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Home & Small Business Tech Solutions

An Extended Guide · No. 1698

Sizing Backup Power for Your Well Pump

Getting the size right
— with the pros who know

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! Read this first — carbon monoxide is the real danger

A running generator's exhaust contains carbon monoxide — an invisible, odorless gas that can kill in minutes. Never run a generator indoors, in a garage, in a shed, or on a porch, not even with the door open and a fan going. Run it outside only, well away from the house — the safety agencies say at least 20 feet — with the exhaust pointed away from every window, door, and vent. Put battery-backup carbon-monoxide alarms on each floor and outside the bedrooms. If an alarm sounds, or anyone feels dizzy, sick, or sleepy, get everyone into fresh air first and ask questions later. The generator you size here is a fuel-burning engine you will actually run during an outage — so whatever size you land on, it always runs outside, well away from the house, never in a garage, a shed, or a basement.

Let's size it right — with the pros who know

Sizing a generator for a well pump sounds like math, but it is really just a short, sensible recipe — and the last step is always to check your numbers with the folks who know your pump. This guide walks you through it, one calm step at a time.

I'm Bill, and I run Bill's Home Tech here in Portage County, Ohio. 'How big a generator do I need?' is one of the most common questions I hear from well-water families — and it is a good one, because a well pump asks more of a generator than almost anything else in the house.

Here is the reassuring part: you do not need to be an engineer, and you do not need to guess. Sizing comes down to adding up a few real numbers and leaving yourself a comfortable cushion. I will show you the recipe, show you where the numbers come from, and be honest about where a licensed electrician and your well company take over.

One promise up front: you will not find a single made-up wattage in this guide. Real numbers come from your pump's nameplate and the pros — never from a guess, mine or anyone else's.

★ Bring me your pump's numbers

If you can find your pump's nameplate, or you know who drilled or services your well, that is the fastest path to a real answer. Call or text me at (330) 200-8042 and we will work out your size together.

The whole recipe, on one page

If you remember only these things, you are already most of the way to an honest, workable size.

- ❑ Start with real numbers — your pump's, from its nameplate or your well company, never a guess.
- ❑ Add up the running watts of everything you want on at the same time — the pump, the fridge, the furnace blower, a few lights.
- ❑ Add the single biggest starting surge on top — just the one, usually the pump's, not every surge added together.
- ❑ Add a generous cushion of headroom, so you are never running right at the edge.
- ❑ On a well, the pump's surge is usually the biggest number on the list, so it tends to decide your size class.
- ❑ Verify the final figures with your well company and a licensed electrician before you buy anything.

> **✔ That is the whole recipe**
> Everything after this page just fills in these six steps, one calm page at a time. Read as much or as little as you like — the recipe does not change.

The plain-English sizing recipe

If you remember one shape for the whole job, make it this simple sum.

Sizing a generator is really just three things added together: the running watts of everything you want on at once, plus the single biggest starting surge on top of that, plus a generous cushion of headroom. That is the recipe, whether you are powering a small cabin or a rural homestead.

- **Running watts** — the steady power drawn by everything you will run at the same time, added up.
- **The biggest surge** — the one largest starting jolt in the group, added once, on top of the running total.
- **Headroom** — a comfortable cushion above that, so the generator loafs rather than strains.

Our general guide on sizing backup power walks through this same recipe for any home and any appliance. This guide is about applying it to the one load that usually dominates a rural list — your well pump — and doing it honestly, with real numbers.

> **✔ Write it down as you go**
> Keep a simple worksheet as you read — a line for the pump, a line for each other load, and a line for the surge. By the end you will have a real number to bring to the pros.

Step 1 — get the pump's real numbers

Everything else builds on this, so it is worth doing first and doing properly: find your pump's real numbers, do not guess them.

Look for a small metal tag — the nameplate — on the pump's control box, on the pressure-tank setup, or in the paperwork from when the well was drilled or the pump last replaced. It usually lists the pump's horsepower, its voltage, and sometimes its running amps. Those are the numbers that start the whole recipe.

Cannot find a tag? Call the company that drilled or services your well and ask for the pump's details — they generally have it on file from the last visit. A licensed electrician can also read it off when they come to plan your hookup. Either way, you end up with a real figure instead of a guess.

> **★ I will never hand you a made-up number**
> Bring me whatever you find — a photo of the nameplate, a horsepower figure, or just your well company's name — and I will help you turn it into an honest size. I would rather make one phone call to your well company than guess. Call (330) 200-8042.

Step 2 — list what else runs at the same time

The pump rarely runs alone. The next step is a simple list of what you truly need on at the same moment.

Be honest and be modest here. During an outage you do not need every light and gadget in the house — you need a short list of essentials. The shorter and more realistic that list, the more sensibly your generator can be sized.

- **The refrigerator or freezer** — usually near the top of everyone's list.
- **The furnace blower** — if you heat with forced air, this keeps the heat moving in winter.
- **A few lights** — just what you need to move around safely, not the whole house.
- **Any medical or well-being device** — anything someone in the home depends on.

Read each item's own nameplate the same careful way you read the pump's. Do not assume something is small just because it feels minor day to day. Our general sizing guide helps you add these running watts together.

> **✔ Shorter lists, smaller generators**
> Every item you can do without during an outage is a little less generator you have to buy and fuel. A calm, honest must-run list is the cheapest sizing tool there is.

Step 3 — add the single biggest surge, not all of them

This is the step people get wrong most often, so it is worth slowing down for. You add one surge — the biggest — not every surge added together.

Motors draw a brief, much larger jolt of power the instant they start, then settle to a smaller running draw. But your appliances do not all start at the very same split second, and each surge lasts only a moment. So the honest way to size is to take your running total and add just the single largest starting surge on top of it — the worst case of one big motor kicking in while everything else is already running.

On a well, that single biggest surge is almost always the pump's. It is a serious motor that starts hard, and its surge is often the largest number in your whole plan. I will not re-teach the surge itself here — our guide on the startup surge and soft starters explains why a pump starts so hard, and what can be done about it.

> **! Adding every surge is the classic mistake**
> If you add up the starting surge of the pump and the fridge and the furnace all at once, you will scare yourself into a far bigger generator than you need. Add the running watts of all of them, then just the one biggest surge. That is the honest number.

Step 4 — add a generous cushion of headroom

The last step in the recipe is the one that keeps everything happy: leave yourself room to spare.

Once you have your running total plus the single biggest surge, do not stop there and buy exactly that size. Add a comfortable cushion on top. A generator asked to run right at the very edge of what it can do runs hot, works hard, and has nothing left when a motor kicks in unexpectedly.

A unit that loafs along at a fraction of its limit is quieter, thriftier with fuel, and easier on itself — and it starts your pump with room to spare instead of straining. Headroom is not waste; it is the margin that makes the whole setup dependable.

> **✔ How much cushion?**
> There is no single magic figure, and I will not pretend there is — it depends on your exact loads and pump. This is one of the things your well company and a licensed electrician help you settle. The rule to remember: comfortably above your total, never right at the edge.

Why the pump usually decides your size class

On most rural must-run lists, one number towers over the rest — and it usually sets the whole size class you are shopping in.

A refrigerator, a furnace blower, and a handful of lights are modest loads. A well pump is a different animal: a serious motor, usually running on 240 volts, with a big starting surge to overcome the weight and pressure of standing water. More often than not, that surge is the single largest number in your plan by a wide margin.

Because of that, the pump tends to decide your size class before anything else does. Get comfortable with the pump's numbers first, size around them, and the fridge and the lights usually tuck in underneath without changing the class of generator you need.

> **✔ Start with the pump, not the lights**
> It is tempting to add up the small stuff first because it feels manageable. But on a well, the pump is the number that matters most — start there, and the rest of the list falls into place around it.

Two kinds of homes, two sets of needs

Sizing looks quite different depending on where your water comes from, so it is worth being clear about which home is yours.

If you live in town or the suburbs

If your water comes from the city or a municipal system, an outage does not touch your water at all. Your sizing job is about comfort and food — the fridge, the furnace, some lights — and that usually points to a smaller, quieter, simpler generator.

- Without a big 240-volt pump surge to plan around, your must-run list is mostly modest running loads.
- The fridge or freezer is often your single biggest surge, and it is far gentler than a well pump's.
- Our general guide on sizing backup power is the right starting point for you.
- A smaller unit is quieter, sips less fuel, and is easier to move and store.

If you are out in the country on a well

If your water comes from a private well, the pump changes the whole sizing picture. Its surge usually dominates the list, so you are sizing up and, almost always, choosing a unit with true 240-volt output.

- The pump's starting surge is very likely the single biggest number on your whole must-run list.
- You will need a generator with a real 240-volt outlet, not just 120-volt receptacles.
- Size around the pump first, with generous headroom, then fit the fridge and furnace underneath.
- The safe hookup — a transfer switch or interlock — is a licensed electrician's job; see our guide on connecting backup power.

> **★ Rural, and not sure where to start?**
> Sizing a generator around a well pump is one of the setups I help rural families with most. Tell me about your well, your pump, and your must-run list, and we will land on an honest size together. Call (330) 200-8042.

Reading a nameplate, in plain terms

A nameplate can look like alphabet soup. Here is how to read the parts that matter for sizing, without getting lost.

The nameplate is that small metal or foil tag on the motor, the control box, or the pressure-tank setup. For sizing, you are hunting for a few things: the horsepower, the voltage (often 240 for a well pump), and sometimes the running amps or the full-load amps. Snap a clear photo of the whole tag so a pro can read anything you are unsure about.

If the tag lists volts and running amps, multiplying them gives you a rough idea of the running watts — volts times amps is roughly watts. It is a starting point, not the final word, because a motor's real behavior is more involved than a simple multiplication. That is exactly why the running figure gets confirmed by the pros rather than trusted blindly.

> **✔ When in doubt, photograph it**
> You do not have to decode the tag yourself. A clear photo of the whole nameplate lets your well company, your electrician, or me read the numbers that matter — and keeps you from guessing at a smudged line.

When to hand it to the pros

You can do the whole recipe yourself on paper. But the final figures — the ones you actually buy and wire to — belong with the pros who can confirm them on site.

Your well company knows your pump. They can confirm its horsepower, its voltage, and how hard it really starts, and they can tell you whether anything about your particular well changes the picture. That is knowledge worth a quick phone call before you spend a dime on a generator.

A licensed electrician confirms the rest at the panel. They verify the pump's circuit, make sure the generator you are considering can actually deliver what the pump needs, and install the transfer switch or interlock that connects it safely — usually with a permit and an inspection. Our guide on connecting backup power covers that hookup in full.

> **! The hookup is never a do-it-yourself job**
> A well pump is a 240-volt, hardwired appliance. Connecting a generator to it safely — and legally — is a licensed electrician's work, every time. Never feed a pump with a cord or by backfeeding an outlet; it can put deadly voltage on the lines outside and is against code.

Headroom, fuel, and a happy engine

The cushion you built into your size pays you back every hour the generator runs. It is worth understanding why.

A generator running well below its limit is a happier machine. It tends to run quieter, burn less fuel for the same work, and last longer, because it is loafing rather than laboring. The same cushion also means that when the pump's surge hits, there is power in reserve to meet it smoothly instead of bogging the engine down.

That matters more out here, where outages often run longer than they do in town. A right-sized, lightly loaded generator stretches your fuel further over a long, multi-day outage — which is exactly the kind of stretch a rural well home needs to plan for.

> **✔ Bigger fuel savings than you would think**
> Because a loafing engine sips fuel, the headroom you paid for up front can quietly pay you back in a long outage — fewer trips to refuel, and more hours of water and heat from the same tank or bottle.

Could a soft starter shrink the size I need?

Sometimes yes — and it is worth knowing about before you settle on a size, because it can change the answer.

A soft starter is a device a pro wires into the pump's circuit so the motor ramps up gently instead of all at once. Because it can substantially cut that big starting surge, it can sometimes let a smaller generator start a pump it otherwise could not. When the pump's surge is what is driving you toward a large unit, a soft starter is worth asking about.

It is not magic, though. A soft starter must be matched to your pump and installed by a professional, and it reduces the starting surge without erasing the pump's running load. Our guide on the startup surge and soft starters covers how they work and where they help — and your well professional or electrician confirms whether one suits your pump.

> **✔ Ask before you size up**
> If a large generator feels like more than you want, ask your well pro whether a soft starter could bring the pump within reach of a smaller one. It does not always change the answer, but it is a fair question to put on the table.

Sizing a standby unit vs. a portable

The sizing recipe is the same, but the two kinds of generators approach the size from opposite ends.

With a portable generator, you are usually sizing to a chosen must-run list — the pump, the fridge, the furnace, a few lights — and running those in turns during an outage. You pick the loads, then size the unit around them plus the pump's surge plus headroom, exactly as this guide describes.

A permanent standby generator is often sized to carry more of the house at once, automatically, and it is sized and installed by a professional as part of the job. If a hands-off, whole-home approach appeals to you, our standby-generator guide walks through what that involves — but the same honest rule holds: the pump's surge and generous headroom drive the number.

> **✔ Two paths, one recipe**
> Whether you lean toward a portable you manage by hand or a standby that runs itself, the underlying math is identical. What changes is how much of the house you are trying to cover at one time.

Do not forget the other water loads

The well pump gets the attention, but a rural water system often has a few other motors that deserve a line on your worksheet.

Some of these run only now and then, and some only in certain seasons, but each one is a load your generator may need to cover — and a couple have their own starting surge to respect.

- **A sump pump** — if your basement or crawlspace relies on one, a wet spell during an outage is exactly when you need it.
- **A water softener or treatment system** — usually a modest load, but part of keeping your water usable.
- **A septic effluent, ejector, or grinder pump** — if your system has one, it is a motor with its own surge, and it stops in an outage just like the well pump.

Read each one's nameplate the same way, and remember the surge rule: only the single biggest surge in the whole group gets added on top of your running total. Our guide on backing up a septic pump goes deeper on that particular motor.

> **✔ List them, even the seasonal ones**
> Write down every water-related motor, even the ones you use rarely. You can always choose to leave one off during an outage — but you cannot size for a load you forgot you had.

A worksheet you can bring to the pro

Here is the whole recipe as a simple worksheet. Fill it in on paper, and you will walk into any conversation with a pro ready and organized.

- ❑ I wrote down my pump's real numbers — horsepower and voltage — from its nameplate or my well company.
- ❑ I listed every other load I truly need running at the same time, with each one's running watts.
- ❑ I added those running watts together into a single running total.
- ❑ I found the single biggest starting surge in the group — usually the pump's — and added just that one on top.
- ❑ I added a generous cushion of headroom above that total.
- ❑ I noted any soft starter, sump pump, softener, or septic pump that might change the picture.
- ❑ I am treating this number as a draft to confirm with my well company and a licensed electrician — not a final figure.

> **★ Bring the worksheet to me too**
> If you would like a second set of eyes before you talk to a well company or an electrician, bring me your filled-in worksheet. We will sanity-check it together, at your pace, before anyone spends a dollar. Call or text (330) 200-8042.

What I help with — and who does the rest

I want to be plain about my role, because honesty is the whole point of these guides.

- **What I do:** help you find your pump's numbers, build your must-run list, work the sizing recipe with you, and get you ready with the right questions — all at your pace, no rushing.
- **A licensed electrician does** the panel work and confirms the pump's circuit — the transfer switch or interlock, and anything 240-volt. That is their trade, usually with a permit and inspection.
- **A well or pump professional does** the pump itself, and can give you its real numbers and tell you how hard it starts.

I am a tech helper with 30-plus years of patient experience — not a licensed electrician, plumber, or well contractor, and I will never pretend otherwise. What I am is the person who helps you make sense of the sizing and lines up the folks who do the licensed work. Our guide on choosing the right pros goes deeper on picking them.

> **★ One friendly point of contact**
> Think of me as the person in your corner who helps you ask the right questions and land on an honest size — then coordinates the pros who confirm and install it. Call or text (330) 200-8042.

Questions to ask when you are sizing

These are the questions that turn a guess into a real, confident number. Ask them of your well company and your electrician.

Q: What is my pump's horsepower and voltage?
This is where the whole recipe starts. Your well company should have it on file, or can read it on a service visit — no guessing required.

Q: How hard does my pump start — does it have an especially large surge?
Ask your well company or electrician. The pump's surge is usually the number that decides your size class, so it is worth confirming rather than assuming.

Q: Would a soft starter let me use a smaller generator?
Ask your well professional. It does not always change the answer, but when the surge is driving you toward a large unit, it is a fair question.

Q: Can the generator I am considering actually deliver what my pump needs?
Ask a licensed electrician to confirm the 240-volt output and the surge headroom before you buy — better to check now than on the day of an outage.

> **✔ Write the answers down**
> Keep these answers with your other home papers, alongside your generator's manual. Future-you, mid-outage, will be very glad you did.

Common Questions

The sizing questions I hear most often from well-water families, answered plainly.

Q: Can I just guess my pump's size from how the house feels?
No — and this is the one place I am firm about it. Guessing leads to a generator that is either too small to start the pump or far bigger than you need. Get the real numbers first.

Q: Do I really add the pump's surge and the fridge's surge together?
No. Add the running watts of everything, then add only the single biggest surge — usually the pump's — on top. Adding every surge at once inflates the size needlessly.

Q: Is a bigger generator always the safer choice?
Not always. A right-sized unit with a sensible cushion is quieter, thriftier, and easier to live with. Oversizing wastes fuel and money without buying you real dependability.

Q: Who has the final say on the size?
Your well company confirms the pump's numbers and a licensed electrician confirms the hookup. Treat the number you work out here as a solid draft to verify with them.

> **★ Still working out your size?**
> This is one of the more involved parts of well-pump planning, and I genuinely enjoy walking rural families through it. Call or text me at (330) 200-8042 and we will land on an honest number together.

The oversizing trap — bigger is not automatically better

It is tempting to solve sizing by just buying the biggest generator you can afford. That instinct costs more than it helps.

A generator far larger than your list is not a free safety margin. It costs more up front, it is heavier and harder to move and store, and — this surprises people — it can actually be less efficient, burning more fuel to idle along under a light load than a right-sized unit would.

A sensible cushion of headroom is exactly right. A wildly oversized machine is money and fuel spent on capacity you will never use. The goal is your honest must-run total, plus the biggest surge, plus a comfortable margin — not the largest number on the shelf.

> **! Cushion, not overkill**
> There is a real difference between generous headroom and gross oversizing. Aim for comfortably above your list — confirmed with the pros — rather than the biggest unit you can find. Bigger is not automatically better, and it is rarely cheaper to own.

Bringing it all together

If this guide did its job, sizing no longer feels like a mystery — it feels like a short, honest recipe you can actually follow.

Get your pump's real numbers first. Add the running watts of everything you truly need on at once, add the single biggest surge on top, and finish with a generous cushion of headroom. Then treat that figure as a draft to confirm with your well company and a licensed electrician before you buy. Numbers first, cushion always, verify with the pros — that is the whole job.

And keep a little water put by regardless. Even a perfectly sized generator can run low on fuel or have an off day, so a few days of stored drinking water sits underneath the whole plan as a quiet backup — our storing-water guide covers how much to keep and how to keep it fresh.

> **★ Let's land on your number together**
> Sizing a generator around a well pump is exactly the kind of project I love helping rural families with. Call or text me at (330) 200-8042, and we will get the size right — honestly, and with the pros who know your pump.

You don't have to do this alone

You just have to remember that a friendly, patient person is one call away.

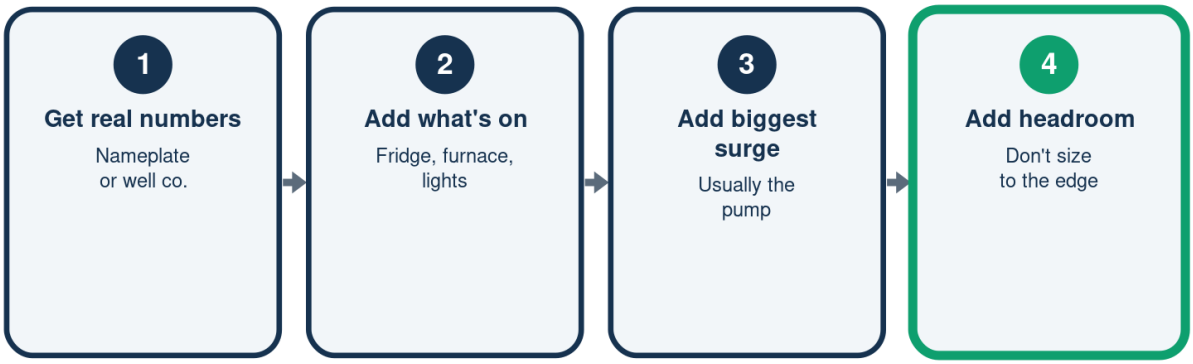
I hope this guide made sizing backup power for your well pump feel a little less daunting and a lot more doable. Keep it in a drawer with your other home papers, come back to a page whenever you need it, and don't worry about memorizing anything.

When you'd rather have a hand, that's exactly what I do. I come to your home, work at your pace, and never make you feel rushed or silly for asking. A first visit is a flat $99, and for the parts that don't need me on-site I can often help right on your screen for $49. Every visit comes with a 30-day, come-back-free guarantee. I don't do the licensed electrical or gas work myself — for that I'll help you line up a trustworthy local pro.

> **★ Bill's Home Tech — real help, close to home**
> Call or text me at (330) 200-8042, or visit BillsHomeTech.com. Serving Atwater and all of Portage County. 30+ years of patient, plain-English tech help — and if you're ever not 100% happy with a visit, I'll make it right or refund it. That's a promise. — Bill

Sizing in Four Steps

The calm way to land on a size



Do these in order and the size almost picks itself.

What Goes Into the Number

Add these up

	Add this	Note
Pump running watts	From the	nameplate
Other running loads	Fridge, furnace,	lights
Biggest single surge	Usually the pump	just one
Headroom cushion	A generous	margin

Only the single biggest surge is added -- not all of them.

Right-Sized vs. Too Big

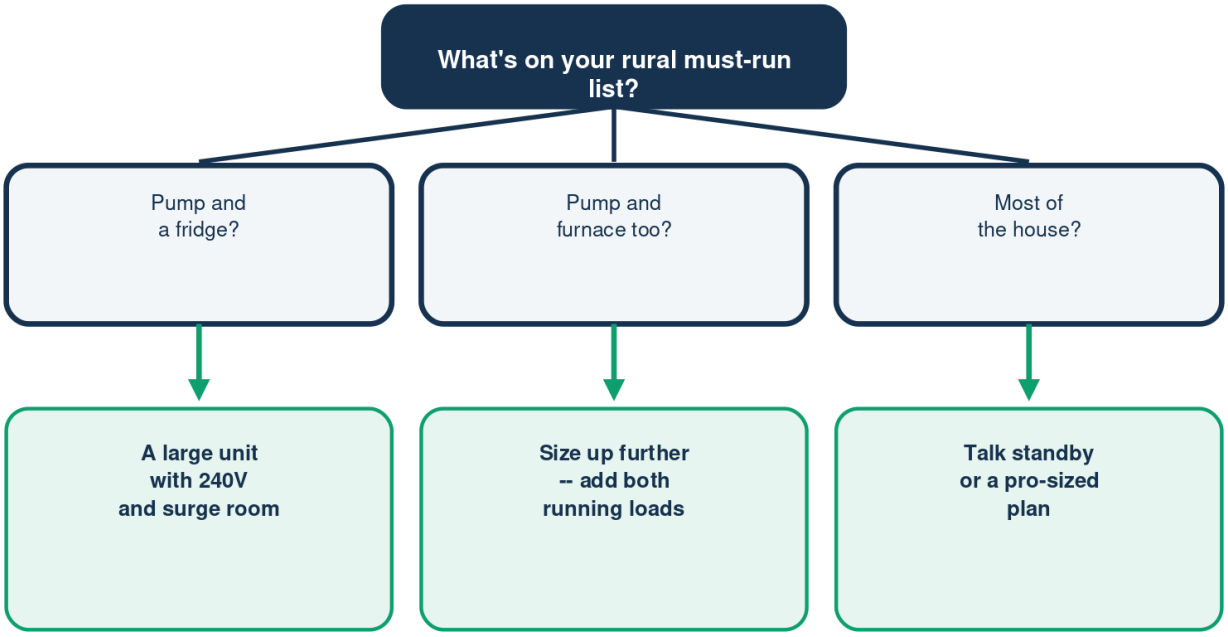
A cushion is good; overkill isn't

	Right-sized	Too big
Fuel	Sips less	Burns more
Noise	Quieter	Louder
Engine	Loafs happily	Overkill
Cost	Sensible	More upfront

Aim for your list plus a sensible cushion.

How Big Should You Go?

Let your must-run list decide



Get the pump's real numbers before comparing any generators.

Illustration - a schematic, not to scale. Your setup may differ.

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A Note From Bill

A quick note from Bill.

I write these guides to make home tech a little less frustrating, and I do my best to keep every step accurate and up to date. Still, every home, device, and setup is a bit different, so I can't promise a guide will match yours exactly or fix your particular problem. These guides are for general information only — they're not professional, legal, or financial advice, and they don't replace your device's own manual or the manufacturer's instructions. Please go slow, use your own good judgment, and use everything here at your own risk. If a step involves electrical wiring, a gas appliance, a water heater, plumbing, or climbing a ladder — or if anything just doesn't feel safe — please stop and call a licensed professional (or give me a call at 330-200-8042). Bill's Home Tech and Bill Davis can't be responsible for any damage, data loss, or injury that comes from using these guides. Thanks for reading, and stay safe out there.

— Bill

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