



**Central
Vacuum or
Luggable
Vacuum!**

**Built-in
Vacuum
Services**

White Paper

Central Vacuum or Luggable Vacuum Built-in Vacuum Services

If you're tired of lugging a vacuum cleaner around the house and have been thinking about some type of alternative, you might want to give some consideration to a central vacuum system. For many homes, central vacuum systems can offer not only additional convenience, but also less noise, less dust and more power.

How Central Vacuum Cleaners Work

Built-in or **central** vacuum cleaners move the suction motor and bag to a central location in the building and provide vacuum inlets at strategic places throughout the building: only the hose and pickup head need to be carried from room to room; and the hose is commonly 8 m (25 ft) long, allowing a large range of movement without changing vacuum inlets. The typical central vacuum system has a large canister vacuum motor mounted in the garage or basement. Because of its wall-mounted, remote location outside the home's living space, central vacuum system motors can be larger and heavier than what is inside a standard vacuum cleaner, thereby offering more power. Also, since the motor is located out in the garage, the vacuum cleaner operates with considerably *less noise inside* the house and without any of the re-circulated dust that's common with most standard vacuum cleaners. More later about *outside* noise.

From the canister, 2-inch PVC pipe and low-voltage wire is routed to each vacuum inlet inside the house. The inlet is similar in size and appearance to a standard electrical inlet and consists of a cover plate and a connection port for the vacuum cleaner hose. Plugging in the hose is all that's needed to activate the remote vacuum motor. At the end of the hose is a power brush, which contains a rotating bar and brushes similar to a conventional vacuum. The brush head can be quickly replaced with other tools for vacuuming drapes, bare floors, and hard-to-reach crevices. Plastic piping connects the vacuum inlets to the central unit. The vacuum head may either be unpowered or have beaters operated by an electric motor or air-driven motor. The dirt bag in a central vacuum system is usually so large that emptying or changing needs to be done less often, perhaps once per year.

Installation

The ideal time for installing vacuum pipe is while your home is under construction – you can even pre-pipe the house during construction and then install the actual vacuum system at a later date. For existing homes, you can utilize the crawl space, attic and areas such as closets, pantries or soffits to simplify installation of the piping. *Often you can get a high quality system installed in an existing home for the same money you might spend for a top of the line upright vacuum cleaner. Installation, of course, is extra.*

You can install a central vacuum system in an existing home. The tubes that transport the dust and debris can be installed in attics, basements and crawl spaces. Even two story houses can be retrofitted. A professional worker can often install a system within one day with minimal mess and hassle. Installing a central vacuum system in a new house is extremely simple. The tubing can often be finished in just a few hours.

Vacuum Types and Sizes

Not all central vacuum systems are created equal. There are **two basic types of system**. One incorporates filters or filter bags and one doesn't. Central vacuum systems that use filter bags operate at peak efficiency when the filter bags are brand new. As you vacuum, dust particles clog the filter paper and dirt fills the bag. These characteristics cause the system to suffer a reduction in suction power as dust and dirt build up within the filter bag.

The other type of central vacuum does not use a filter. Using advanced design, the dirt and dust enter the central vacuum canister and swirl around. Centrifugal force created by the cyclonic spinning of the air transports the dirt and dust to the sides of the canister. Here a series of cones and standpipes stop all but the finest dust. This fine dust is transported to the exterior of your home where it belongs.

Sizing a central vacuum system is important. The smaller your house, the smaller your central vacuum system needs to be. How high a column of water it can support or pull often measures the power of a vacuum system. Most manufactures make models that can pull anywhere from a 90 inch to as high as 136 inch water column. An average home that contains 2,400 square feet of finished floor space might easily be serviced with a vacuum system that is rated at 95 inches of water column. Large homes above 6,500 square feet usually require motors that can create a column of water 120 inches or more. Extremely large homes often require two or more separate central vacuum systems.

Positioning the Inlets

The positioning of the inlets ports requires some planning. These ports are the locations where you plug in your vacuum hose. Vacuum hoses come in different lengths and some people like long ones and other people prefer to use short ones. Long hoses have greater reach from room to room. If you use one of these, you may only need two inlets per floor that are located in hallways. Short hoses obviously require more inlets per floor. Be sure that you place the inlets on walls where they will not be blocked by furniture. Often the best place is near a doorway. For a typical house, you will need one vacuum inlet for each 500 to 600 square feet. When considering the number of inlets, bear in mind that you will have about 25 to 30 feet of hose, and you'll want to position the inlets so there is an adequate number in convenient locations to reach every area in the house.

Vacuum Accessories

Central vacuum system manufacturers offer a complete line of accessory cleaning tools. These are often matched to the system and can't always be interchanged between manufacturers.

Consider purchasing ones that are electric powered instead of air powered. Air powered accessories might not work at peak efficiency if there is a loss of suction power.

Make sure that you can get at least one of the nifty dustpan inlet accessories. These special inlets are cut into baseboards at the floor level. They are ideal for mudrooms, kitchens, and bathrooms. You simply use a broom to quickly sweep large messes over to the sleek baseboard mounted door. As soon as you open the door with your toe, the motor starts up and your dirt offering is accepted by the vacuum cleaner!

Maintenance

Many people do not realize that it is necessary to clean out the bucket of a central vac as soon as it is half full, not only to keep it working properly but to avoid extra stress on the motor.

Watch the suction level at every inlet. If it is weak, there is a clog someplace, which must be cleared out, both for the machine to work properly and to reduce pressure on the motor.

Even with a portable vacuum cleaner, you need to keep the bag less than half full, and occasionally clean all the filters, which are designed to protect the motor from dust. If they are clogged, no dust will get to the motor, but it will over-heat from a lack of cooling air, which is just as bad.

Motors are probably the weakest part of any vacuum and are expensive to replace if you burn them out. If you keep everything clean and the air flowing freely, the motor should last for a very long time.

Selecting Your System

There are several manufacturers of central vacuum systems, and each offers a variety of models and accessories to choose from. This adds up to quite a list of potential choices. There are, however still only a few basic choices that you'll need to make, and your dealer can help you with the pros and cons of each as they pertain to your particular application.

Standard Versus Cyclonic

As has been explained, a **standard central** vacuum canister works on the same principle as a conventional cleaner. A powerful motor creates a vacuum within the unit, drawing air towards it. The air stream carries the dirt with it to be trapped inside a disposable paper bag, while finer dust is trapped in a filter. With a **cyclonic system** – which is similar to the large sawdust collectors used in mills and woodshops – a rotating "cyclone" of air inside the unit allows larger dirt and dust particles to fall into a dirt canister that is separate from the motor unit, while finer dust is simply exhausted to the outside of the house. This eliminates any filters, and allows the motor to work at full power with no clogging from the dust particles.

Electric Versus Air-powered Brush

The **electric brush** utilizes 110 volt power to operate the roller bar for more power-brushing action and has greater power for large carpet areas or for carpets that are fairly thick. Traditional electric brush heads have a power cord strapped to the vacuum hose and are plugged into an electrical inlet at the same time the hose is connected to the vacuum inlet. Newer models have both high- and low-voltage wiring incorporated into the hose. Simply plug in the hose and all of the electrical connections are made as well, which offers a lot of additional convenience.

Air-powered heads have a 'turbo' action inside the head that is created by the movement of air. They require no 110-volt connection and are less expensive to purchase, but often lack the cleaning power of their electric counterparts.

A Few Central Vacuum Issues

- Health officials all recommend that central vacuum systems should exhaust outdoors while most installers do not put in an outdoor exhaust pipe.
- Though the vacuums can be very quiet indoors, they can be noisy at the outside exhaust site and a few municipalities have begun to outlaw outdoor exhausts, primarily for the noise. Some people remove their filters and then an outdoor exhaust can even become a neighborhood dust problem. If motorcycles can be made to be relatively quiet why not central vacuum cleaners (or for that matter, leaf blowers).
- Manufacturers are making better and better filters to trap the dust, saying that they don't need to exhaust outdoors because they catch it all. In fact they are mostly responding to price pressure, as most of them will offer the outdoor exhaust as an option. Few consumers take the option.
- Health officials say that the only harmful particles in the exhaust stream are those that are too small to be trapped by all those filters - you would need a HEPA (High Efficiency Particulate Air) filter, and that makes little sense on a central vacuum. HEPA filters are expensive and they seriously reduce the vacuum pressure, although we are seeing some HEPA filters on portable machines. However, if you have asthma or other respiratory condition you may need to consider this option.

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