

## ***Buyer's Guide to Hot Tubs and Spas***

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## General Information

### Introduction

So, you've decided to buy a hot tub or spa. Good for you! You'll enjoy it. There are many styles to choose from. This buyer's guide will help you make an informed, educated choice for your family and lifestyle.

### Why are you buying a hot tub or spa anyway?

You're looking at hot tubs and spas because the home bathtub *just doesn't do it*. The most important reason to buy a hot tub or spa is to be able to soak and socialize in HOT WATER. Salesmen talk about jets, pumps, filters, and heaters instead of depth, leg room, and lovely, glorious hot water bubbling over your shoulders.

Most of us get pains in our neck and shoulders. To get water over your shoulders without sitting on the floor, you need a tub over three feet deep. If you don't have water over your shoulders and on the back of your neck, you're not hot tubbing.

Lack of depth is a serious limitation for many spas. Most spa designs concentrate on fitting through doorways, not on providing comfort and depth for soaking.

### What styles are there?

Hot tub, spa, whirlpool, Jacuzzi, jetted bathtub. What do these terms mean? Many people use them interchangeably. In this buyer's guide, a hot tub is a deep wooden tub and a spa is a shallow, molded acrylic vessel. Both hot tubs and spas share the same hydrotherapy jets, heater, and circulating and filter equipment. They aren't connected to the city sewer or water supply; you don't drain out water after each use; you don't use soap. Hot tubs and spas are installed in public areas—family rooms, decks, gazebos—they can be used indoors or out.

The terms *whirlpool* and *jetted bathtub* mean the same thing. They are deeper than normal bathtubs and have hydrotherapy jets. Most of them don't have their own heaters, and none of them have a circulating and filter system. A whirlpool or jetted bathtub is usually installed in the bathroom and connected to city sewer and water; you drain the tub when you're done; you can use soap. You don't save water or heat—it all goes down the drain. Hot tubbing or "social bathing", is acceptable to most people, but social bathing in a jetted bathtub would be frowned upon.

Jacuzzi is a trade name for a company that manufactures spas and whirl-pool bathtubs; it isn't a special kind of spa. Great Northern is a trade name for our company. We make hot tubs and spas.

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## What is a portable spa?

Portable spas have built-in (also called self-contained) equipment. A wooden skirt around the perimeter hides equipment and provides support for the sides. They look like appliances. Like other hot tubs and spas, they have self-circulating systems.

Portable spas appeal to people because it seems you can just buy it, plug it in, and go. No electrical hassle, no construction. **Watch out!** The heaters on these spas have the *same power as a hairdryer!* Both portable spas and large hairdryers have only 1500 watts of output. Imagine heating 250 gallons of water with a hairdryer!

If you get a portable spa, you still need to build steps and seating around the top. Portable spas don't have adequate access or top edge seating. You need seating for a place to cool off, for drinks, food, towels, and sandals. The name "portable" is somewhat misleading too. A portable spa weighs 400-800 pounds empty! Really easy to move, right?

## Which is more comfortable, hot tub or spa?

Comfort and water depth are related. When you're in water up to your neck, you're comfortable. You've never been uncomfortable in a pool, because of its depth. The same thing is true in hot tubs or deep spas. If the water is three to four feet deep, you'll be comfortable. You don't need to lay down for comfort.

## Why do some spas have molded seats and loungers?

Molded seats and loungers have a lot of dazzle and eye appeal. They look so comfortable! Be careful about buying a highly stylized spa with arm rests, bucket seats, or other form-fitting shapes. Why? Bodies! We're tall, we're short, we're big, and we're little. If a bucket seat fits one person, it's much too small or large for someone else.

Manufacturers naturally want to advertise that their spa has as much seating as possible. Many of them make bucket seats narrow to boost seating capacity. The narrow seats can be uncomfortable for many adults.

Beautifully molded loungers look as if they're really going to support your back and be extra comfortable. Remember, *water* supports you! Maybe the spa is so shallow you need to lie down to be covered in water. People can float out of loungers too. Your body weighs only four to five pounds in the water. It takes just a pound or two of jet pressure or bubbles to lift you out and float you away.

Some manufacturers try to eliminate float-away problems by making stirrups or recesses for your feet and arms. You wedge your heels in, and you wedge your arms in, and there you are, all wedged in, ready for...comfort? Loungers also take up so much space that they limit the number people who can use the spa at one time.

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## What kind of seating should I look for?

The most comfortable and convenient hot tubs and spas have barrier-free seating. If you have a lot of friends, they can slide over and make room. If you buy one of our Rubadub Tubs, you can have the seats installed at different heights too, they're adjustable.

Parents often want a hot tub or spa with really high seats for little kids. We don't think extra high seats are a good idea. Children don't sit still. Babies like to hang on the edge of the tub or sit on a lap. Older children can sit on the highest regular bench. High seats eliminate room for adults who use the tub more often and anyway, kids grow.

<b>Our Advice:</b> Choose multi-level, barrier-free seating.
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## Where should I put it?

You can have your spa or tub inside or outside. The heater, pump, and filter should be no more than 15–20 feet away from the tub. (You can put the equipment farther away if you have the proper design.) Equipment can also be self-contained under the spa. People with outdoor tubs usually install them close to the garage or house so they can keep the equipment in a heated area.

One consideration in choosing a location for the tub or spa is ease of installation. Because spas are molded in one piece, they have some indoor installation limitations. Some spas are designed to go through standard doorways. Maximum spa diameter can't exceed doorway height and width. Most spa shells are 6<sup>1</sup>/<sub>2</sub> feet across and approximately 28–29 or 34–35 inches deep. Measure carefully! A standard doorway is 6'8" high and 30–36" wide. These are *rough-in* measurements. Doorways can be <sup>1</sup>/<sub>2</sub> to 1 inch narrower than the rough-in measurement! It is impossible to get standard size spas up or down stairways.

A two-person spa may go through the door, but it will be tight. Don't find yourself in a situation where you have to tear out a wall or staircase. If you can find a spa that fits into your house, be sure it's still large enough to give you the leg room and depth you need. Unfortunately, many spas that fit through the doors and around the stairways are no bigger than a two-person bathtub. Remember! Depth is everything. Consider putting the spa outside or buying a Rubadub Tub.

## Environments

No matter where you put your spa or tub, you need to make decisions about your tubbing environment. Hot tub and spa manufacturers make the vessel; they don't provide seating, decks, lighting, plants, or other decorating. Decide how the tub area should look. Discuss your plans with a carpenter if you're not doing it yourself.

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You should have simple decking or seating for comfort, safety, and beauty. Seating should be 12 to 16 inches wide and flush with the spa or tub top so you can cool off, dangle your legs, then slide back in for another good, deep soak.

If you're thinking about a portable spa, you still need to provide a seating area around it. The lip on a portable spa is only 3-5 inches wide; too narrow for safe, comfortable seating.

## How are hot tubs and spas built?

### Spas

Most manufacturers use the fiberglass lay-up method of spa construction. This manufacturing method combines layers of polyester resin and glass fiber. A heated acrylic sheet is placed over a spa-shaped vacuum mold. Air is drawn out through hundreds of small holes. When the acrylic cools, they remove it from the mold and reinforce the underside of the spa with a resin and chopped fiberglass mixture.

This polyester resin and glass combination can lead to a common problem—acrylic blistering. Blisters occur because of a chemical reaction between moisture from the tub and the polyester resins used in the reinforcing process. Many spas have been ruined because of blisters. Spas made from polyester resins are *blister resistant*. Their finish and structure warranties are *separate*. The salesman points out the structure warranty because it is usually 10-15 years. Many times he won't mention that *finish* warranty is only 1-3 years. You could have a blister problem in as little as one year!

Great Northern spas don't have the blistering problem that others do because we use epoxy resin instead of polyester resin to reinforce the spa. Epoxy resin doesn't react with moisture to form the gasses that cause blistering. Great Northern spas are *blister proof*. The warranty on structure and finish is the same—20 years.

#### ***Does wall thickness affect spa durability?***

The acrylic provides color, not structure. We measure durability by weight and the thickness of the *fiberglass*, not thickness of the acrylic. The acrylic covering is at most  $\frac{1}{8}$  inch thick and tapers to 15 or 20 thousandths of an inch in the foot well of the spa.

Water is heavy. Water in a spa can weigh one or two tons. What happens when you fill a thin walled spa with water? The water pushes down and gradually bends or breaks the spa. To compensate for the lack of strength in a thin-walled spa, some manufacturers fill the underside with urethane foam. Others require sand or a wood structure underneath the spa. Sand or foam provides support under the benches or seats, lounge area and step. Portable spas often depend on the wooden skirt to support the water. Without the skirt, many of these

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cheap spas would collapse. If the spa shell is thick enough, no other reinforcement is necessary.

Let's compare two well-known spas. One shell weighs just 95–100 pounds and has  $\frac{1}{8}$  inch walls. Another weighs 120 pounds and has  $\frac{3}{16}$  inch walls. Spas with flimsy walls like these require additional support. Great Northern spa shells weigh 225–260 pounds and have walls up to  $\frac{5}{8}$  inch thick. They don't need additional support. They're built to last!

How can you tell how thick the wall is? It's difficult. Try flexing flat wall areas. If you can, try to examine a spa that doesn't have the jets installed yet. The holes will show the spa thickness. Lift the spa shell only. does it seem too light? If the manufacturer foam fills or requires sand filling or wood framing, you know the vessel walls are too thin.

### ***How can I recognize a good quality spa?***

Quality spas have the following characteristics. They—

- Are constructed from blister-**proof** materials;
- Are thick enough to hold water without sand, foam, or wood support;
- Are deep enough for over-the-shoulder soaking;
- Have high vessel weight (indicates good wall thickness);
- Have a the same warranty for structure and finish;
- Don't rely on a wood skirt to support the water weight; and
- Are well-molded with straight sides, no warping, and flat across the top.

### **Hot tubs**

The art of wood tank building goes back to the fifteenth century. People built barrels and tanks to hold liquids. We build hot tubs the same way medieval craftsmen built their tanks and barrels. Barrels, wooden tanks, and hot tubs are built from curved pieces of wood called *staves*. Craftsmen assemble the staves and place metal hoops around them to hold the staves in place. At Great Northern, we make hot tubs out of redwood or cedar. We coat our hoops with plastic to eliminate rust.

Back in the 60s hot tubs were made out of old wine vats or 500-gallon water tanks. The tub becomes watertight when the wood saturates, swells, and seals. Wooden vessels have always been popular with people who love depth and leg room.

All-wood tubs are no longer as popular as they once were since all-wood construction requires clean, knot free heartwood from old growth trees. Who wants to sacrifice beautiful old trees to make hot tubs? You can get the benefits of a traditional all-wood tub (leg room, depth, and portability) with a modern, plastic lined tub. The best known lined tub is the *Rubadub Tub*. Bill Jaworski, a

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pioneer of the hot tub and spa industry, created it in 1978. These tubs are easy to clean and have the same hydrotherapy jets and equipment as spas.

***Is the liner vinyl?***

No. The interior finish on the Rubadub Tub is made from PVDF, an easy-to-clean industrial tank lining material designed for high-temperature service. Its semi-gloss finish resists chemical and weather damage just like acrylic. Many people mistake PVDF for pool vinyl. Pool vinyl doesn't hold up to the high water temperature you have in hot tubs. BEWARE! Some manufacturers use vinyl liners in their hot tubs. The life expectancy of these liners is only 1-2 years.

***Are there any advantages of a hot tub over a spa?***

Yes! There are several reasons you might want a hot tub instead of a spa. Here they are:

You can install a hot tub anywhere.

Because hot tubs aren't molded in one piece like a spa, you can have a large, deep hot tub anywhere you want! Hot tubs come in a package that fits down the stairs, through the door, and even through the windows!

The Rubadub Tub, once assembled, can be moved indoors or out as the season requires. Its flexible, lightweight construction allows it to be moved anywhere easily!

You can create your own hydrotherapy system.

Where does your back hurt the most? How about that neck strain? You can position the jets in your tub at the best height for your aches and pains. The 5-foot diameter Rubadub Tub allows you to place jets where you need them. If you want one jet on the small of your back and another between your shoulders, just install two jets vertically. If you want more jets, you can have them. You can have as many jets as you want; it just takes a larger pump to power them.

You can have any size tub you want.

If you want a custom-size vessel, a Rubadub Tub is the easiest, most economic way to get it. All Rubadub Tubs are made one at a time, so ordering an extra large or extra small tub is easy. Almost any size is possible. We have built tubs as small as 30 inches around by 30 inches high for one person, and as large as 14 feet in diameter for ski resorts.

***How can I recognize a good quality hot tub?***

Quality hot tubs have the following characteristics. They—

- Are deep enough for soaking (35 to 44 inches);
- Are lined with PVDF for long life and easy cleaning;

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- Are built from high quality redwood or cedar;
  - Have poly-coated hoops to prevent rust; and
  - Look like high quality furniture.

## Covers

To operate your hot tub or spa safely and efficiently, keep it covered. There are three cover types: floating thermal insulator, Styrofoam, and structural.

**Floating thermal insulators** float on the water's surface. There are two types, bubble blanket and micro cell floating blanket. Both are lightweight, inexpensive, and stop surface evaporation, a major source of heat loss. You can use them indoors year round or outdoors during the summer. Neither type prevents people or animals from falling into the water.

**Styrofoam** hard covers are made from three-inch Styrofoam wrapped in Naugahyde or vinyl. They are popular despite these disadvantages: They become waterlogged easily. A waterlogged cover is difficult for one person to lift and has substantially reduced R-value. These covers break so easily, children have fallen through them and drowned. Life expectancy is only one to three years.

**Structural** covers are constructed from solid wood, or a other strong material. Be wary of plastic covers because they warp in the sunlight. Solid wood covers are strong, but heavy, awkward, and bulky. Some are insulated.

Another type of structural cover is the rolling cover. Great Northern's Roll-up covers are made from solid wood slats bonded to insulating, flexible backing. They are strong, compact, and easy to use. You don't have to lift them, just roll them up. Roll-up covers retain their R-value because they don't waterlog, keep children, pets, dirt and debris out of the tub and heat and moisture in. If you have a particularly inquisitive child, you can secure the Roll-up cover with a hasp and lock.

<p><b>Our Advice:</b> Use a floating thermal blanket or Roll-up cover. If your tub is outside, you must have an insulated, structural Roll-up cover to prevent heat loss and accidents.</p>
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## Hydrotherapy systems

### How many jets do you need for a good massage?

Many people think the more jets you have, the better your massage. This is not necessarily true. We also have to look for a balanced relationship between number of jets, jet size (nozzle diameter), and pump size.

#### *Number of jets*

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When you're looking at the confusing panorama of jet offerings, it's hard to determine which of them is best. Keep this simple thought in mind: *The only jet that does you any good is the one aimed at your back.* The real questions are "How many people use the tub at the same time?" and "Do those people each need their own jet?". Any jet not on somebody's back is wasted. Don't buy more jets than you need for the number of people in your tub.

Some manufacturers offer many jets instead of fewer high quality ones. In most cases, you can't use all the jets at once because the pump isn't big enough to handle them. This type hydrotherapy system includes a director valve that you use to select *one group* of jets at a time! They don't all operate at once.

### **Jet size**

Large-nozzle jets permit more water to flow than small jets. More water flow means a firmer massage. A spa with many small jets could have the same massage action as a spa with fewer large jets. You need to compare total diameters of all jets in relation to the pump size.

### **Pump**

A large jet with 15-20 GPM (gallons per minute) needs  $\frac{1}{4}$  Hp to produce massage action. If you increase the number of jets, you must also increase pump size or decrease jet size to get proper massage action. Some manufacturers try to fool you into thinking their spa has increased hydrotherapy action because it has many jets. Their claim is true only if total nozzle diameter and pump size are larger than comparison models.

<p><b>Our Advice:</b> Buy a hot tub or spa with the correct number of jets for your needs. If you need or want very firm action, consider fewer large jets and a bigger pump. Watch out for salesmen that brag about the number of jets they have. Ask for a demonstration to see if all jets operate at once.</p>
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## Pumps

### Why do we have a pump on hot tubs and spas?

Pumps in hot tubs and spas have two functions: They circulate water through the filter and heater and power the jets. Pump size varies from small  $\frac{1}{20}$  to  $\frac{1}{8}$  Hp circulation pumps to monster 2.5 or 3 Hp pumps used to power many jets.

Hot tubs and spas use high-volume pumps. In a high-volume pump, a large volume of water flows at low pressure. This kind of pump is rated in GPM (gallons per minute). Some people get high volume pumps confused with high pressure pumps which are rated in PSI (pounds per square inch). An example of a high pressure pump would be one used in a self service car wash. The water from the hose comes out with great pressure, but little volume.

Before the mid-80s, it was common to have a small circulation pump for filtration and heating, and an additional larger pump for powering the jets. Today most hot tubs and spas use two-speed pumps; the same pump circulates water and powers the jets. A two-speed pump provides low cost continuous circulation for filtration, heating, and freeze prevention in low-speed mode and high power and output in jet mode. On low speed these pumps use as little as 150–170 watts and cost only \$5–6 per month.

### What is the relationship between hydrotherapy action and the pump?

The bigger the pump, the more power in the massage, right! Wrong. What gives a firm massage then? Large volume jets. The larger the jet nozzle, the higher its GPM rating.

We determine a pump's size by adding the total nozzle area of the jets it's expected to power. Because there are so many different sizes of hydrotherapy jets, there is no hard and fast rule concerning pump size. In general, large jets (15–20 GPM) require  $\frac{1}{4}$  Hp per jet. Some jets are so small you can have a 1 Hp pump drive eight to ten of them. At the other extreme, some small swim spa jets require 1 Hp per jet. Manufacturers often use two or more pumps to power individual groups of jets if total jet area is extremely large. This practice generally saves money for everybody.

We match pumps to the size and number of jets they are expected to run. Once the hydrotherapy system has been designed, increasing horsepower has no benefit on jet action. *Bigger pumps only operate more jets, they don't increase pressure!* If you need more vigorous hydrotherapy action, use high GPM jets. Expect to pay more for a large number of high GPM jets and the required larger pump.

### Does it cost a lot to run the pump all the time?

Although it's difficult for the consumer to tell the difference, there are high and low energy efficient pumps. Unfortunately for the spa industry, pump manufacturers have moved to inexpensive, inefficient pumps. The result is

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higher operational cost for consumers. For example, in the late 70s, a 1 Hp model consumed 11 amps. Over the years (because of cost cutting measures in the motor) the same model pump today consumes 15.5 amps. That's an additional  $\frac{1}{2}$  kW per hour! Great Northern uses only energy efficient pumps. For example, our 1 Hp pump draws a maximum of 10.3 amps on high speed and only 170 Watts on low speed.

<p><b>Our Advice:</b> Don't specify a big pump for your spa just because it's bigger. If you want more vigorous hydrotherapy action, ask for large-volume jets and an appropriately sized pump. If you're still in doubt, call us.</p>
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## Filters

Three kinds of filters are used in the swimming pool, hot tub and spa industry. Diatomaceous earth (DE), sand filters, and cartridge filters. DE and sand filters are used in cool-water pools and aren't suitable for hot tubs and spas. These filters have limited surface area and are easily clogged by body oils, perfumes, cosmetics and so on that come off the skin in hot water.

Hot tubs and spas use cartridge filters made of non-woven, spun-bonded, polyester fabric. Avoid filters made from paper or cotton-paper blends because you can't clean them. They must be replaced when dirty. Polyester cartridge filters are made from two or six ounce fabric. Most filter manufacturers use two ounce fabric and pack pleats so tightly together that the filter can't handle the water flow. They are ineffective. Heavier six ounce fabric with large pleats offers good strength, little if any flow restriction, and does the best filtration job. You can clean and reuse these filters many times. They last about two years.

There are two filtration methods available—suction and pressure. In the suction method, water from the tub is sucked through the filter to pump, heater, and jets. Sometimes the filter sits right inside the hot tub or spa. Suction filtration requires about four times as much filter area as pressure filtration. If you don't have a large filter, you have to clean it often. On some systems, a dirty suction filter can cause such flow restriction that there may be damage to the pump or heater. This filtration method is cheaper than pressure filtration because it doesn't require an expensive housing to hold the filter cartridge.

Pressure filtration is more expensive, but safer for the equipment and easier to maintain. The filter sits in a pressure housing located near either the tub or pump. A good six-ounce polyester fabric in a well spaced and sized filter affords good element life, excellent filtration, and little possibility of damage to pump or heater at reduced water flow.

Great Northern and many other manufacturers use and recommend pressure filtration. However, suction filtration is acceptable on budget sized and priced tubs.

Manufacturers determine filter size by examining two factors—bather load (number of people, how dirty they are, frequency of use) and circulating pump volume.

If you had a 2.5 Hp pump, you'd need a 100 square foot or larger filter. (This is large and expensive!!) If an average family used this large filter, they'd need to clean it only once a year. A more reasonably sized 25 square foot filter requires cleaning every four to six weeks.

## Heaters

### How long does it take to heat up and what does it cost?

There is no simple answer to these questions. Before we can answer them, we need to know about the beginning water temperature, heater power, heat loss, surface area, heat retention, and final use temperature. Cost of operation depends on insulation, surface area, and energy cost.

#### *Heater power*

Electric heaters come in three sizes: 1.5 kW (120V); 6 kW (240Vs); and 11.5 kW (240V). Each heater has a different rise rate. The following table compares rise rates:

Heater size i	Spa (250 gallons)	Rubadub Tub (400 gallons )	Remarks
11.5 kW	16 <sub>i</sub>	10 <sub>i</sub>	Used with large spas and hot tubs or in situations that need fast rise rates.
6 kW	8 <sub>i</sub>	5 <sub>i</sub>	Keeps water hot during use even in winter.
1.5 kW	2 <sub>i</sub>	1.25 <sub>i</sub>	When the cover is off, water loses heat faster than the heater supplies it. The water cools quickly. This is acceptable for short soaks only.

**Table 1. Rise rate of heaters in degrees per hour. (All temperatures are approximate.)**

Using the chart above, note that the rise rate on a 250 gallon spa is 20<sub>i</sub> per hour with an 11.5 kW heater, 10<sub>i</sub> per hour with a 6 kW heater, and only 1–2<sub>i</sub> per hour with the 1.5 kW heater.

Let's assume that the starting water temperature is 50<sub>i</sub> and we want to raise the temperature 54<sub>i</sub> to 104<sub>i</sub>. Look up the heater you'll be using on the chart. Divide 54<sub>i</sub> by that number. The result is the number of hours it will take that heater to raise the water temperature 54<sub>i</sub>. You'll find the 1.5 kW heater may take several days for the initial heat up. That is too long. We don't recommend this small heater.

It seems that a 11.5 kW heater would be best, however they need a 60 amp circuit and can only be used where 150–200 amp service is available. Usually

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commercial establishments with extremely large spas and hot tubs use 11.5 kW heaters. If you want this size heater, you need a 150–200 amp electrical service.

**Our Advice:** Get the right sized heater! The best choice for most home spas and hot tubs is a 6 kW 240V heater. Beware of 120V only plug-in spas. They have 1500 watt heaters which won't heat your spa adequately!

### ***Surface area and heat retention***

So, which is the most economic, energy-efficient tub? The deep, narrow hot tub (400–600 gallons) or the shallow wide spa (250 gallons)? Many people think “Of course! The spa. There’s more water to heat in a hot tub!” Not true! Hot tubs have greater thermal mass (gallons of water) than spas. They take longer to heat up, but retain heat longer. They take less energy to maintain use temperature. We don’t pay to heat water! We pay to replace the heat that sneaks out the top, sides, and bottom of the spa or tub.

A typical five-foot diameter Rubadub Tub has roughly 94 square feet of surface area. A spa that seats the same number of people has at least 140 square feet of surface area. A hot tub has less surface area than a spa, so less heat escapes from the top.

The large volume of water in a Rubadub Tub allows it to hold heat considerably longer than a comparable spa. For example, consider an outdoor installation in the wintertime. If you lose electric power, the Rubadub Tub retains enough heat to keep it from freezing for five to six days. A spa would lose its heat and freeze within a couple of days. It’s really a matter of thermal mass—the larger the thermal mass, the slower it cools.

**Note!** *Even though the water in the hot tub won't freeze quickly in the above situation, the pipes and equipment will! If you lose electric power, you must act quickly to prevent damage to your equipment. Drain the hot tub or spa during extended power outages in winter!*

### ***Should I turn the heater off?***

Most of the time, you shouldn’t. Hot tubs and spas are energy-efficient. Remember what we said about heater size and rise rates. You’re better off if you leave the heater on all the time, especially if your tub is outside. The thermostat maintains the proper use temperature. Your spa or hot tub will always be ready when you want to get in. No waiting!

### ***Isn't it cheaper to heat with gas?***

Well, yes and no. Gas heaters aren’t often used in home spas and tubs for three reasons—up front heater cost, outdoor winter use restrictions, and indoors, cost of modifications to chimneys and flues.

Gas heaters are possible for home units, but they cost considerably more than electric heaters. You could pay \$600–1,000 for the heater alone. You shouldn’t use gas outdoors in the wintertime. The gas heater must be in a heated

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environment. Some dealers will install gas heaters outside; but, every winter these heaters freeze and cause damage to the heater and tub. Neither tub nor spa warranty nor homeowner's insurance covers damage from freezing. Gas heaters belong indoors, just like your home furnace.

Many homes require modification to chimneys or flues to accommodate a gas heater. Installing a gas heater can mean new venting through the house up to the roof. These modifications can cost another \$1,000 or more.

If you really want a gas heater, contact a building inspector or a heating and air conditioning contractor who can tell you if your existing flue or chimney will be adequate and the requirements for vent and combustion air.

### ***Propane***

Propane heat, commonly used in cabins and some rural homes, costs about the same as electricity. Use propane in remote areas where electricity is not available, or if you installed your tub in a cabin and can't wait for the slower rise rates of electric heaters. Large propane heaters offer fast rise times of 20–30 degrees per hour depending on heater size and number of gallons being heated.

If the cabin has its hot tub heater installed outdoors or in a non-heated porch area, you won't be able to use your tub year round because of the same problems you have with any gas heater—heat exchanger freeze-up, pilot lights blowing out, and stiff controls that don't operate properly.

<p><b>Our Advice:</b> If you can recover the cost of the heater and installation in 5–7 years and install the heater indoors, get the gas heater. However, if it's going to take 10 to 20 years to recover installation costs and you're only going to live in the house for 5 years, you've just lost the money. For most people, a 6 kW electric heater is the most practical.</p>
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## **Electrical requirements**

Ask about electrical requirements before you buy anything. Electrical requirements vary depending on the heater and pump. Most home hot tubs and spas use standard 120/240V circuits. Most Great Northern products can be powered by 40–50 amp 120/240V (3-wire with ground) feeder circuits. Depending on the options you may have chosen for your hydrotherapy system, please call for specifics.

## **Air bubblers**

Air jets, superchargers, turbochargers, bubblers, and blowers are synonymous. Air bubbler systems push air, not water, through their own piping and manifold system. They aren't plumbed to the hydrotherapy jets. Air exits through many small holes in the spa surface or through a hot tub's air bubbler ring.

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A 1 or 1.5 Hp blower pushes air through the pipes so it bubbles into the water in the seat area. The bubbles rise up and burst at the surface with vigorous action. The upward movement of the bubbles gives some water movement but the action is much less intense on your body. Hydrotherapy jets massage one small area of the body intensely. Bubblers provide a gentler “tickling” sensation all over. Bubblers also cause a lot of surface disturbance which is great for photographs!

Not all spas can have bubblers. Hot Spring and Softub are examples of two that don't. Bubblers are available for all Great Northern products.

## ***Finale***

### **Bill's philosophy on tubbing**

In today's lifestyle, tubbing is probably the best bargain you could have. We'd all like to run the hot tub or spa for about fifty cents a month, but we have to be realistic about it. It's going to cost more than that. I have a Rubadub-Tub. It costs me about a dollar a day to run my hot tub outdoors in Minnesota with no gazebo, no covered greenhouse over it, nothing. It's fully exposed to the elements. Our family of five uses it year-round. Some of our best tubbing months are in the winter when it's well below zero. We sit in the hot water and soak up the BTUs.

Tubbing makes winters in Minnesota bearable. If someone took my hot tub away today, I'd simply pack up and leave the state. I've become so accustomed to never having to be cold! For that matter, hardly ever getting a cold! For a dollar a day, it's one of the best bargains that I think you can have. People say “\$30 a month?! I don't need another \$30 a month on my electric bill!” We all agree—none of us want that. On the other hand, we think nothing about going out to dinner and spending \$60–100. You could have run your hot tub easily for two, three, maybe even four months.

There are salesmen who argue that their brand doesn't cost more than \$10 a month to run. I'm an engineer. I could play with the numbers to achieve those figures too, but I would be misleading you. A hot tub or spa used on a daily basis with the thermostat always set up to 104; will cost about \$15 a month indoors and about \$30 a month outdoors.

If a dealer or manufacturer insists that their brand costs only \$3–5 a month, ask them to pay the difference if your bill is higher. AND get it in writing! In today's fast-paced environment, fifty cents to a dollar a day is cheap entertainment for ourselves, our spouse, our family, and all of our friends.

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### **Choose your dealer and manufacturer wisely**

Before you buy, take into consideration reputation, time in business, and the length and quality of product warranty. If your heater breaks down after hours in the dead of winter, will they come out and fix it? Find out where the hot tub or spa is made. Check with the Better Business Bureau. Most people in the spa and hot tub business are honest reputable people. However, there are some unscrupulous manufacturers out there. Don't get caught! Ask many questions. Get references and call them! Don't get soaked before you try out your new tub.

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