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# **CENTRAL VACUUM SYSTEM INSTALLATION MANUAL**



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## Central Vacuum System Installation manual

Installing a central vacuum system is a relatively straight forward do-it-yourself project, providing you take your time and follow the instructions carefully. Like most DIY projects the key to a successful installation is PLANNING, get this right and the rest should be straight forward.

### Planning the system.

There are three areas that need to be thought out before you start to install your system.

1. The power unit location.
2. The inlet valve locations.
3. The vacuum tubing system.

### The Power Unit.

The power unit of a central vacuum system not only houses the motor it also incorporates the dust collector.

Therefore to reduce the possibility of any spillage in your home when emptying and to ensure the system is as quiet as possible, it is ideally located away from the living areas. A garage, utility room, plant room or storage room is preferable.

The unit should be mounted so that it is out of the way but still accessible for emptying.

If the system is to be exhausted to the outdoors then the power unit is best located on an exterior wall.

Venting to areas such as patios and entranceways should be avoided.

Vacuums need a good air supply so ... do not enclose, if the unit is to be located in a cupboard or confined space it must be vented. Louvered doors would fulfil this requirement, a muffler can of course be used to further minimise any noise.

Most domestic central vacuum units are fitted with a standard 13amp 3 pin plug; a socket should be placed within 1 metre of the unit. Electrical specifications of your specific power unit should be checked to avoid overloading the circuit.

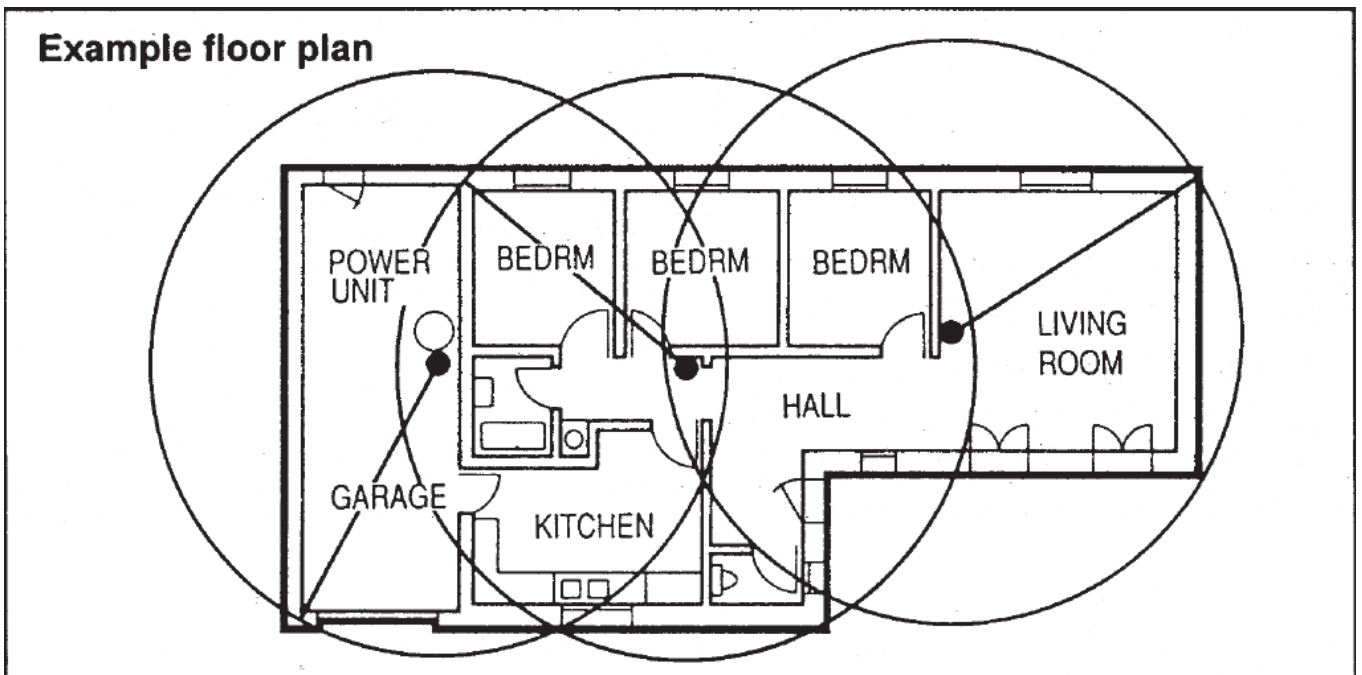
### Tools Required

57mm hole saw  
57mm Diamond core<sup>1</sup>  
Vacuum pipe cutter<sup>2</sup> or fine tooth saw  
Tape measure (preferably steel)  
Pencil/marker  
Knife  
Screwdriver  
Spirit level  
Wire stripper/cutter  
Padsaw  
Grinder/stihl saw<sup>3</sup>  
Drill  
Drill bit/wall plugs/screws  
<sup>1</sup> needed if you have to run vacuum pipe through a solid wall.  
<sup>2</sup> Available from [www.vacandvent.co.uk](http://www.vacandvent.co.uk)  
<sup>3</sup> needed if you have to chase any solid walls or floors.

### **Inlet Valve Locations.**

Correctly positioned inlet valves will ensure effortless vacuuming over the many years of service your central vacuum system will provide.

The hose must be able to reach into every corner of the house and go around furniture to get there. When planning the positions of the inlets be sure to check if the hose will reach into the ceiling corners, into cupboards and walk-in wardrobes, not forgetting en-suites etc.



If possible avoid locating an inlet in a corner or at the end of a corridor as this will limit the available cleaning area covered by that inlet. Central locations are most convenient and efficient, hallways and landings being ideal, close to the bottom of the stairs and close to doors (but not behind them) are places to aim for.

Consider where your furniture is going to be placed as it will be extremely inconvenient if you have to pull out a table or move a sofa every time you vacuum!

If working from drawings, cut a length of string or wire to scale (for 1:50 drawings a 9m hose is represented by a 180mm length of string) this will help you find the ideal inlet locations. If you have no drawings, cut a 9m length of string or use the hose itself to work out the locations.

## Planning the Tubing System

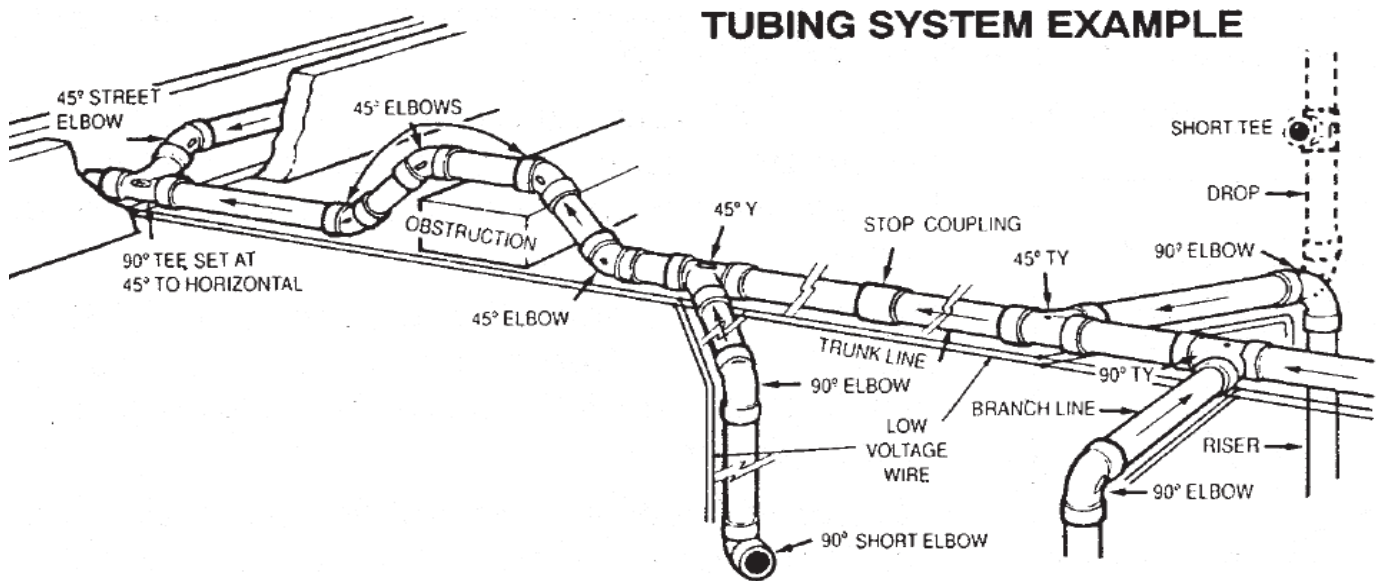
The amount of air-flow that is available at the hose end is dependent on the efficiency of the tubing system, pipe runs should be as straight as possible, tight (short) 90° bends SHOULD only be used immediately behind an inlet valve, instead sweep 90° and 45° bends should be used in all other applications.

## The Trunk Line

The trunk line connects the furthest inlet valve to the power unit; all other inlets will be serviced by branch lines FLOWING INTO the trunk line.

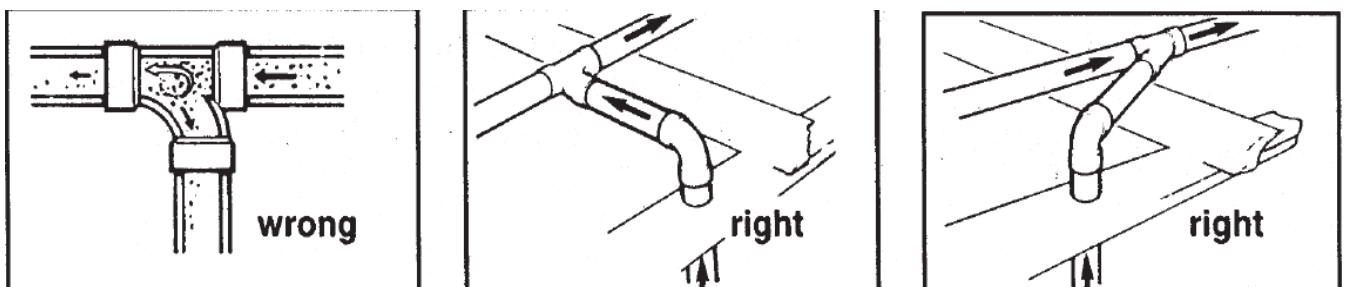
## Branch Lines

Branch lines join the remaining inlet valves to the trunk line, as with the trunk line these lines should be kept as straight as possible. Again sweep 90° and 45° bends should be used to avoid sharp corners, always consider the direction of the air flow when planning the branch lines.



## Avoid Gravity Drops

A gravity drop is formed when a tee piece is placed on a horizontal trunk line with the tee pointing vertically down; the effect of gravity will result in a build up of heavy particles at the bottom of this drop. To avoid this situation the following techniques should be used;



As a rule, whenever possible the vacuum tubing is run within the insulation on the floor before the screed is poured, the tubing is then chased into the walls (if solid) up to the inlet position. This is more often than not the same height as the electric sockets (400mm to 1000mm from FFL.). In the case of stud walls the foot plate is drilled out to accept the tubing and any noggins drilled likewise.

The riser between floors is generally accommodated along with soil pipes or other plumbing, although any convenient route will suffice. If joist runs or available space prevents entering stud walls on the upper floor, access can be from above; running the trunk line across the roof space and dropping down into the studs (remember to watch for any gravity drops).

In existing properties the design and installation of the tubing system is not quite as straight forward, a careful and thorough inspection of the property will reveal exactly where and how you can conceal tubing, under kitchen units, behind baths, inside airing cupboards, within wardrobes, under floors, in roof voids and within the boxing around soil pipes are all places to look.

Each and every home is different and it would be impossible to provide a definitive solution that would work for them all, but with a good knowledge of the building and a little ingenuity the system can be installed into the vast majority of homes.

### **Get Out Of Jail Cards**

1. If you're really struggling to find a suitable route around your home here's a little trick that usually gets around most problem situations. It is quite feasible to run the vacuum ducting on the outside of the building, on an existing home this can sometimes be the only way to install a system without the need to disturb decor or to have to box-in surface mounted tubing.
2. When installing a system into an existing house it isn't always possible to locate the inlets where you would like them to be. In which case you will have to locate the inlet where it is possible not where you would have liked it to be, this might mean the hose will be too short to reach the furthest corners. Different lengths of hose are available to accommodate such eventualities.
3. It is also quite Ok to install floor valves as opposed to wall valves; this can get around some problems as well.
4. I would like to locate the power unit in a detached garage, is this possible?

There are a few problems with running the vacuum ducting underground, heavy condensation can be formed resulting in the pipes furring up, the integrity of the solvent weld can be compromised causing leaks and water ingress and the pipe itself is vulnerable to damage.

However these problems can be avoided and such an installation can be successful if done correctly.

We recommend that you use 63mm O/D 50.9mm I/D MDPE PE Alkathene pipe (more commonly used to bring your water supply into the house) as this is more resilient, has good insulation value and there will be no joints under the ground.

Run this pipe from inside the house under the ground and up into the garage, you will then be able to connect it to the vacuum tubing at either end, a little patience and a file might come in handy!

At the same time run the low voltage (control) cable within a conduit to protect it also.

Now that you have planned your system you are ready to begin the installation, PLEASE read the following instructions carefully before commencing.

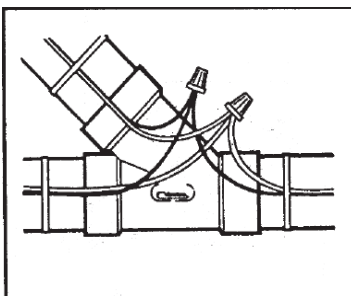
**Measuring:** Measurements should be taken from the base of the pipe-stop on the inside of a fitting when sizing tubing. As each section of tubing is cut it should be dry fitted before the next measurement is taken.

**Cutting:** The tubing should be cut as straight as possible; a mitre box should be used if you haven't a specialist vacuum pipe cutter. All burrs must be removed with a knife or coarse sand paper.

**Dry Fitting:** Once all the pieces are cut they can be dry fitted to check for correct fit, the markings on the fittings can be utilised to assure proper alignment.

**Gluing:** PVC Solvent cement actually welds the fittings to the tubing; a chemical reaction permanently joins the molecules from each surface to produce an air tight seal. Before cementing both the tubing and the fittings must be free from burrs, dirt, grime and grease so wipe the components with a clean cloth if necessary. The cement should be applied to the tubing ONLY as cement applied to the fitting will be pushed ahead and create a rough bead on the inside of the fitting. This will reduce the air-flow and could cause a blockage in the future. The tubing should be inserted all the way into the fitting and twisted a quarter turn to evenly distribute the cement, all excess cement should then be removed with a cloth.

#### Low Voltage (Control) Cable:



For added convenience the central vacuum system is turned on and off automatically, the power is activated by completing a circuit at the inlet valve by simply inserting the hose.

To facilitate this, a low voltage cable must follow the tubing system to each inlet valve. At each junction of a branch line and the trunk line the cable can be spliced together as shown in the diagram.

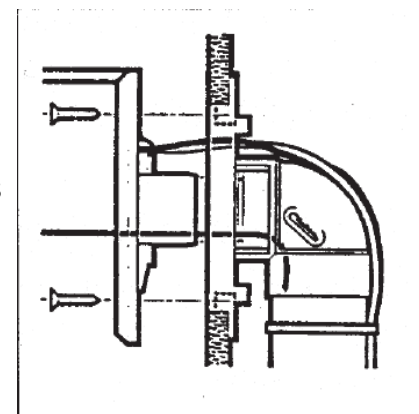
However, it is recommended that you run the cable to and from each valve with the only connections being at the inlet valve itself.

Each inlet valve must be able to activate the power unit independently of the other valves.

Cable tie the cable to the tubing to protect it from damage.

#### Tight (short) 90° bends

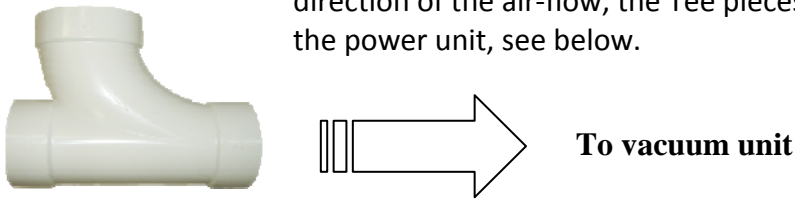
In your fitting kit, there will only be the same number of these bends as there are inlet valves it is most important that these are only ever fitted behind an inlet valve as shown in the diagram.



The reason for this is that the tight radius of these bends will prevent any long thin object entering the system, if an object passes through this bend it will pass all the way through the system.

**Tee Pieces**

When fitting the tee pieces it is essential that you take into account the direction of the air-flow, the Tee pieces are swept and must sweep towards the power unit, see below.



**Installing the Inlet (mounting) back box**

The inlet valves are usually fitted at the same height as the electric sockets, current regulations (approved document part M) are between 400mm and 1000mm from FFL (finished floor level). Fix the mounting box securely to the wall or stud, sometimes you will have to improvise to get something to fasten to, see pictures.



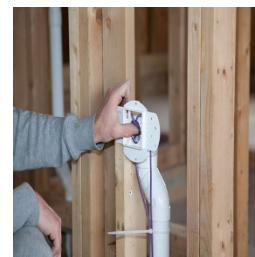
**A noggin used to fix mounting box securely**



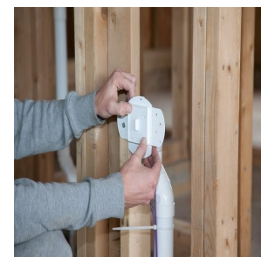
**Low voltage cable, approximately 150mm tails**



**Low voltage tails secured**



**Low voltage tails pushed inside ducting**



**Plaster guard fitted**

**Fitting the inlet valve to the back box**

The inlet valve is a push fit (there being a rubber seal in the mounting box) and is then fastened by means of two screws, ensure the valve is level before tightening. If there is a whistling develops during operation slightly loosen these screws. The low voltage control cable is connected to the two small screws on the back of the inlet valve, when connecting the cable DO NOT remove the screws, instead back them off, attach the cable then tighten the screws.



**Removing the plaster guard**



**Stripping the cables**



**Connecting the cable to the inlet valve**



**Inlet valve ready for fitting to the back box**



**Tightening the screws to secure inlet valve**

## Installing a Vac-Pan

The Vac-Pan is an extremely useful and convenient accessory; they are usually fitted in the Kitchen and/or Utility room, although they can be located pretty much where ever you wish. They replace the traditional dust-pan and brush, the idea being that with a Vac-Pan you can simply sweep any debris towards the Vac-Pan and it will suck it all away, every last bit.

In the photo the vacuum ducting has been laid across the kitchen floor and the ducting has been brought up above what will be the finished floor.

A longer length of low voltage has been left here so on 2<sup>nd</sup> fix the actual Vac-Pan can be positioned anywhere within the run of kitchen cupboards.

Note; only sweep 90° bends are used, the tight 90° bend will be fitted directly to the Vac-Pan. A short length of flexible ducting is supplied with the Vac-Pan to enable its fitting, as well as to allow the plinth to be removed if needed in the future.



**For more information concerning these instructions or particular questions we may not have answered, please call 0845 4679197 for assistance.**



**Pipe Cutter\***



**Short 90° Bend**



**45° Bend**



**90° Sweep Bend**



**Exhaust vent**



**Typical Inlet  
(Mounting) Back Box**



**Vacuum Pressure  
Gauge\***



**Vac-Pan**

**\*Available from [www.vacandvent.co.uk](http://www.vacandvent.co.uk)**