

\$4.95

Become An Empowered Consumer!

7 Important Ways a Manual J Will Save You \$\$\$ When Buying a New Central Air or Heating System

Here it is at last. The booklet you've been waiting for.

The “7 Important Ways a Manual J...” Includes the following:

Read This Guide and You'll Discover:

- 7 Important Ways Having a Manual J Load Calculation Will Prevent the Most Common Problems People Have with their Heating and Cooling Systems After Installation
- The 3 Most Common Problems You'll Have When Choosing A Contractor By Price Alone
- The 6 Costly Misconceptions About Heating & Cooling
- 3 Simple Ways To Save Money
- How To Avoid The 6 Most Common Rip-offs

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It's informative! It's educational! And it's valuable!

Dear Homeowner, Architect, Engineer or Contractor,

Thank you for taking the time to read these tips on choosing a Residential Manual J Load Calculation provider. This free information will help you pick the best service for you. The more knowledgeable you have about the heating and cooling industry, the fewer problems you will have.

Education is truly the first step to making a good decision. You do it before you buy a house, a car or anything else. Why not before you buy a furnace or air conditioner or hire someone to install it?

You'll learn why you should never pick the contractor with the lowest price. You'll also learn why all contractors are different and why communication is so important. This consumer guide can make your service experiences painless and trouble free.

You start by reading this special report. This fact-filled report will reveal how to avoid **6 most common rip-offs**. You'll learn how to avoid the **7 biggest problems** after installation and the **5 most costly misconceptions** about Heating & Cooling. You'll also find information about **3 simple ways** to save money that could save you thousands of dollars!

This information was compiled to be a valuable resource. PLEASE TAKE A FEW MINUTES TO READ IT! If you have any questions, please contact Savoy Engineering Group at www.load-calculations.com.

Sincerely,

Tracy Savoy

Tracy Savoy
Design Engineer
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Savoy Engineering Group
www.load-calculations.com

I'm Tracy Savoy and I own www.load-calculations.com. I've been in the Residential heat loss – heat gain load calculation business for over 4 years and have completed projects throughout the United States, Bermuda, Bahamas, Canada, Mexico, Asia, and the UK.

In that time, I've learned that **Manual J Load Calculations** is a subject of much confusion. Misconceptions, myths and out-and-out lies abound today that needs to be exposed.

This Consumer's Guide was prepared as an educational service to assist you in making an informed, intelligent decision about residential Manual J and selecting a company to perform this service for you.

I have dedicated my company to consumer awareness and education and helping homeowners get the highest return from their furnace & air conditioning investment. I welcome your inquiries and will gladly answer your questions.

"7 Important Ways a Manual J Will Save You \$\$\$ When Buying a New Central Air or Heating System."

Reason #1 – You replace your old system with the same size unit

According to the Department of Energy (DOE), older central air conditioners just aren't as efficient as today's newer units. Those meeting the Energy Star guidelines of the DOE and the Environmental Protection Agency use 20% less energy than standard models.

Like Goldilocks, you need to find just the right system – not too big and not too small. If it's the former, it will cycle on and off constantly but not run long enough to deliver even temperature throughout the house or properly dehumidify the air. If it's too small, it won't create sufficient airflow and will have to run constantly to cool off the house. Either way, it puts a strain on the system resulting in wasted energy and a shortened life span.

When you are purchasing a new air conditioning unit, it is not always a good idea to size up your current one. Even if the unit was correctly sized when the house was built, chances are, home improvements have been made since then and anything from new insulation to weather stripping can alter your house's cooling and heating requirements.

People put in new windows, add a room, or finish a basement and, frankly, the original unit may not have been sized properly. So the only way to truthfully determine the requirements for any specific residence is to have a cooling and heating Manual J load calculation for that specific residence.

Reason #2 – The Equipment is Undersized

Most Americans tend to undersize their HVAC equipment in an effort to save money. While **slightly** under sized equipment (by a margin of 10% or less) may actually provide more comfort at a lower cost, most are designed improperly and will not maintain the desired temperature.

Having an undersized heating and cooling system in your home can be a problem. An undersized heating and cooling system will always be running and will never satisfy the required temperature. Undersized equipment will also not last as long as a properly sized system. If you think your system is undersized, have a load calculation performed on your home. This is accomplished by a qualified engineer who gathers all your building information. All these measurements are then put into a manual J calculation to determine the size of equipment that would need to be installed to properly heat and or cool a home.

Reason #3 – The Equipment is Oversized.

Oversizing your HVAC system creates many problems including short-cycling, marginalized temperature control and pockets of stagnate air. In addition, oversized equipment can degrade humidity control during the cooling season, requires larger duct runs which increases the installation cost, increased operating cost because of the increased demand on utilities and adds unnecessary stress to the equipment shorting the life of the equipment.

Having an oversized heating and cooling system in your home can be a problem. This can easily be seen in the summer when it is hot and muggy. An oversized system doesn't run long enough to remove the proper amount of moisture from the air to make the environment feel comfortable. If you think your system is oversized, have a load calculation performed on your home. This is accomplished by a qualified engineer who gathers all your building information. All these measurements are then put into a manual J calculation to determine the size of equipment that would need to be installed to properly heat and or cool a home.

Reason #4 – Internal Loads are Not Properly Accounted For.

Many contractors ignore many internal load components (anything that consumes electricity, gas, or solid fuel). There are two types of internal loads. The sensible heat load comes from lights, equipment such as computers and TV and hooded equipment such as broilers, ranges and ovens. The mixed heat load contains both sensible and latent components. Mixed loads come from people and hottubs/whirlpools.

Knowing how and when a building is used is critical to determining the building's heating and cooling requirements. The main internal heat sources are the people themselves, the electric lights they need and the electric equipment they use. People emit heat as a natural by-product of their living functions. Electric equipment and appliances contribute to the heat of a space as a by-product of their operation.

Reason #5 -- RULE OF THUMB HVAC SIZING DOES NOT WORK because it depends upon a number of factors, all of which must be calculated.

Example 1:

A 1000 square foot home has 8 foot ceilings, three single pane windows, no insulation in the ceilings and very little insulation in the walls. It has one large window directly facing the Sun most of the day.

Another 1000 square foot home has 10 foot ceilings, three triple pane windows, lots and lots of insulation in the ceilings and walls. It has no windows directly facing the Sun.

Both have the same square foot area. Do they both lose heat at the same rate? Do they both need the same size heating system? No & no.

Are you going to sell them both the same size system?

I just gave you a few of the variables involved. There are still more, but you get the point, right?

Here is another example:

Example 2:

Two buildings both have 1000 square feet of floor area. Both are identical in construction, have the same windows, doors, insulation, etc...

However, structure #1 is 31.62 feet wide by 31.62 feet long. That gives it its 1000 square feet.

Structure #2 is 10 feet wide by 100 feet long so it also has 1000 square feet of internal area.

But do they both have the same wall surface area for heat to escape from the inside to the outside? Not at all!

Structure #2 has nearly twice the outside wall area as structure #1. The 1000 square foot rectangular shaped structure will lose up to TWICE the heat compared to the square structure. That could mean it will take a furnace twice the size to keep it heated to the same temperature.

Reason #6 – Is This Lurking In Your House? What else is in your air?



You see your air is filled with all kinds of contaminants. You've got that little dust mite pictured above. You can't see him, but he is everywhere. He can cause itchy, red eyes, stuffy nose, and scratchy throat.

Not only are dust mites around, there are also pollens, animal dander, mold and tobacco residue. Everywhere in your air. There seems to be no escaping them.

Does this sound familiar? You get home from work and you're in a hurry to make dinner. Then it starts up. Sneeze after sneeze after sneeze. Your nose starts running. And itching. A tissue is nowhere to be found! (They never are when you really need one!) Your eyes start watering. They become itchy too. You go to the bathroom frantically looking for one lousy tissue. And then ... Horror! You see yourself in the mirror. Red, puffy eyes, runny, red nose - you're a mess. Your kid hollers, "Mom, what's for dinner? I'm hungry!"

You thought you were safe in your own home. You thought out there with all the pollen and other stuff, your allergies might act up but not in your own home. The truth is that your own home may have more allergy causing things than outside. Especially flowing through your heating and air conditioning system.

Weather stripping and insulation affects the operation of the air conditioner. If the house is really loose, then the air conditioner is going to have to work harder and longer to try to cool it because it

has to overcome outdoor air that's getting in. If you tighten up a home and make it energy efficient, your air conditioner may then be oversized for the space. How tight or loose a house is determines the needed amount of outdoor air needed to maintain a healthy indoor air quality.

Reason #7 – Certain Rooms are Too Hot in the Summer or Too Cold in the Winter.

- **70% of systems need improvement**
- **52% are not satisfied with their system**
- **33% of new installations require one or more call-backs**

The most common project type I receive is people who are upset because their million dollar investment is too hot in the summer and/or too cold in the winter. Like Goldilocks, you need to find just the right system – not too big and not too small.

If you live in a two-story home over a basement and you have an air conditioner, your home's comfort may have been designed by Goldilocks. A Goldilocks home is one that, when the temperature is just right on the main floor, is too hot upstairs and too cold in the basement. It costs more \$\$\$ to heat and cool a Goldilocks home and personal comfort is compromised.

Load calculations cost approximately \$150-\$600 per house based on size and take between 2-8 hours based on size. If a number of homes of similar plans are being calculated, costs may be lower. However, the additional cost is usually recouped immediately because the system can typically be downsized.

It is important to select someone up to date on industry recognized standards and utilizes a quality load calculation software program. The software should be based on Air Conditioning Contractors of America (ACCA) guidelines for sizing HVAC equipment, Using Manual J, an engineer calculates heat loss from the building through walls and ceilings, leaky ductwork, and infiltration through windows, doors, and other penetrations as well as heat gain into the building from sunlight, people, lights and appliances, doors, walls, and windows, and infiltration through wall penetrations. Design conditions for the area are also used as inputs into load calculations.

Benefits/Costs

The benefits of properly sizing HVAC systems include satisfied and comfortable customers, lower initial and operating costs, reduced callbacks, longer equipment run times and less cycling, and proper dehumidification during the cooling season.

Bonus! Bonus! Bonus!

Problem #8 -- You Don't Understand the "Lingo"

Alright, this wasn't one of the original "seven mistakes" for this guidance, but it IS important. It's so important, that we've decided to define the most common Heating and Air terms so YOU understand what contractors are saying!

BTU: (British Thermal Unit) -- The amount of energy that's needed to change the temperature of one pound of water by one degree Fahrenheit. This is what the heat removed from your home is measured in.

COIL: Looks like a radiator on a car. Usually installed inside the box on top of your furnace. It takes the heat and moisture out of the air as the refrigerant (what you might know as Freon) evaporates.

CONDENSER: This is the unit outside the home that's usually making all the noise (at least in the older models). This holds the compressor, which is the heart of your system. In addition, it also transforms your refrigerant (Freon) from a gas to a liquid. Finally there's a fan discharging heat to the outdoors.

ENVELOPE LOADS or SKIN LOADS: Loads associated with the roof, walls, windows, doors, floor and partitions.

INFILTRATION: Air that leaks into a building through the building envelope.

HUMIDITY: The quantity of water vapor present in air. It can be expressed as an absolute, specific or a relative value.

REFRIGERANT: This is the real name for what many people call Freon. It's the fluid that evaporates at low temperatures and pulls heat and humidity out of the air.

SPLIT SYSTEM: The most common system in the country. Some components are inside the home and others outside. The inside is the furnace and evaporator coil. Outside is the condensing unit.

TON: The unit used to measure the capacity of an air conditioning system. One ton of air conditioning removes 12,000 BTUs of heat energy per hour from your home.

ZONE: A single area with a similar thermal and use characteristics.

Problem #1 -- You Picked a Contractor Based Only on Price!

The old adage is really true. "You get what you pay for." This is especially true in the contracting business. If you want good contracting you should decide to deal with a contractor because of the overall value you receive, NOT because they are the lowest priced.

Here's why...

Value = Quality + Service + Price

It is **impossible** for any company in any industry to offer the cheapest price, have the highest quality, and provide the best service all at the same time. You can get high quality and super service, but you can't get both and still get the lowest price.

Just like in your business, you hire the best people and buy the highest quality products -- consequently, you have to charge more for your services. Total Value is all three -- **Quality, Service and Price!**

The 3 most common problems YOU WILL have when you pick a contractor who only offers the lowest price:

- 1) The first problem is that dirt-cheap contractors don't usually stand behind their work if there is a mistake. Sure, other contractors might do your job for a little less money, but how will they treat you when there is a mistake with your job?

To give the cheapest price, they usually have low-wage, inexperienced employees that have not been adequately trained. **The end result is that you get what you pay for and the little bit of money you saved ends up costing you more in the long run!** Believe me, this is a little saying we tell our customers: "The good feeling of a

cheap price is long gone before the stench of poor quality is ever used up."

2) The second problem with a contractor who offers the lowest price is that they tend to also offer the lowest quality. Your furnace and/or air conditioner is the biggest appliance in your home and one of the best investments you can make in your home if done properly.

Plainly said, "Shoddy or low quality contracting because of cheap price costs you money." No amount of savings is worth this. You've worked too hard and spent too much money on your home. Why throw it away for the few pennies you save on a contractor?

3) And the third reason why picking the cheapest contractor is a problem is that you might get charged extra for things other contractors normally include in their quote in the first place. You'll be charged extra for such things as filters, thermostats and overtime due to bad estimates. Cheap contractors will nickel and dime you to death. What seemed like a good price actually ends up costing you more in the end. This is just a tactic cheap contractors use to get in the door.

To avoid buying on price alone, we suggest you choose two or three contractors and rank them in the order that is important to you such as **Quality first, Service second, and Price last.**

"The 6 Costly Misconceptions About Heating & Air Conditioning."

Misconception #1 -- As long as it's running, it's O.K.

Not necessarily. Equipment often appears to be running fine but may be on the brink of failure. Furnaces can have cracked heat exchangers and appear to run properly. However, they are leaking carbon monoxide setting up a very dangerous situation. Air conditioners will run low on refrigerant but have to run harder and longer. This can eventually lead to equipment failure. Just because it runs when you want it to doesn't mean there's not a serious problem.

Misconception #2 -- Changing filters is all the maintenance you need.

That's a good start but more should be done. Changing and keeping filters clean is critical to maintaining the proper air flow through your equipment. However, there are numerous things that should be done regularly. The blower should be inspected and lubed. Refrigerant level and thermocouples checked. Burners adjusted and cleaned. You see, it's more than just changing filters.

Misconception #3 -- It's normal for some rooms to be hotter or cooler than others.

No. Each room should maintain proper temperature. With a properly designed air distribution system all should be comfortable. A properly designed system will have different size ducts and registers serving each room. The ducts and registers should only be identical if the rooms are identical and that is unusual. The ducts should also have adjustable dampers for adjusting the air-flow to each area. A room by room load calculation should be preformed so each room is properly conditioned.

Misconception #4 -- Indoor air quality is not a problem at my house.

Not true. All houses have indoor air quality problems. They just differ in severity. All houses have some problems with dust. It is usually most noticeable right after you've dusted or when company is coming over. In the springtime, pollen can be a big problem. And if you have pets, there's pet hair and dander that get in your air. There are also fumes from painting, hairspray, cooking, and who knows what else. Plastic in your house is always giving off molecules as it sets up. If you have allergies, all these problems feel amplified by your sneezing and runny nose. All houses have indoor air pollution, some are just worse than others.

Misconception #5 -- Service contracts are a waste of money.

No. Regular service is critical to making your equipment last a long time and run efficiently. Regular servicing also can detect small problems before they become more serious. No one wants their system to fail on the hottest or coldest day of the year. Regular servicing helps keep your system in tip top shape and pays for itself in the long run.

Misconception #6 -- The Company that offers the lowest price is the company you should hire.

Maybe -- but not always. Here are a few points to consider.

Point #1: The price you see offered may not be for the services you want performed. Before you select a company, decide what you want to accomplish. Price is usually an indication of quality. More efficient equipment costs more. Better-trained service people cost more. Reliable service and products cost more. You don't buy the cheapest car, clothes, or foods. Don't let price be the deciding factor when choosing a contractor.

Point #2: The price you see advertised may not be the price you pay. Many homeowners have learned that the low price they saw advertised was not the amount they were charged.

And if you've hired a contractor, you too may have been the victim of false or misleading advertising. You probably learned the hard way that some companies offer a cheap price -- and then pressure you into paying a lot more once they get inside your home. Some of them may even break the law by using illegal bait and switch tactics.

As in all businesses and professions, the Heating and Air industry has its share of bad apples. I take no pleasure in telling you this, but some are unethical -- and sadly, a few are dishonest. By their misleading advertising and false promises, they cast a dark shadow on our entire industry.

Then you'll find other companies -- professionals like us who work hard to earn your trust and respect. As a way of improving our profession, we've dedicated our business to educating the public. The only way you can make an intelligent decision is to have all the facts you need.

"3 Simple Ways to Save Money on Your Next HVAC System"

Recommendation #1: Make a commitment to yourself to get your equipment serviced. The longer you wait, the sooner it'll wear out. Seriously consider a service contract. Regular service will extend the life of your equipment and help maintain its efficiency.

Recommendation #2: Do something about indoor air pollution. Maintain good quality air in your home. This begins by regularly changing your filter. Next, consider an electronic air cleaner, having your ducts cleaned and sanitized, and installing a heat recovery ventilator. The latter will allow you to bring fresh air into your house without wasting the energy you use to heat and cool your air.

Recommendation #3: Ask questions. The way you learn about a company is to ask specific questions and listen carefully to the answers. Here are the questions I suggest you ask:

1. Are you licensed?
2. Are you certified to recover air conditioning refrigerant?
3. Can you provide a room by room load calculation?
4. Can you give me five references of recent customers?
5. Do you offer financing or take credit cards?
6. What training have you had in the last year?
7. Are you a member of any trade associations and, if so, which ones?
8. Can you be reached in an emergency?

"How to Avoid the 6 Most Common Contracting Rip-Offs"

Ask your contractor about these items:

1. A gas safety shut-off.
2. Not putting a new flue pipe in at all to bring the furnace up to code.
3. Not using proper angles, sizes and clearances when putting the flue pipe in.
4. A level foundation or slab for your air conditioner to sit on.
5. Ask for experienced and trained technicians.
6. Ask your contractor about the requirements for clearances, refrigerant lines, combustion air for your furnace and accessibility.

These are all items often ignored.

You now know what your contractor should be providing you: great service by a well-qualified contractor who can service your equipment completely and thoroughly -- removing the bacteria, fungus, chemicals, pollens, and tobacco products from your system and indoor air.

Here's one last point: I know that many consumers are skeptical about contractors. I'm skeptical as well. So in addition to dedicating my business to consumer education, we do one more thing as well.

We guarantee our work. That's right. We fully guarantee every job we do. If you aren't happy with our work, we'll work to make it right. And if you still aren't pleased, you pay nothing. Not one cent. What could be fairer?

As a matter of fact, add this question to the list of things to ask a contractor you're considering hiring, "Do you guarantee your work?" Not all companies do -- and it's important that you have this information before you make your decision.

EXPERIENCE OUR GUARANTEED SERVICE!

The most discriminating homeowners, architects, engineers and contractors in the United States rely on me to take care of their heating & air conditioning load calculations and keep their client's homes comfortable. I will give you a complete project evaluation and tell you exactly what you can expect from our service. NO SURPRISES!

So visit our website now at www.load-calculations.com

I look forward to adding you to my list of satisfied clients

Sincerely,

Tracy Savoy

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