Waterfall Owner's

Manual

Congratulations! This is the beginning of many years of relaxation and enjoyment from your water feature. We have continually improved and perfected our system over the course of several decades. Our water features, while dramatic, artistic and natural looking, are also the most durable and maintenance free that you can buy.

Please refer to this manual for the information you will need to become familiar with your water feature and assure its care-free operation.

The most critical information is:

THE WARNING
ON
PAGE 3

If you have questions or concerns not sufficiently addresses in this manual, call us at 406.227.9100 or e-mail us at:
info@MontanaLandEscapes.com

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Waterfall Owner's Manual

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Regular Care

Empty skimmer basket

Depending on how much debris enters your pond, the skimmer basket will fill up with leaves and other floating debris that lands on the surface of your pond. The frequency required for emptying your skimmer basket will depend on the season and the surroundings. The skimmer basket is inside of the skimmer housing which is located on the edge of your pond. This task takes less than a minute.

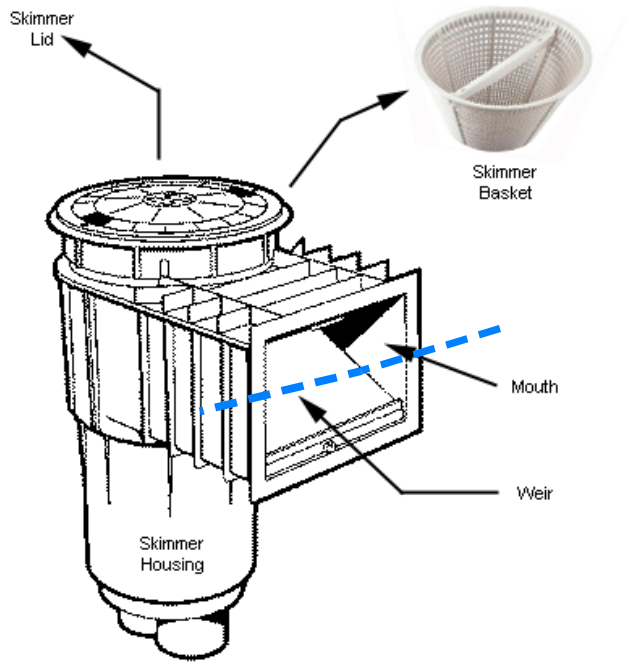

Figure 1
Skimmer Assembly

1. Remove the Skimmer lid.
2. Grab the basket by the handle and lift out of the housing.
3. Empty and return into the housing.
4. Replace skimmer lid.

Troubleshooting

If the skimmer is not collecting debris:

1. Is the basket empty?
2. Is the water level sufficient? The blue line is the optimum level.
3. Is the weir working properly? It should float freely just blow the water level.

Algae Control

Since decorative water features and residential landscape ponds have gown in popularity over the last few decades there has been a lot of research and development in the area of natural algae control and water quality products. We have tried quite a few of them and will continue to watch for better and more economical pond products. We have gotten very good best results the regular use of these two.

Algae-Fix™

Pond Care AlgaeFix™ is a liquid algae-control product for use in ornamental fish ponds and water gardens containing live plants and fish. Pond Care AlgaeFix™ controls many types of algae including "green water" blooms and filamentous algae.

- Can be used in ponds containing live plants and fish.
- Effectively controls "green water" algae blooms and blanket weed (Oedogonium).
- Keeps ornamental ponds and water gardens clean and clear.
- An EPA registered Algaecide that helps resolve future algae problems.

This product kills the algae very effectively and will not harm pond plants fish or other animals.

Pond-Zyme with Barley™

Cleans and clarifies pond water. It starts working in minutes and eliminates troublesome organic sludge and debris helping to maintain a natural healthy balance in your pond.

With the added natural power of barley, Pond-Zyme with Barley is an enzymatic cleaner containing a super concentrated blend of beneficial dry bacteria and natural barley that creates and maintains sparkling clean water gardens and koi ponds.

Organic matter accumulates in all garden ponds, forming an unsightly sludge layer. As the sludge decomposes, it consumes oxygen and degrades water quality. It is also a breeding ground for fish pathogens.

Specially selected bacterial strains in Pond-Zyme with Barley quickly breaks down fish waste and dead algae that cause cloudy water, sludge build-up, and debris that clogs pumps and filters.

Pond-Zyme with Barley also digests leaves and grass clippings that may enter your pond. Through enzymatic action, Pond-Zyme with Barley reduces pond maintenance and keeps pond water clean and clear.

Cleaner water means healthier fish, increased dissolved oxygen in your pond and a decreased breeding ground for pathogenic disease causing organisms.

Pond-Zyme with Barley is a 100% natural product, safe for all pond fish, plants and wildlife.

These products can be ordered at http://www.pondpetsusa.com/index.html or purchased at our nursery.

Seasonal Care

Letting your waterfall run during the winter is optional. Your waterfall and pond is unique - there are no two exactly the same. We have designed our system so that they can run year-around without problems. It seems that about 30% of our customers enjoy their water feature during the winter months while the majority turn them off. It can vary from one winter to the next. The following thoughts may help in your decision.

1. If enough ice builds up in the wrong place along the waterfalls it could direct the water out of the stream channel. This is a rare occurrence but something to keep an eye on.
2. Depending on how much sun exposure there is and how severe the winter weather, there may not be much advantage to paying the pumping cost when you can't see or hear it.
3. We recommend that if you are planning to be gone for extended times throughout the winter it's best to play it safe and winterize your pond.

Do NOT leave pond empty during Winter!

Serious damage may occur.

Your pond is designed to be self-insulating.
This feature works ONLY when
pond is full of water.

ONLY For ponds with a bottom drain line (see spec label)
If you want to leave your pond empty through the winter
LEAVE THE DRAIN VALVE WIDE OPEN.

To "Winterize"

1. Un-plug pump from electrical outlet.
2. Turn off auto-fill. (Where applicable)
3. Remove sump lid.
4. Release Cam-Loc fitting by pulling both levers outward from the fitting.
5. Lift pump out of the sump.
6. Invert pump and attached line to let remaining water drain out.
7. Put lid back on sump.
8. Store pump in the garage or some other appropriate place.

Fish and water plants will usually survive our Winter conditions just fine. Your pond will support only a certain number of fish through the Winter. The larger the fish the fewer numbers can be supported with the available oxygen.

Spring Start-Up

1. Do any pruning, leaf raking and clean-up in rock garden and around your water feature prior to starting waterfall.

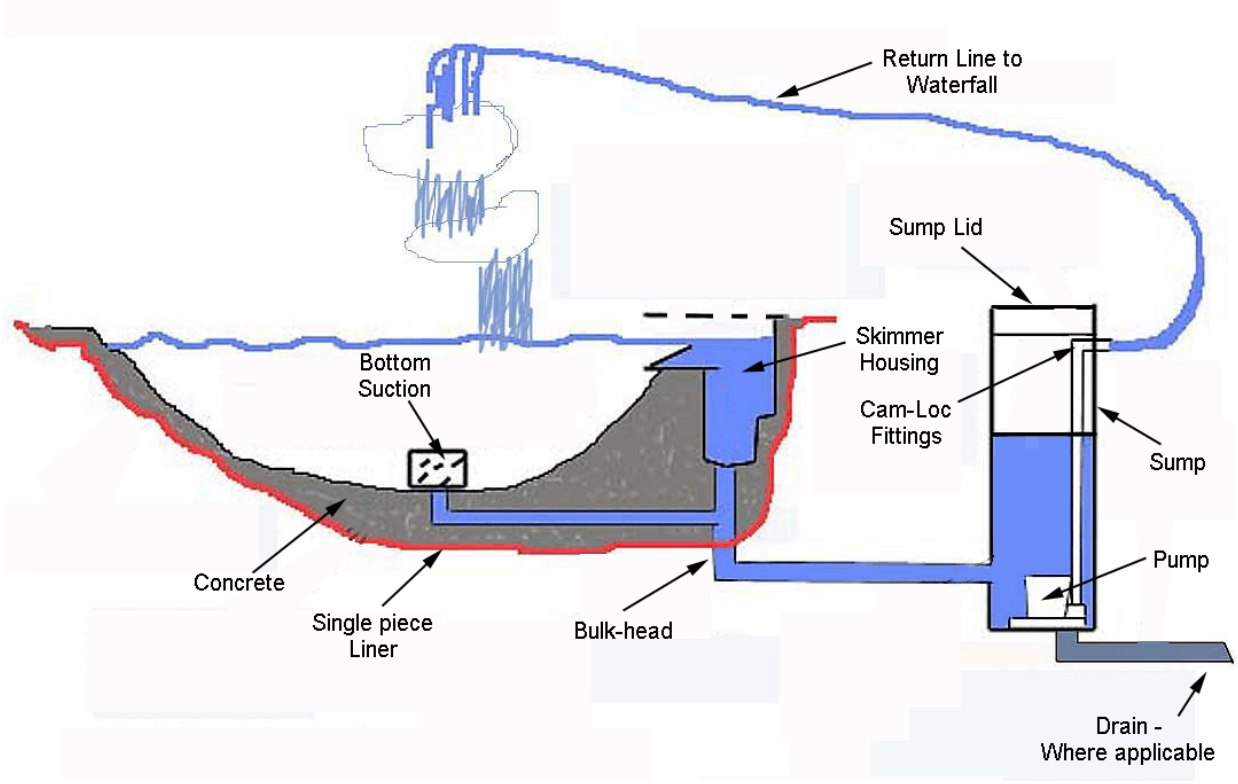

Figure 2
Waterfall & Pond Schematic
Our standard (Most Common) design

2. Clean loose debris from waterfalls and stream bed and cover / conceal any visible concrete with the loose cobble rock that have migrated to the middle of the stream.

3. With a leaf rake or net, clean out any floating debris in the pond.

4. Empty skimmer basket and check weir for free and unhampered movement.

5. Add water to bring pond to proper level.

6. Turn on auto-fill valve.

7. Install pump in sump and plug into electrical outlet. If there is a ball valve on the discharge line adjust water flow to maintain a slight back pressure on pump. This is done by partially closing valve as in the position of the light blue handle. (Figure 3) **DO NOT DROP PUMP INTO SUMP. DOING SO COULD CRACK PLASTIC SUMP FLOOR.** (Fig. 2)

Figure 3
Return
Line Valve

Water level in the sump should draw down a foot or more before finding a static level. Regulate this level by adjusting valve position. (Red - full open / Dark Blue - full closed)

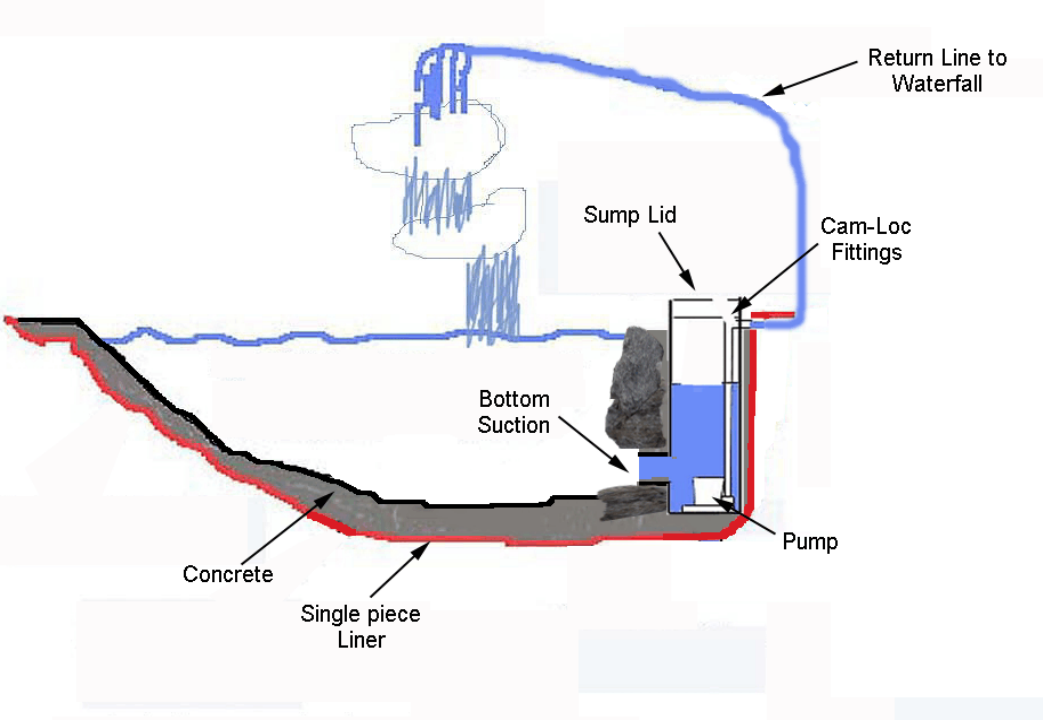

Figure 4
Waterfall & Pond Schematic
Our "In Pond Sump" design

Water Loss

There are two types of water loss: Normal and Leak.

Normal Water Loss

There are three ways your pond will undergo normal water loss.

1. Evaporation: The temperature and humidity differentials between the air and the water in your pond causes evaporation. Even when it is cold outside there will be evaporation going on. Even when you waterfall is not running, there is evaporation going on.

2. Splash: The water tumbling down your waterfall is splashing into the dryer air and onto the dryer / warmer rocks and dirt. It is absorbed by plants or evaporated away.

3. Wicking: Just like a wick in a kerosene lamp draws the fuel up to the top where the fire consumes it, water is being "wicked" up into the drier concrete, soil and rocks where it evaporates into the air.

Leaks

Leaking can develop three ways.

1. Liner sag: This is the most common leak in our waterfalls and ponds. It occurs when the heavy plastic liner, which is the true boundary of the water feature, sags away from the concrete and lower than the water level. Occasionally water will find one of the many folds in the liner and follow it out to the edge and escape over the edge of liner.

   This is a 2 step process that requires dry conditions around the water feature. First check if the leak is in the pond, then the waterfall / stream.

   Begin by turning off the pump and wait about an hour before marking the static level of the water in the pond. Check water level 12 to 24 hours later. ***If level is the same, the leakage is in the waterfall.*** If level is only and inch or two lower, check back in another 12 to 24 hours. Keep doing this until the water level has gone as low as it is going to go. The level of the water is the level of the sag somewhere around the edge of the pond. Carefully inspect the soil around the entire edge of pond looking for muddy or excessively wet areas. When you find a wet spot, inspect the liner in that area.

   If the leak is in the waterfall, turn the pump on and periodically inspect the entire edge of the stream for muddy areas.

   To repair: clean out any rocks and dirt between the liner and the concrete. Pull the liner up snugly to the concrete and carefully pack dry dirt into the area under the liner sag. If there is liner showing after the leak is corrected - fold over and bury. **DO NOT CUT OR TRIM LINER.**

2. Liner puncture: This problem happens very rarely. Anytime anyone works around your water feature with shovels or other digging tools there is a chance the liner can get damaged. Instruct sprinkler contractors, gardeners and others to be extremely careful when digging near your water feature. **IF YOU OR OTHERS THINK THEY MAY HAVE DAMAGED THE LINER, MARK THE SPOT WITH FLAGS AND CALL LAND-ESCAPES INC. WE CAN FIX A DAMAGED LINER VERY INEXPENSIVELY IF WE CAN EASILY FIND THE DAMAGE**.

3. Outer Plumbing: All of your system outside of the pond is engineered to be failure proof. It is a time tested design that we have used for over 20 years. The “outer plumbing” is everything outside of the liner from bulk-head. (See fig 2)

   The waterfall return line is graded so that it drains back to the sump when you disconnect the pump at the Cam-Loc fittings.

   The Sump itself and the connecting line to the pond are the deepest buried parts of your water feature and are insulated by the soil and the water that fills them.

THERE MUST BE SUFFICIENT WATER IN THE POND TO PROTECT THE PVC PIPES AT THE BOTTOM OF THE POND. See warning on Page 3.

If these pipes freeze they will break. They can be replaced / repaired but it is never easy and always expensive.

Draining & Cleaning Your Pond

Once the plantings in your rock garden and the area around your pond are well established there will be few occasions where draining you pond will be necessary. After the construction and planting is finished there is a lot of loose soil which will get washed or blown into your pond. This will muddy up the water but it will settle out and build up on the bottom.

Besides making the pond water murky, the dirt that washes or blows in carries nutrients that will feed algae growth. The murkiness will settle out in a few days. Algae control can be a bit difficult during this time. The goal is to get your pond "naturalized" as soon as possible. This means having a balanced eco-system in the pond and a maturing and stable planting scheme surrounding it. The sooner you plant, the choice of plants, and the early and regular care they get will determine how thoroughly your water feature naturalizes. . In our climate you should expect it to take two full growing seasons until this naturalizing is well underway. If there is a good build up of mud in the bottom of the pond a cleaning may be needed.

Draining Your Pond

If your pond has a bottom drain valve (see specs label) simply un-plug pump from the electrical outlet, open the drain valve and let the pond drain. In the cleaning process, be careful to prevent too much heavy mud and gravel entering and clogging the drain line.

For ponds without a bottom drain line, follow this procedure:

1. Un-plug pump from electrical outlet.
2. Turn off auto-fill. (Where applicable)
3. Remove sump lid.
4. Release Cam-Loc fitting by pulling both levers outward from the fitting.
5. Lift pump out of the sump until you can let the elbow rest on the edge of the sump.
6. Attach the blue drain hose with the Cam-Loc fitting and roll it out to where you want the water to drain. (Usually on the lawn)
7. Plug the pump in. It should begin pumping the water onto the lawn.
8. When the water level gets near the bottom of the pump, lower the pump as far as it will go.
9. Net fish and move to temporary quarters.
10. When the pump is no longer moving water, un-plug

Cleaning Your Pond

1. Use a flat shovel and a wheel barrow (in necessary) to remove any large build up of mud on the bottom of the pond. Don't worry about getting as aggressive as needed - there is concrete protecting the liner. You may notice cracks in the concrete, but this is normal. We do not depend on the concrete to have a water-tight pond.

2. Starting in the top pool of your waterfall, use a good spray nozzle to blast debris downstream. Re-position cobble rock as needed to hide exposed concrete on the edges of the stream. An old household broom can be used to move things downstream.

3. Once the waterfall is clean, use the same technique around the sides of the pond. With a combination of the water blast and broom, move debris toward the bottom suction. You may need to plug in the pump again to remove the accumulated water.

4. Sweep up and shovel out what mud and debris is left. Clean off the screen on the bottom suction.

5. Place the hose in the top of the waterfall and fill.

6. Remove blue drain hose and re-connect pump to waterfall return line.

7. Turn on auto-fill valve.

8. When there is sufficient water in the system, plug in pump and replace sump lid.

Once the pond is full it will still be a little murky. Add **Pond-Zyme**™ and **Algae-Fix**™ according to the instruction on the package. Return fish when water temperature is safe.

Automatic Fill Valves

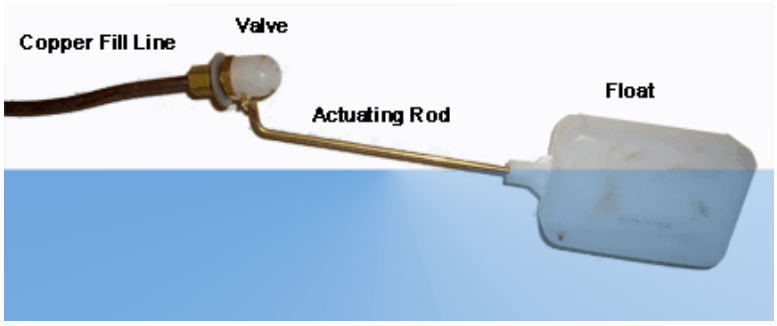

Figure 5
Float Valve auto-fill

The optional auto-fill feature is either a simple float valve or an electronically controlled fill valve. The float valve system (Fig. 5) is fed by a 1/4" soft copper tube connected to a live water source, usually in a sprinkler valve box. This is the most common for small pools. To adjust water level simply bend the actuating rod up or down so that when the water is at a normal level the valve has closed. Make sure that the float ball has free and full movement.

To adjust the water level higher bend the rod upwards. For a lower water level bend it downward. Float ball can be either vertical or horizontal, but changing this will affect the adjustment.

For larger ponds a solid state controller (Fig. 6) senses the need for water through a set of stainless steel probes mounted near the skimmer. When the micro-volt circuit is broken the controller opens a 24v sprinkler valve and fills the pond until the circuit is closed by water touching the probes. (Fig. 7)

Figure 6
Electronic level control

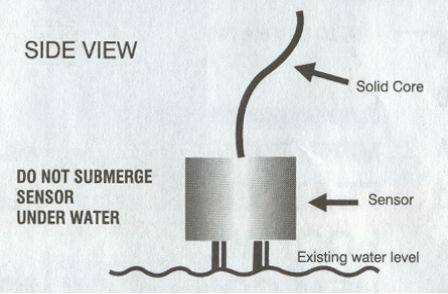

Figure 7
Sensor Probes

The control unit (Fig. 6) is mounted on a wall or post near a 110v circuit. There is a small 2 part wire from the controller to the probes and another going to the sprinkler valve which fills the pond through a 1" poly pipe.

The probes are hanging in a 1" PVC pipe near the skimmer, fixed or glued to a rock, or to the inside of the skimmer. If the unit has power, the green light is lit. The yellow light means that the sensor is working and the fill light will come on only when the unit is calling for water.

Plants and Fish for your Pond

The most enjoyable and easiest to maintain pond is one that has reached and maintains a balanced chemistry. Your pond is a very complex eco-system where Ph, dissolved Oxygen, microbial life, water temperature, fish, snails, plants and algae should all work together in balance. The general rule of thumb that we have found best is don't mess with the system too much. Bring to the system the needed elements and then let them find an equilibrium based on all the particularities of your pond. Remember, no two ponds are identical. The pond size, volume of water being circulated, the direction of orientation to the Sun, location in your yard and the nearby surroundings all play a significant role.

Water Lilies, wetland plants like Reeds, Sedges and Water Iris are all helpful in maintaining clear water and a very natural appearance. Gold Fish and Koi are the most common fish species for the small ornamental pond. The number of fish your pond will support is dependant on its size and the size of the fish. Most of our ponds will winter over fish. When the pond ices over there needs to be enough water to provide sufficient oxygen otherwise your fish will asphyxiate.

The rock garden around your pond should be planted with appropriate trees, shrubs, perennials and ground covers. Special care should be given when choosing ground covers for the areas near the edge of the pond and waterfall. Material that will fill the planting pocket and grow over the concrete pond edge will create a very soft and natural looking transition between the water and the rock garden.

For suggestions or assistance in planting your rock garden talk with our Nursery Staff at Land-Escapes. 406-227-9100 or see the Nursery page at our website: www.MontanaLandEscapes.com