps or benches. If the excavator operator is at all unsure of the internal features of the pool have him remove all of the dirt. It will take a little more work later on to backfill them but will prove to be a much safer option than trying and failing to craft a perfect hole.

At the deep end have the excavator dig out a pit underneath the area where the hydrostatic valve will sit. This pit should be around 600mm square and at least 600mm deep. Have him scrape a small trench from this pit to the deep end wall. This should be as deep as the base of the pit (600mm) and at least 100mm wide. This is for the standpipe that you will be installing later.

Once the excavator has finished the dig check all the heights carefully. The floor of the hole should be reasonably clean and free of any large lumps. As a guide, it takes approximately 4 to 5 hours to excavate a Moroccan 9.4 metre hole using a 5-tone excavator in semi-clay conditions.

SETTING THE BASE

The next step is to set the base of the hole. Take into the hole 4 steel pegs, a hammer and a string line. Place a pair of pegs approximately 2 meters apart at the shallow end of the pool exactly in line with the shallow mark you placed next to the pool earlier. Do the same for the deep end.

Now run the string around all 4 pegs being careful to set the height of the string to match the 'S' & 'D' marks on your staff. If you have excavated your hole correctly you should see the string line stretched tightly around the hole with a minimum 100mm between it and the floor of the hole. A minimum of 100mm of base material is required under all Leisure Pools.

Have the excavator now place the base material into the hole. Remember, there is to be no cement in your base material. Have the excavator place the majority of material down the centerline of the hole so that you don't upset your string line too much. Using a shovel move the base material around until it is evenly spread out in line with the string lines but leave the deep end alone for now.

At the deep end place the 65mm slotted drain pipe covered with a sock into the trench that runs from the main drain pit and take it up the wall of the deep end clear of the surface of the hole. If you use 90mm storm water pipe instead you will have to cut a number of slots into it to allow water to access it easily and again fit this with a sock.

Dig the surplus base material out of the main drain pit and fill the trench that runs to the deep end with 20mm stone and cover with a layer of geotextile cloth. Fill the pit up with the same stone to approximately 100mm below the top of the pit and cover with the geotextile cloth. It is now safe to cover this with base material.

Using your 3-metre screed bar, screed the base material until it matches the string lines and looks even. Don't be too concerned about getting the base perfect the first time around.

Use the dumpy and staff often during this process to check your heights, you already have the shallow, middle and deep ends marked on the staff and you could now split these marks to give the heights at the ¼ and ¾ marks. This will enable you to spot-check the parts of the floor that the string lines don't cover.

Once the floor has been screeded to your satisfaction place the tamper or mechanical compactor into the hole and thoroughly compact the base. Again do not rush this process; if settling occurs (and it should) then scatter more base material into those areas. Once you have removed the compactor from the hole you can screed the base properly.

Starting at the shallow end place a screed bar next to the first string line and carefully dig it into the base material and pack it fully until the top face of the screed bar is flush with the string line for the entire length of the bar. Repeat this for the second screed bar with the other string line. Screed bars normally are only around 4 meters long so you will only be able to do part of the base at any one time. Check their placement with the dumpy and staff. Now place your screed onto the two screed bars and carefully screed the base filling in any low spots and cleaning off any high spots. As you get to the end of the screed bars just slide them down the floor alongside the string lines and repack them so that you can continue screeding right to the deep end.

Remove the steel pegs, string lines and screed bars from the hole taking care not to walk on the base material. Your floor should now look absolutely flat with just the two grooves running from the shallow to deep end where the screed bars were. Fill these grooves up with base material by walking only in the grooves and not on the rest of the bed. Use a plastic rake to smooth them over.

Dig out some of the base material that covers the pit at the deep end to allow the main drain to fit into it when the pool is lowered into position. A Leisure Pools main drain hangs approximately 150mm below the bottom of the floor. Remove any surplus base material that could interfere with the floor of the pool.

Take a step back and check the overall job, the floor should be completely flat and sloping evenly from the shallow end to the deep end of the hole where the standpipe will be leaning up against the wall with its bottom end disappearing below the bed into the trench filled with the larger stones. Where the main drain will rest on the floor is where you have dug your 600mm x 600mm x 600mm pit which has at least 500mm of stones covered by the Geotextile cloth and then covered by some base material. The base material will look hollow over the pit to allow for the main drain.

Using your staff and dumpy check 6 spots on the floor for level using the marks on the side of the pool hole for your shallow, middle and deep end reference points. If all has been done correctly you will see the 'S', 'M' &'D' lines sit nicely on the cross hairs of the dumpy sight.

DO NOT PROCEED UNTIL THE FLOOR IS PERFECT – If something does not line up take the time now to fix it, as you will regret it later if you rush this part of the installation.

FITTING THE SHELL

Make sure the access for the crane is clear and that you discuss the lift with the crane operator before you start. All Leisure Pool shells must be lifted using a spreader bar. This is a steel bar that spans the width of the pool. There is a minimum of 2 lifting points on each side of the pool and cloth slings or chains can be used to attach the pool to the spreader bar.

Attach a rope to each end of the pool, in order to guide the pool. Ensure the ropes are long enough to guide the pool whilst it is in the air. Only lift the pool in still conditions and never, under any circumstances, get underneath the pool.

When the crane operator lifts the pool for the first time, just hold the pool a few inches above the ground and check that the top of the pool is level and that it is not twisted. If it is not level then place it back on the ground and adjust the slings and try again. Be careful when placing it back on the ground that it goes back into its original position, as great care must be taken not to knock the main drain or to sit the pool on a rock or sharp object.

Using the guide ropes to keep the pool away from all obstacles carefully arrange the pool over the hole. Many hands do help here, as the pool should not touch the sides of the excavation but take care not to kick any loose material into the hole.

Once it is all lined up lower the pool into place stopping at the point where the main drain is just touching the base material. Check that the main drain will fit into the hole provided for it neatly. The hole should not be too big, as this will leave an area of the floor unsupported, or too small, as this will force the main drain up into the pool. A good way is to use the main drain underneath the pool to lightly mark the base material and then lift the pool clear of the hole to allow you to get into the hole and dig a space around the mark. Remember, do not get underneath the pool for any reason.

The pool can now be lowered into position all the way until it is resting evenly on the base material and the crane's lifting slings are slack. Taking care not to tread dirt into the pool (take your shoes off) get into the shell and walk over the floor checking that it is sitting firmly on the base material. Check the floor around the main drain to see that it is not upraised and that the main drain is clear. Check that no part of the shell is touching the sides of the excavation as this will almost certainly mean that the shell will be 'hung up' in that spot.

Now using the staff and dumpy check the height of the coping around the pool, normally in just the four corners or close to them will do. Make sure that the staff rests on the inside edge of the coping in

areas where there are no seats, steps or benches as these areas tend to drop slightly and give a false reading. Choose areas to check where the floor of the pool joins the wall and comes straight up to the coping. If you have done all your preparation work correctly you will see the datum line 'X' on the staff in the cross hairs of the dumpy. You can allow yourself a little leeway as small differences can be adjusted later.

As a guide, on the Moroccan 9.4 metre we allow 3mm above and below the datum line as an acceptable margin. If the pool is not sitting level use the crane to lift the pool out of the hole and adjust the base accordingly. When all looks good remove the lifting slings and send the crane away.

SECURING THE SHELL

With the pool approximately level you can now secure the shell by placing the first of the backfill around the shell. Starting at the deep end place enough backfill into the hole to cover the curve of the floor radius say around 100mm. You can go slightly deeper at the deep end corners. Take care to pack this material firmly but don't ram it so hard that you move the shell. Do not mix the cement into this material.

Don't be too concerned if the long walls appear low in the dumpy sights, they have a habit of hanging out slightly and thus appearing to be low when all they need is to be pushed upright which will cause the top of the coping to come level again. This is not really noticeable in the shorter pools but if your pool shell were over 9 meters long it would be advisable to brace the sides of the pool. This can be done simply by tying two ropes across the pool to the lifting points and tensioning gently until the walls are level. An alternative would be to brace them with timber posts placed into the ground midway along the shell and bracing back against the walls of the excavation.

If the shell needs to be lifted slightly at any point other than the overhangs (seats, steps & benches) it is easy to lift it at any point using a wide piece of timber placed underneath the coping. Do not however under any circumstances lift the pool using this method with water or any other weight inside the pool as you may crack or damage the pool shell. Furthermore, do not jump or jerk the timber when lifting the pool shell as this may also crack or damage the pool shell. Then pack the base and bottom radius. You can use a limited amount of water to wash some more material under the floor but it is very easy to create more problems this way and should be avoided if possible.

Take care not to lift the pool too much and remember that when you move one point then you have probably moved all the other points as well. Check that the overhanging areas are low, this is as it should be. If they are high place a few bags of pool salt on the area to bring them down to the right level. If they are actually exactly right give yourself a pat on the back.

Keep checking your levels constantly while you set the pool, don't be fooled by the size of the shell, it is very easy to lift it too much or adjust it out of level. Take your time and keep asking yourself, "If I move this point here, what will happen to the rest of the shell?" and make sure you know the answer before you touch anything.

At the end of this section you should not be able to see any of the bottom radius and the pool should be level at all points except for the overhangs.

PLUMBING THE SHELL

Leisure Pools will have supplied you with all your filtration needs. One of the boxes you receive is marked “Skimmer Box”. This is what you will be using next. This box contains the skimmer box, two eyeball return jets, a hydrostatic relief valve and hydrostatic cover plate.

The first step is to cut out the skimmer box aperture in the deep end wall of the shell, (side wall on Roman models). Remove the skimmer escutcheon plate from the box and use this as a template for the cutout. Each Leisure Pools pool shell already has a recess where the skimmer box should go and it is merely a matter of centering up the plate within that recess and marking around the outside of it to allow it to fit cleanly into the hole you will make.

Ideally situate the top of the plate approximately 50mm down from the pool coping. Cut the aperture out using an angle grinder and be sure to wear a mask and eye protection. Check the cut out by placing the escutcheon plate into the hole, check it is parallel with the top of the pool coping and that there is plenty of room for the screw holes. Leave the plate there and mark the screw holes with a marker (14 in all), then remove the plate and drill the holes – these should be a clearance hole so make sure that the screws provided fit cleanly without ‘grabbing’ the shell.

While you are in a drilling mood drill out the two holes required for the return jets in the shallow end wall (opposite side wall for Roman models) using a hole saw. The return jets should be set around 350mm down from the coping and should be at least 1 metre to 1.5 meters apart. Before you drill these holes just check the back of the shell to ensure that you will be drilling through an unobstructed flat part of the wall and not through a reinforcing section on the outside as the return jet flange faces must be able to fit flush with the shell.

Now get out of the shell and using sandpaper sand smooth the back of the shell where the eyeballs will be fitted to ensure the best seal possible. Do the same for the skimmer box cutout making sure there are no sharp edges or protrusions that will stop the skimmer box from sitting flush to the shell. Using a clear neutral cure type silicone sealant on all surfaces (shell and skimmer) fasten the skimmer box to the pool using the supplied screws. Ensure that the silicone is squeezed out of the join between the shell and skimmer and the join between the shell and the escutcheon plate. Wipe off excess silicone with a clean rag and fit the 14 cover caps into the recesses in the escutcheon plate. Fit the return jet eyeballs in the same manner using the same silicone sealant.

Check that the hydrostatic valve socket in the main drain pot is totally clear with clear space underneath it (wiggle a finger down it) and check the threads are clean. Fit the hydrostatic valve into the hydrostatic pot in the shell taking great care to ensure that the o-ring seals properly (some installers help this along with a small amount of silicone). This valve is the main cause of leaks in swimming pools. Ensure that the o-ring hasn’t popped out sideways from over tightening.

Now tie a 3 metre piece of string to a conveniently clean brick or paver. Silicone the hydrostatic cover plate into position on the hydrostatic valve pot and place the brick on top to add some pressure. Secure the other end of the string to the skimmer box or onto a concrete tie on the shell so that once the pool is full of water you have a means of removing the brick without going for a swim. If you don’t add pressure to the cover plate whilst the silicone is curing it will come off after a couple of months and be a nuisance to swimmers. The pool shell is now basically plumbed.

If an underwater light or any other skin fittings such as solar heating suction and return points or overflow fittings are to be fitted to the shell now is the time to do this. There are a number of different types of fittings for lights so follow the instructions that will be supplied with the unit. Make sure with light fittings that you put the electric cable that comes out of the shell straight into conduit and then take the conduit up to just below the pool coping. This ensures that should the seal where the cable

passes through the shell ever begin to leak, the water will stay trapped in the conduit as the top of the conduit will always be above pool water level.

If you are fitting spa jets follow the same procedure for the return jets but dry fit them first and then make up the plumbing that interconnects them so that when you fit the spa jet eyeballs to the shell you can glue the pipe work at the same time. You will need a short length of 15mm pipe for the venturi air supply along with 3 x 15mm T pieces and 2 x 15mm 90 degree elbows. Refer to the diagrams at the back of this Manual to see how they are connected together.

Make sure that when you finish this section that you clean the interior of the shell completely.

SETTING UP THE FILTRATION UNIT

A standard domestic swimming pool filtration set comprises of a pool pump, filter and saltwater chlorinator. Once you have chosen the location for the filtration unit prepare the ground by leveling it off and placing a pre-formed concrete slab in to position.

All your equipment will be placed on this slab so ensure that it is large enough to do the job. A 600mm x 600mm is a good size if you have a cartridge filter and a 900mm x 600mm if you have a sand filter. These are readily available from most landscaping yards and some irrigation & hardware outlets.

Make sure that the trench from the pool runs right up to the slab and that the pool pump and the end of the salt chlorinator overhang the trench. If the filtration unit is to be set up lower than the pool water level you will need to install some 2 way valves in the suction and return lines so that should you need to remove any part of the system you can close off the valves and prevent water draining from the pool. If the filtration unit is set up higher than the pool water level the pump can sometimes have a hard job priming itself and it will be necessary to install a non-return valve in the suction line.

Satisfy yourself that the layout of the filtration looks tidy and that it will fit under the equipment cover (if supplied). Good pipe work runs horizontally and vertically but never diagonally.

It can be a good idea to fit the plumbing without glue initially to check that the completed plumbing layout will work but if you do this you should then clearly mark every joint as you glue it to ensure that you don't forget one. Make sure that you have fitted a backwash line for the sand filter and check with your local council to see where it should be plumbed. Some councils say sewer and some storm water.

If you have a cartridge filter you will need to install a 3-way valve in the return line. Connect a pipe to this valve and run it to either storm water or across your property as council directs. This is your overflow pipe, which you will use only when you wish to drop excess water out of the pool. Unlike a sand filter, which dumps dirt by backwashing, this water is normal filtered pool water and is 'clean'.

Once you have set up your filtration unit you should expect to see the pump plumbed to the filter but missing the suction pipe from the skimmer box. The filter should have the salt chlorinator cell connected to it on the return line but the rest of the return line won't get fitted until later. The waste line can already be in place. The suction and return connection points at the filtration unit should now be easily accessible from the trench that runs from the pool to this unit.

Refer to the diagrams at the back to see how a typical filtration system might be plumbed.

BACKFILLING THE SHELL

In this stage you will be filling the pool with water so it is important to ensure that you have either your pool fencing or a temporary fence ready to enclose the pool. It is illegal in Australia to fill a pool without having a fence in place. This can sometimes be hard on the fibreglass pool installer because of the immediacy of the project. It can be awkward to have a fence in the way when you are trying to wheelbarrow backfill material around the pool so ensure that the fence that you use is temporary initially and can be removed when you are working there and replaced whenever you have to leave the site unattended. It is critical to ensure that you comply with statutory fencing requirements before you start to fill the pool with water. If you fail to comply and a person drowns then you may be criminally liable.

The bags of cement can now be dry mixed into the backfill material. If you have a bobcat or even a dingo available they can make this part much easier. The normal mix is approximately 2 bags of cement per cubic metre of backfill as a minimum. Make sure you pace yourself and do this a little at a time. The mixed backfill can be placed around the edge of the pool.

Turn on the water. As the water level in the pool rises add the backfill material evenly around the shell to keep pace. The speed that the pool fills will dictate the speed of the install. You could be using the garden hose, a mains water hydrant or a water truck. In all cases the important thing here is not to let the water get too far ahead or behind the level of the backfill. Keep them within 150mm of each other.

Bulges are an indication that you have pushed the backfill in too early if the bulge is inwards or that you have let the water get too high above the backfill if the bulge is outwards. Keep checking your levels all around the pool every time the backfill rises by 150mm and watch for bulging in the pool walls. The bulging will affect the levels shown on the dumpy and the job will need to be stopped so that the bulge can be taken out before work resumes. Do not ram the backfill down along the long walls as this will almost certainly cause the wall to bulge inwards.

The Leisure Pools Moroccan range has a long wall that is not supposed to be dead straight. It actually has a curve that comes out from each end to the centre of the long wall. On the Moroccan 11.7 metre the curve in the long wall comes out 200mm at the centre of the long wall. Take care that you do not try and straighten this curve out, as it will place undue pressure on the shell.

As the water level gets to each step backfill behind it. The areas under seats, steps and benches are the only areas where you can pack the backfill as firmly as possible. Make sure that the entire area is completely packed right up to the underside of each step.

Use water to help the consolidation process but use it sparingly as you do not want to wash the bed out from under the pool. Keep checking your levels, the idea here is to pack the benches up to the desired height with the backfill, there is little danger of the rest of the pool moving as there will now be a significant tonnage of water in the shell.

A good way to direct water to the exact site required is by fitting a 1 meter length of copper pipe to a garden hose and flattening the end a little. This gives you a ‘spear’ that you thrust through the backfill to areas under steps and benches. It is very effective in washing the backfill in a precise area.

Remember to stop the water before it reaches the return jets. Now connect the suction and return pipes from the pool to the filtration unit. These pipes should be fully supported by the backfill. If you intend to fit a subsoil drainpipe now would be a good time. This pipe is rarely fitted but can be useful

if excess water is a problem. Simply lay a slotted pipe covered in a geotextile sock around the pool and then send it off to lower ground through the 600mm deep separate trench prepared earlier by the excavator.

Continue with the water fill and the back fill until the pool is full. This pool is full when the skimmer box entry tunnel is ¾ under water. The backfill should be left 100mm from the top of the pool in all areas except for immediately behind the skimmer box and above the return jets. These areas should be left open exposing the pipes for a visual inspection. Carefully check the back of the shell around these fittings for any signs of a leak. If a leak is found then you must empty the water level to below the level of the leak and replace the affected part. It is not possible to repair any leak properly by just applying a 'band-aid' to the outside of the area and a small leak that only drips a drop or two a minute will still leak mega liters over a weekly period.

Now take a step back and check the job and confirm the following:

- The pool is full of water;
- The pool is level;
- The backfill is completed except for areas that have pipe work running to the shell;
- All pipes are exposed and every joint can be seen;
- The filtration unit is fully connected and ready to go.

START UP

If you have a cartridge filter then check that the handle on the three way valve on the return line is pointing to the waste line confirming that it is closed. If you have a sand filter make sure that the valve on the filter points to 'filter'.

Check that the vacuum plate has been removed from the skimmer box (this is a white plate with a screw plug in the middle of it that sits over the basket in the skimmer box and is used when vacuuming the pool). The vacuum plate has two locating lugs on it; one of them is a delicate spring-loaded clip. These lugs will locate it into the skimmer box when required. Unscrew the plug in the middle of it and then screw the plug into the underside of the lid of the skimmer box (you will probably never use this plug but now you won't lose it either).

Unscrew the clear lid on the pump and pour water into the pump until you are sure that the suction line is full. Replace the clear lid taking care that the large o-ring is clean and seals properly. Turn on the pump, it will take a short time for the pump to prime itself initially and then once the pump has grabbed the water you will see air boiling out of the return jets in the pool. If you didn't empty the pipes of dirt beforehand the system will now do it for you and throw the dirt into the pool. If you did empty the pipes first give yourself a pat on the back for being a careful workman. Take a note of the pressure showing on the gauge of the filter and confirm that it is in the green section.

Now carefully go over every bit of pipe work and every skin fitting to check that there are no leaks. Leave the pump running and the pipe work open for 24 hours and recheck it before covering them up with the balance of the back fill. Rake the ground around your pool of all excess backfill material and clean up the site. Once you are satisfied that the pool is leak free and there is no need to take any water out of it add the salt directly to the water along with the start up kit chemicals. Follow the instructions on each packet of chemicals carefully.

Run the pump and the salt-water chlorinator for at least 48 hours to allow the chlorinator to generate some chlorine. Then take a sample of the pool water for testing and supplement the chemicals as directed. The salt-water chlorinator normally has a time clock that will control the pump operating times. Initially set it to run for eight hours a day in two 4-hour periods. These periods should be early morning and late afternoon. Today's filtration systems are very efficient and the filter needs to be operating for a much shorter period than eight hours but you need this much operating time to allow the salt water chlorinator to generate enough chlorine for the pool water. In winter you can dial this time back as less chlorine will be required. Every system is slightly different and a certain amount of trial and error is involved. Take advice from your local pool shop until you get the hang of your water chemistry.

PREPARING FOR THE SURROUNDS

The backfill must be given time to settle before the concrete surrounds are poured. You should allow around 1- 2 weeks for settling. Before you start the concrete preparation check the backfill. Look along the long walls of the pool for bulging, check that they are upright and level. Check that the steps and benches are firm by tapping them. If the steps and benches sound hollow then pack/wash more backfill under them using the copper pipe on the hose method.

Make sure that you have 200mm clearance between the top of the backfill and the top of the shell; you should have left a 100mm clearance a week earlier when you finished backfilling and settling will have brought it down a little further. You might need to top up the backfill or scrape some away to get the desired height.

LAYING THE BOND BEAM

All of the Leisure Pools range of fibreglass pools requires a concrete bond beam with a minimum width of 350mm. This beam should be 200mm thick at the poolside and 150mm thick on the outside edge. It should be reinforced with a length of 3 bar F8 trench mesh and 2 bars of Y12 reinforcing steel. The Y12 bars should be laid on each side of the trench mesh and all steel has to be laid right around the pool. There are concrete wire ties built into the fibreglass shell just below the coping, ensure that you use these to tie the steel to the pool.

The concrete should be at least 20Mpa (40Mpa is better) with 20mm aggregate and approximately 80 slump. If in doubt refer to the engineers drawings. This beam is structural and should be as big as is required on the engineer's drawings as a minimum. If you have not poured concrete before get professional help. The bond beam is structural and must be completed properly.

Pavers can be laid on the bond beam after the concrete has set. There are a number of different styles and sizes to choose from but in all cases when shopping for pavers check with the supplier that they are suitable for use with a saltwater pool as some pavers can leach an enormous amount of a white powdery substance that can detract from the appearance of the project. Also consider how slippery they might be when wet.

LAYING THE WALKWAY

A bond beam is not a walkway. A walkway can be a bond beam but a walkway is much wider (normally 900mm minimum). The local council will have requirements regarding the walkway. Generally, councils require a 900mm non-slip walkway around at least 75% of the pool coping and

allow landscape up to the bond beam for the remaining 25%. This will need to be checked however with the council that governs over the area where the house is located.

A walkway can be made up in a variety of materials but concrete is the most common and it can be finished in a number of ways such as exposed aggregate, stencil, stamped or just left plain to be covered later with paving. The walkway can be blended into the existing garden pathways or joined up to the house paths. It should always be properly reinforced.

It is a good idea to lay out the outline of where you want your concrete to go by using the remains of the markout paint or flour as an outline. This will help when you need to work out quantities of concrete and steel for ordering purposes. Remember to allow the concrete to slope away from the pool so that excess rainwater can drain away from the site and not cause a nuisance. If you need to build spoon drains as part of the project it would be a good idea to do them at this time.

INSTALLATION PARAMETERS

The installation parameters that the Leisure Pools Structural Warranty is based on (after consideration of Australian Standard 1839:1994) is as follows:

The pool is installed in accordance with this Installation Manual and Australian Standard 1839:1994. Should the Installation Manual differ from the Australian Standard the Australian Standard will take priority. Should the Installation Manual not address an issue covered in the Australian Standard (or the Manual refers back to the Australian Standard) then the Standard will take effect;
The pool shell shall be installed in a manner that keeps the pool shell to its true design shape;
The overall pool shell shall be installed level.