



ALLAWAY MANTA
CENTRAL VACUUM CLEANING SYSTEM
PLANNING AND INSTALLATION
MANUAL





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1. Usages

The Allaway Manta central vacuum cleaning system **is intended** for professional usage in places where large areas need to be cleaned, with equipment that is used for longer periods than normal domestic use, and where the systems have several simultaneous users. Typical usages include hotels, offices, sheltered homes, passenger ships, daycare centres, and schools. The Allaway Manta central vacuum cleaning system is also often used in libraries, theatres and concert houses, and other public buildings. Industrial applications include offices and other such spaces.

The Allaway Manta central vacuum cleaning system **cannot be used** in industrial production facilities where the amount of dust and rubbish being cleaned is large, or the pieces being cleaned are large and heavy, such as chippings from machine tools, pieces of metal thread, or oily pieces. The Manta system is also not suitable for places where the objects to be vacuumed differ from normal household dust and rubbish, or for local extraction of welding flue gases, soldering, etc.

Only durable wall-inlet-started cleaning equipment with steel handle pipes and telescopic wands **may be used** in the Allaway Manta central vacuum cleaning system. Due to the control technology used in the Manta system, handle-started cleaning equipment **may not** be used.

2. Legislation and regulations

There are no comprehensive fire safety regulations or instructions for central vacuum cleaning systems. The construction instructions and regulations for the installation country and the general quality requirements for HPAC construction must be applied in the planning and installation of the system.

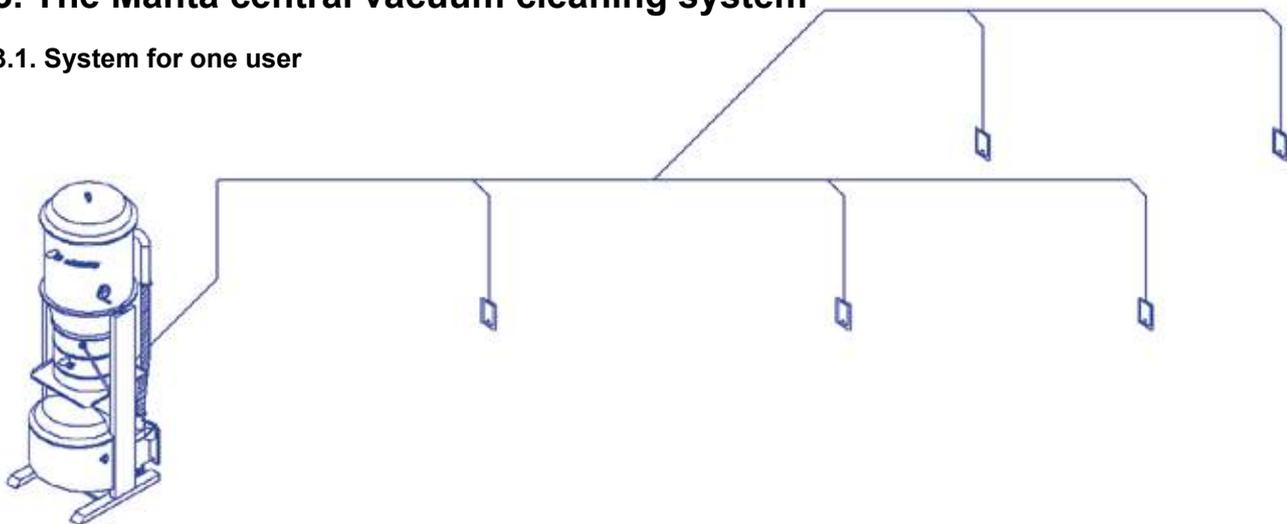
The heat insulation and airtightness of the exhaust air duct must be sufficient. This is the case when using sheet metal ducts. In addition, the integration to any necessary protective appliances, such as fire shutoff valves, must be accounted for in the selection of the exhaust air duct. The locations of the exhaust holes are determined according to the applicable construction regulations.

The noise level of the central unit must be considered when selecting its location.

The Allaway suction piping is made of environmentally friendly recyclable plastic material (PP or PVC). The suction piping is usually made using Allaway dust pipes, but other pipes may be used for special installation sites. The regulations and instructions for plastic drains are applied for the leadthroughs in compartmentation doors.

3. The Manta central vacuum cleaning system

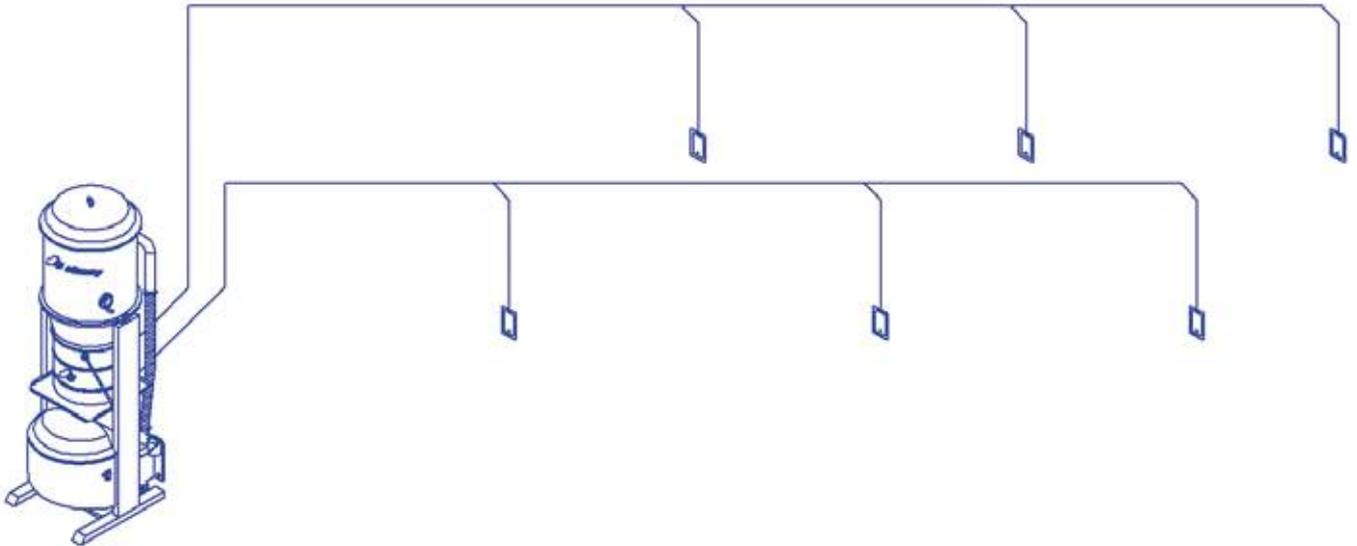
3.1. System for one user



For systems for one user, lead the piping from the wall inlets to the central unit using the shortest possible route. The wall inlets can be branched from one $\varnothing 44$ mm pipe. One suction pipe leading to the central unit and one exhaust air duct leading outside are enough.



3.2. System for several users

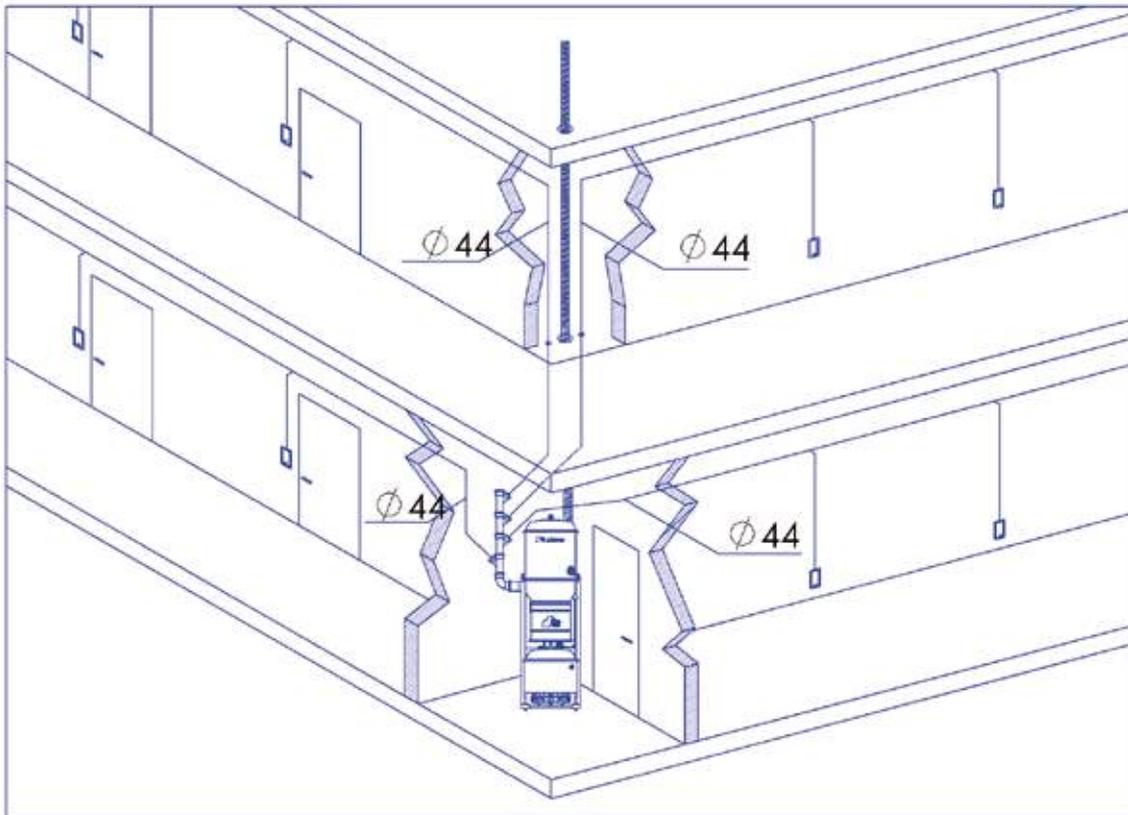


Two basic points are used as the basis for the planning:

- 1) The amount of air vacuumed simultaneously by two users does not fit to one \varnothing 44 mm dust pipe.
- 2) If larger pipes were used for the dust piping, the flow rate would be insufficient with only one user.

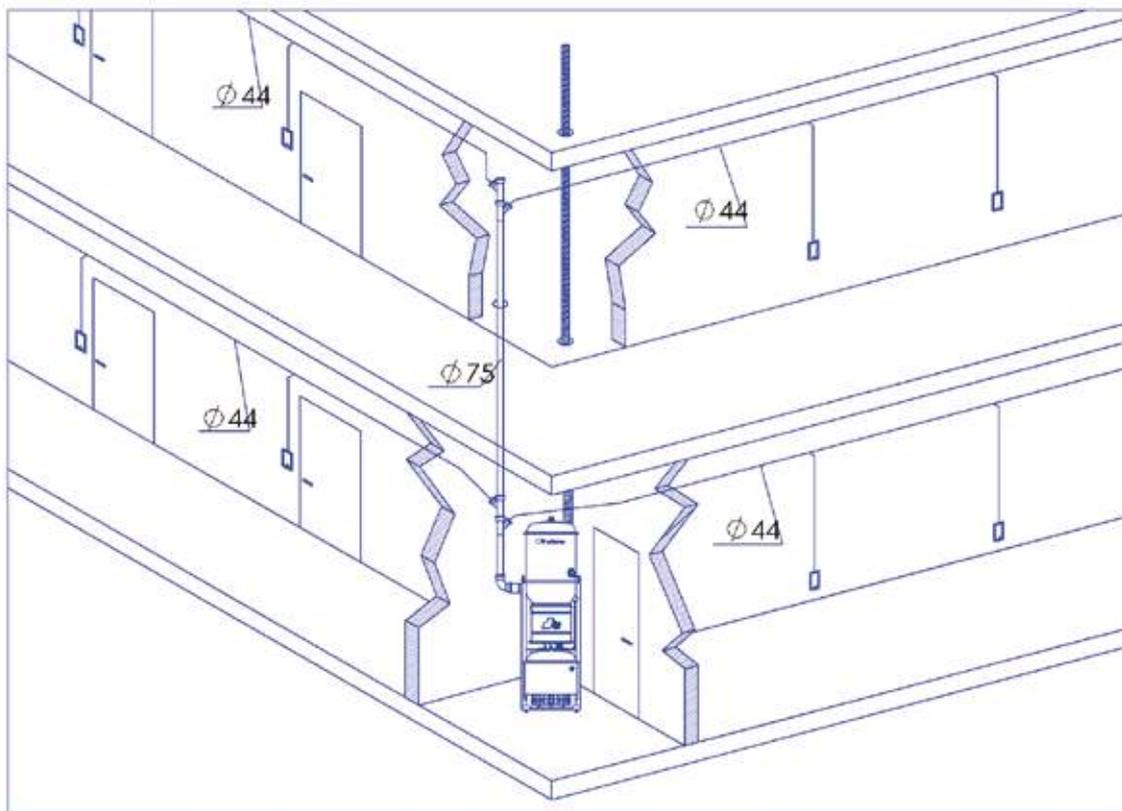
If the spaces to be cleaned are divided into cleaning areas according to the requirements of the usage situations, this will guarantee a sufficient flow rate in the dust piping in all usage situations. Expensive and noisy by-pass systems are not needed, and the central vacuum cleaning system is energy-efficient.

Cleaning areas can include the various parts or floors of the building. In hotels, the rooms can be divided into cleaning areas of the same size based on the number of rooms or the side of the corridor that they are on. Only one user can work on one cleaning area at any one time. A layout of the division of the cleaning areas must be made for the users in systems with several users. Locate the layout in a visible place, such as next to the hose holder.



The most important issue when planning a system for several users is to lead a separate $\text{Ø } 44 \text{ mm}$ dust pipe from the cleaning area to the central unit. The pipes from the various cleaning areas must not under any circumstances be connected before the $\text{Ø } 75 \text{ mm}$ central unit collector pipe.

In buildings with several floors, the $\text{Ø } 75 \text{ mm}$ collector pipe of the central unit can be led vertically through the floors, or the $\text{Ø } 44 \text{ mm}$ dust pipes from the cleaning areas can be joined on their respective floors. This requires the location of the central unit to be directly below the collector pipe. The collector pipe must never under any circumstances be designed to be horizontal. The largest angle allowed for the collector pipe is 45° .





4. Technical information for the central units

The temperature of the motor or turbine may rise to almost 80SDgrC. The turbine is equipped with thermal protection at 80SDgrC, at which temperature the protection will turn off the device.

Allaway Manta 3000

The Manta 3000 central unit is designed for one user with the maximum distance of 70 metres between a wall inlet and central unit.

Allaway Manta 6000

The Manta 6000 central unit is designed for two simultaneous users with the maximum distance of 60 metres between a wall inlet and the central unit. It is intended for one user per cleaning area.

The system for two simultaneous users also requires the piping to be divided into at least two separate cleaning areas. If used for one user only, the maximum distance between a wall inlet and the central unit is 100 metres.

Allaway Manta APC 3

The power of the Manta APC 3 central unit can be adjusted. It is intended for 1-3 simultaneous users. The Automatic Power Control (APC) considers the number of users in the system and ensures sufficient suction power, while saving energy if only one or two users are using the system.

The system for three simultaneous users also requires the piping to be divided into at least three separate cleaning areas. The maximum suction distance for three users is 60 metres per user, 70 metres each for two users, and 80 metres for one user. The maximum suction distance for one user is 100 metres when using the fixed Preset frequency setting. The collector pipe is not considered in the suction distance.

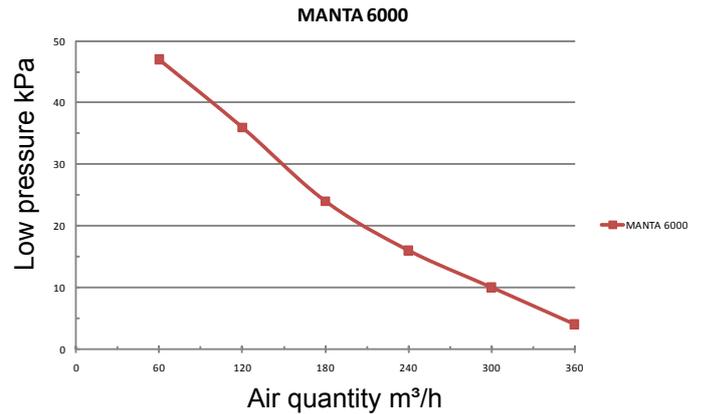
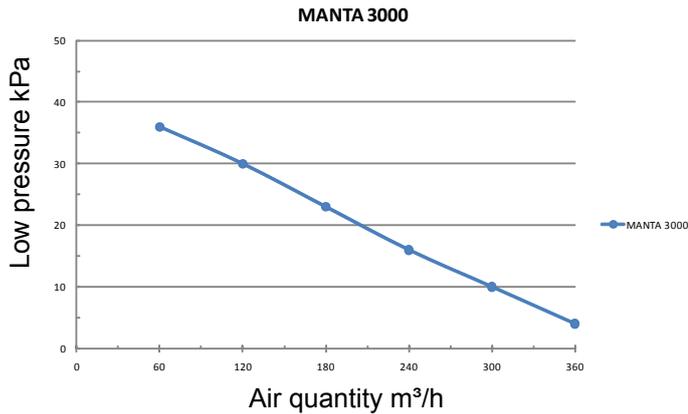


	Manta 3000	Manta 6000	Manta APC 3	
Rated power	4.0 kW	5.5 kW	4.0-7.5 kW	
Electrical connection	32 A 3-phase coupler plug installation/ with 25 A front fuses	32 A 3-phase coupler plug installation/ with 25 A front fuses	16 A 3-phase coupler plug installation/ with 16 A front fuses	
Drip-proof casing class	IP34	IP34	IP34	
Turbine thermal protection 80 C	Yes	Yes	Yes	
Measured from the turbine:				
- Maximum amount of air	108 l/sec. (390 m ³ /h)	108 l/sec. (390 m ³ /h)	178 l/sec. (640 m ³ /h)	
- Maximum low pressure	approx. 32 kPa	approx. 40 kPa	33 kPa	
Noise level of the machine				
Lp +2 dB (A) *	approx. 70 dB(A)	approx. 69 dB(A)	approx. 75 dB(A)	
Dust canister	34 litres	34 litres	34 litres	
Suction hose (Ø 32 mm), length	8 or 10 metres	8 or 10 metres	8 or 10 metres	
Height	1965 mm	1965 mm	1965 mm	
Width	600 mm	600 mm	800 mm	
Depth	650 mm	650 mm	650 mm	
Weight	149 kg	153 kg	155 kg	
Maximum suction distance (Excl. the collector pipe)				
- 1 user	70 metres	100 metres	Autom. 80 metres	Fixed 100 m
- 2 users	-	60 metres	70 metres	80 m
- 3 users	-	-	60 metres	-

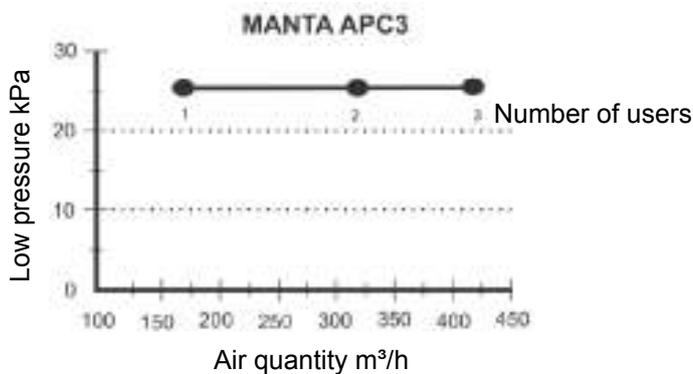
* Measured in an anechoic room, from a distance of 1 metre, directly in front, with the cleaning equipment attached to the wall inlet.



Fan diagrams for the central units



The air quantities and low pressures for the Manta 3000 and Manta 6000 central units are measured at the turbine.



The air quantities and low pressures for the Manta APC3 are measured at the central unit with one, two, and three users.

5. Selecting the central unit

Example:

- The floor area to be cleaned is 5,800 m²
- The time in use is 8 hours
- 6 simultaneous users are needed

Solutions:

- 1) 2 Manta APC 3 central units, if the structure of the building and the location of the central unit are such that the maximum distance between the furthest wall inlet and the central unit is 60 metres, and that there can be three simultaneous users per central unit.
- 2) 3 Manta 6000 central units, if the maximum distance from the furthest wall inlet is 60 metres. The central units can be located on different sides of the building. There can be two simultaneous users per central unit.
- 3) 6 Manta 3000 central units, if the maximum distance from the furthest wall inlets is 70 metres.



6. Location of the central unit

Several factors affect the location of the central unit. The following section discusses the situation for one central unit. The same principles can be applied for solutions with several central units, if the total area to be cleaned is divided into separate areas for each central unit. At least the following issues must be considered when planning the system:

6.1. Length of the dust piping

The distance from the furthest wall inlet to the central unit must be within the limits defined for each central unit. If at all possible, locate the central units close to the centre of the area being cleaned, in order to regulate the length of the dust piping. In addition to cost savings, a shorter dust piping will also achieve improved cleaning efficiency.

6.2. Requirements for the location of the central unit

The central unit should not usually be attached to a floor, and under no circumstances to a wall. There should be approximately 1 metre free space in front of each central unit for maintenance purposes. Several central units may be installed in the same space next to each other. Also reserve space for the functional diagrams of the system and the operating and maintenance instructions. The central unit is usually located on the ground floor or a cellar, but it can just as well be located one floor higher than the area to be cleaned. However, the maximum rise in the piping must not exceed 6 metres.

The central unit must be located in a space where the exhaust air duct can be led out. The temperature of the installation space of the central unit must not be under +5°C or over +40°C.

The noise level from the central units is between 65 and 75 dB (A), which must be considered in the surrounding wall structures. The turbine does not cause structure-borne noise that carries in the structure of the building, as it rests on rubber legs.

6.3. Maintenance operations on the central unit

Locate the central unit in a space where it can be easily accessed for maintenance. Good locations include cleaning rooms and storage facilities in central locations. Avoid distant locations that are not easily accessed, because this may cause the emptying of the dust canister to be considered unpleasant, and to be left undone.

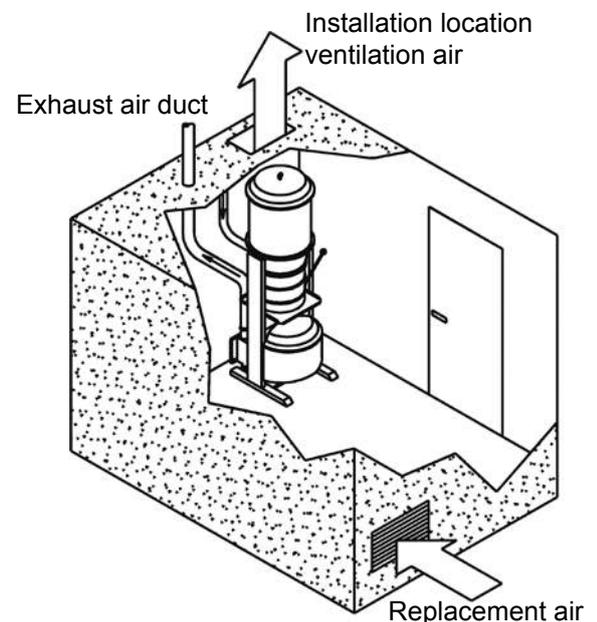
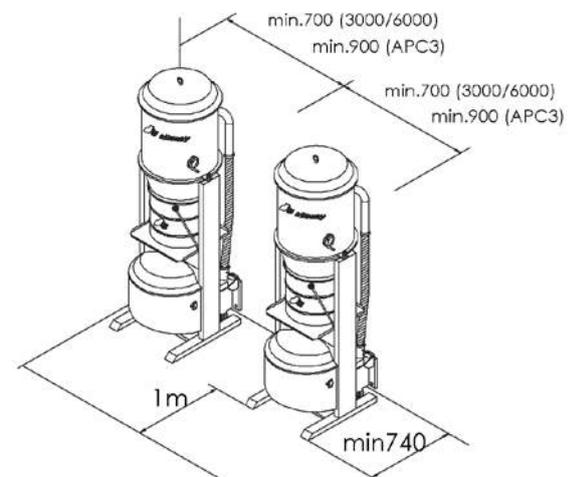
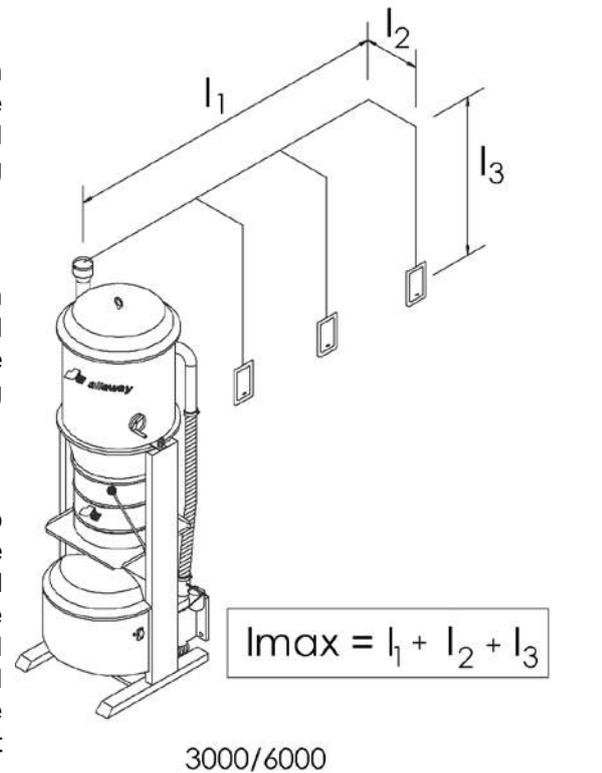
6.4. Ventilation of the location of the central unit

Part of the power of the central unit is transformed into heat. Most of the heat is transferred outside with the exhaust air, but some of it will remain in the installation space of the central unit when the vacuum cleaner is used. The central unit produces heat in the installation space as follows:

Manta 3000	500–800 W
Manta 6000	800–1,500 W
Manta APC 3	600–1,500 W

The heat load greatly depends on the surface materials of the cleaned areas. As an example, cleaning fitted carpets produces more heat than cleaning hard floor surfaces. The ambient temperature of the electric motor of the central unit must not exceed 40°C, which is why the excess heat must be removed from the space in question.

The amount of air to be exhausted depends on the length of the period of use, the size of the installation space, and the wall materials. The general guideline is that the need for ventilation in spaces of less than 20 cubic metres is approximately 55-70 l/s per central unit. If this cannot be arranged through the general ventilation system of the building, for example a thermostat-operated exhaust fans can be used.





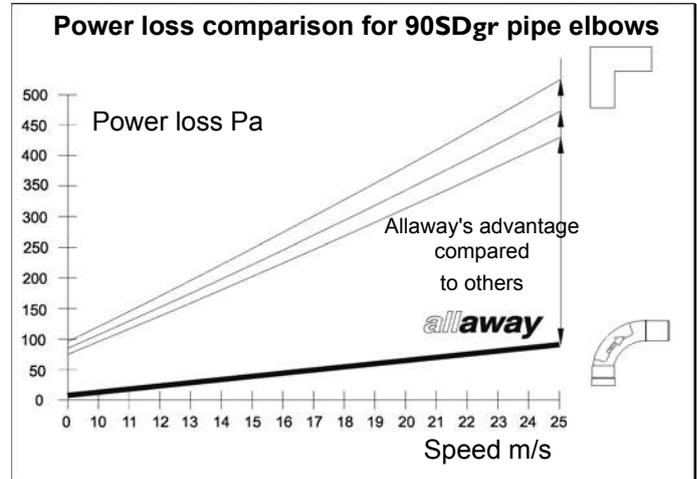
7. Dust piping

7.1. Features of the dust pipes

The design of the dust piping is crucial for the operation of the entire system. The size and flow properties of the Allaway dust pipes are developed to ensure a flow rate in the piping of at least 20 m/s in normal use. However, this requires that the equipment-specific maximum line lengths and numbers of users are not exceeded. At a flow rate of 20 m/s, the dust and even any heavier rubbish will be transferred all the way to the dust canister.

The diameter of the dust pipe must be in line with the power of the central unit, cleaning hose, and cleaning equipment.

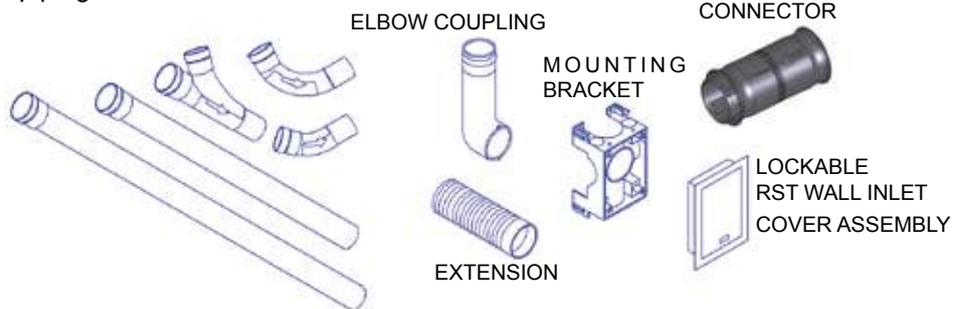
The diameter of the dust pipes in the Allaway Manta system is 44 mm. With a smaller diameter, the loss of pressure caused by the flow resistance would be too great, causing decreased cleaning power. With a larger diameter, such as 50 mm, the flow rate of air in the piping would be too small, and the flow of heavy rubbish, such as stones and sand, would be insufficient. The shape of the bends and the smoothness of the inside surface are critical for achieving excellent flow properties. The parts of the Allaway piping that are particularly exposed for wear, such as the elbow and branch pieces, are strengthened. The sleeve joints in the Allaway dust pipes are always adjusted according to the flow direction, minimising the risk of blockage.



7.2. Parts of the dust piping

The following factory-made parts are available for the installation of the dust piping:

- Dust pipe 0.6 m, Ø 44 mm
- Dust pipe 1.2 m, Ø 44 mm
- Dust pipe 2.4 m, Ø 44 mm
- Branch 45°, Ø 44 mm
- Elbow 15°, Ø 44 mm
- Elbow 45°, Ø 44 mm
- Elbow 90°, Ø 44 mm
- Wall inlet and supplies
- Connector

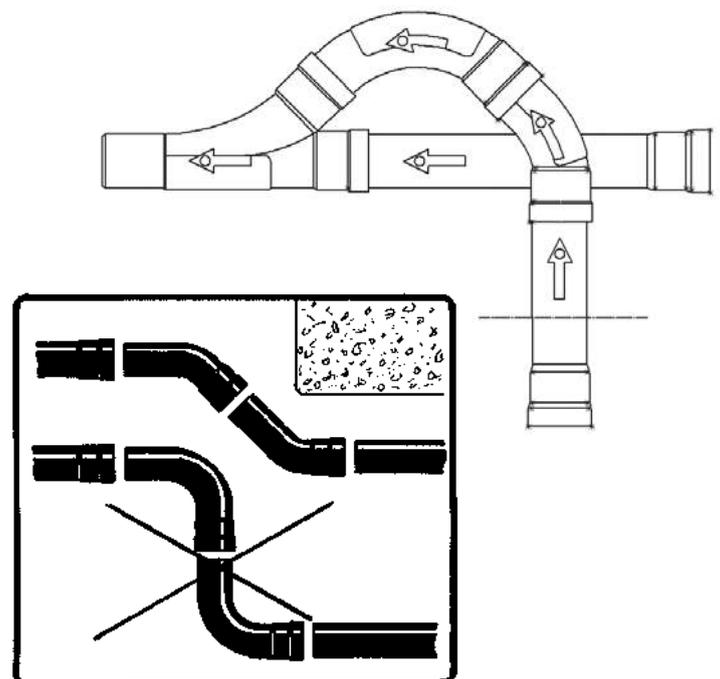


8. Installing the dust piping

The dust piping can be installed even in narrow spaces, because the diameter of the pipes is only 44 mm (51 mm in sleeve joints). However, we recommend installation in easy-to-access places, where the risk of damage during construction and maintenance is minimised. Enter the pipes and low-voltage leads from each cleaning area in the plan. The piping should be installed as direct and short as possible, avoiding unnecessary bends and corners.

8.1. Attaching the pipes

Ensure that all parts are in good condition both on the inside and outside, and clean if necessary. Install the yellow locking seal inside the sleeve. Push the pipe directly into the sleeve, rotating the pipe slightly, until the end of the pipe is sealed to the bottom of the sleeve. The pipe is sufficiently extended when the point of connection of the pipes is over the white marking line. If you cut the pipe, draw the marking line at the correct point using another marked pipe. The locking seal ensures and locks the joint. Branches must always join the body pipe from above or one side. The joints must be situated in the correct way, ensuring that there are no collision surfaces in the piping where shards of glass, toothpicks, nails, etc. could catch. The arrows in the parts of the piping show the direction of the flow. When installing the piping, the **sleeve must always be on the wall inlet side of each part**. On the exhaust side, the sleeve must be towards the central unit.





Always connect the elbow coupling to a dust pipe without a sleeve. The sleeve can be cut from an intact dust pipe using a fine-toothed saw or a pipe cutter. Carefully remove any cutting burr using a sharp knife or file. Chamfer the outer edges of the cut pipe end.

8.2. Supporting

Support the pipes with pipe clamps or metal clamps. Support the pipes to the framework of the wall, floor, and ceiling. Select the supporting distance according to the structures. If the distance between the studs is 600 mm, the distance between the pipe supports should be 1,200 mm or 1,800 mm. Each pipe should be supported. Support the pipes steadily to ensure that later maintenance near the building's piping system is possible. Follow the general instructions and construction regulations in the work specification.

During installation, ensure that the temperature of the piping stays close to room temperature when it is used. Otherwise, use thermal insulation in the ceiling, for example.

Stretches of piping that are exposed to extreme changes in temperature at the installation phase must be supported as follows:

- Only use Allaway pipe clamps to support the piping (please refer to the picture below).
- Install the pipe clamp in a way that allows the pipe to move freely in the axial, i.e. longitudinal, direction.
- Support the piping in a manner that allows axial thermal expansion and contraction. Sleeve joints in particular should not be subject to extension strain as the piping contracts.
- Only install the pipe clamps in stretches of pipe without bends, and at a sufficient distance from the sleeve joints to enable thermal expansion and contraction. The thermal expansion coefficient is approximately 0.1mm/m/CSDgr.
- In order to allow for the movement of the pipe, only one pipe clamp is allowed near an elbow piece, as shown in the picture below. The pipe clamp on the other side of the elbow piece must be at least 70 cm from the elbow piece. No pipe clamps are installed on direct stretches of pipe shorter than 70 cm.

Dust pipe clamp



8.3. Hung ceiling

ung ceilings are recommended for the installation of the piping, because it decreases the risk of damage to the pipes during installation. The installation can also be organised flexibly according to the other stages of the work, decreasing the cost of installation.

8.4. Cast floor

If the building will have a cast floor but no hung ceilings, the piping can also be installed in the casting. Be particularly careful not to damage the piping during the casting work. The final plans of the locations of the wall inlets must also be finished, because changes to the piping are extremely difficult to perform after casting. Support the pipe carefully before casting. Protect the pipe ends carefully to prevent concrete splatter from entering the pipes.

8.5. Hollow core slab

The piping can be installed lengthwise through the voids in the slab, for example when leading the pipe to wall inlets on the floor level.

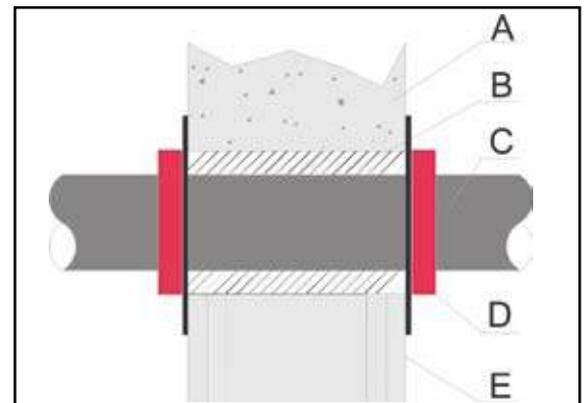
8.6. Other solutions

When installing piping to unheated spaces, insulate it using thermal insulation at least 50 mm thick. Otherwise, the inside of the pipe will bleed or gather frost and dirt. When installing the piping in the ground between buildings, install the pipe within a waterproof and thermally insulated protective tubing.

8.7. Leadthroughs in compartmentation structures

In detached houses, the garage and boiler room are usually separate fire compartments. Pipes may be led through compartmentation structures, assuming that the leadthrough does not significantly reduce the fire-proof properties of the structures. Please follow all authority instructions and regulations. Use type approved firestop collars, for example. Install the firestop collar according to the manufacturer's instructions. **If necessary, ensure that the protection and casing class of the central unit correspond to the requirements of its location and the related equipment. For more information, please contact your local authorities.**

- A Fire wall
- B Insulation with non-flammable material
- C Dust pipe Ø 44 mm
- D Firestop collar
- E Light partition



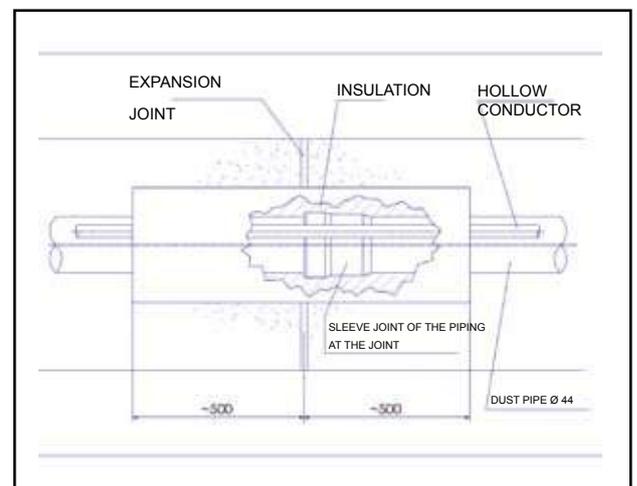
8.8. Leadthrough to the air-raid shelter

Only use officially approved leadthrough flanges for leading the pipe through to an air-raid shelter. If the flange needs to be closed, remove the dust pipe first.

8.9. Expansion joint

When crossing expansion joints in a moulded structure, for example, insulate the dust piping with foam rubber approximately 20-25 mm thick in order to prevent the pipe from breaking at the expansion joint. Ensure that the sleeve joint is located together with the expansion joint. Continue the insulation 50 cm to both sides of the expansion joint.

- A Expansion joint
- B Insulation
- C Hollow conductor
- D Sleeve joint of the piping at the joint
- E Dust pipe Ø 44 mm





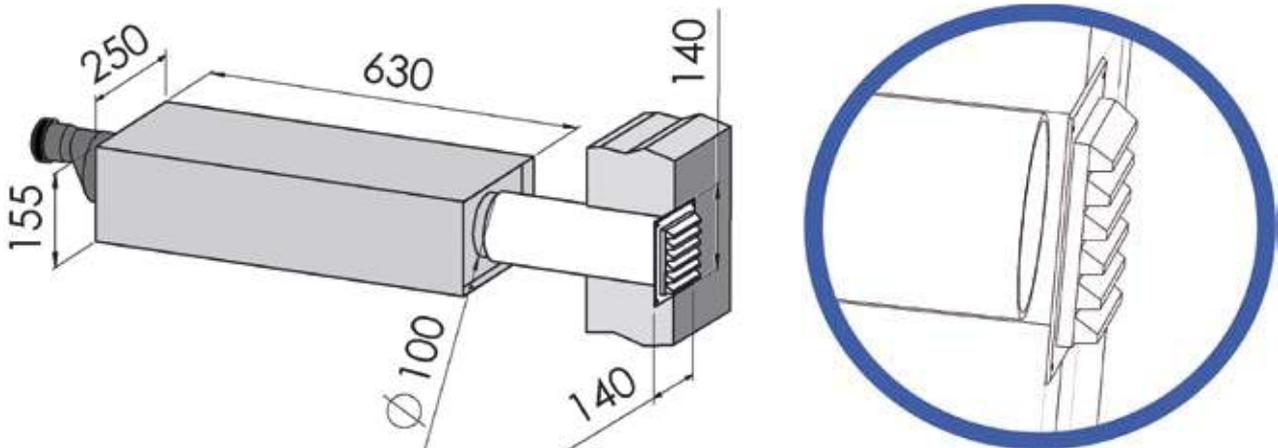
9. Channelling the exhaust air

It may be useful to perform the installation of the exhaust air duct together with the ventilation work. Use a spiral-weld tube or other metal pipe for the exhaust air duct that leads out from the central unit. The measurement of the exhaust air duct depends on the types and number of central units attached to it, as follows:

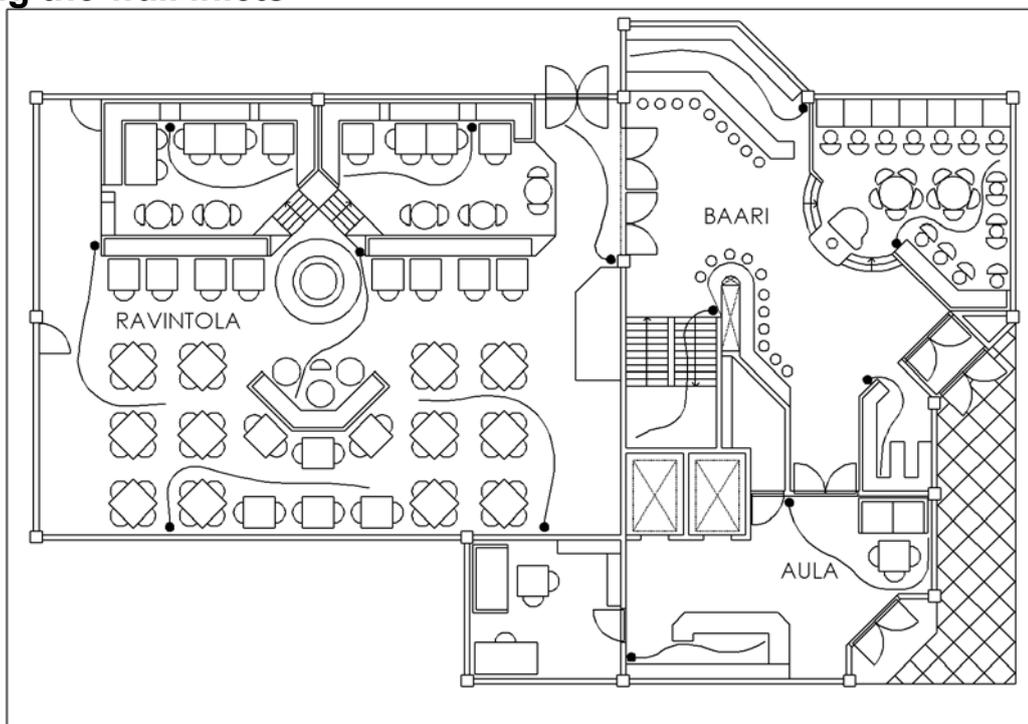
Exhaust duct Ø mm

Number of the central units	Manta 3000	Manta 6000	Manta APC3
1	100	100	100
2	100	100	125
3	125	125	160
4	160	160	250
5	250	250	315
6	250	250	315

If the length of the exhaust duct exceeds 10 metres, the exhaust duct should be one size larger. When designing the exhaust air duct, consider the temperature of the exhaust air (55-80 C). The exhaust air includes micro dust and must not be led indoors. Using an exhaust silencer is recommended. If the diameter of the exhaust air duct is 100 mm, use the Allaway turbo exhaust silencer. If the diameter is larger, use a silencer intended for ventilation equipment. The best place for the silencer is as close to the end of the exhaust air duct as possible. Install the blow-out grating or vent cap according to the picture below. Leave 2 cm of space between the blow-out grating and the exhaust air pipe. This will reduce the level of noise. The picture shown below is an example of the installation of the turbo exhaust silencer:



10. Installing the wall inlets



10.1. Installation frequency and height

The locations of the wall inlets should allow the entire area to be cleaned using a standard length suction hose assembly (8 or 10 metres). Use a thread or a piece of electric wire proportioned to the scale of the design and the length of the suction hose for planning.

The thread will help you to view the reach of the suction hose, and enable you to define the locations of the wall inlets. Locate the wall inlets so that the suction hose will reach all areas, and the area cleaned using one wall inlet is maximised. Consider the reach of the suction hose in spaces with furniture: the user may need to go around the furniture when cleaning. Lengthening the suction hose assembly beyond 10 metres will decrease the suction power and make it more difficult to manage the hose, and may cause the turbine thermal protection to turn the central unit off repeatedly.

Sometimes, for example in hotels, wall inlets may be located on both sides of the corridor in order to avoid the hotel visitors needing to walk over suction hoses drawn across the corridors. Also avoid crossing passage and transportation routes in public spaces and storages.

The recommended installation height for the wall inlet is level with the light switch. This will remove the need for bending over when attaching the suction hose to the wall inlet. Aesthetically the wall inlets should be at the same height.

10.2. Installation locations of the wall inlets

The wall inlets can be installed in almost any wall material, as long as the diameter of the dust pipe within the wall (44 mm, or 51 mm in sleeve joints) is considered. Flush mounting to slab walls requires a minimum beam strength of 67 mm. The most commonly used wall types are:

- a) Lightweight partitions of wood, chipboard, or plaster board
- b) Coated masoned brick walls
- c) Clean-masoned brick walls
- d) Walls cast on-site
- e) Element walls.

Installation is more expensive in the latter wall structures. The installation of the wall inlets or reservation for the wall inlets must be performed in the manufacturing stage of the element.

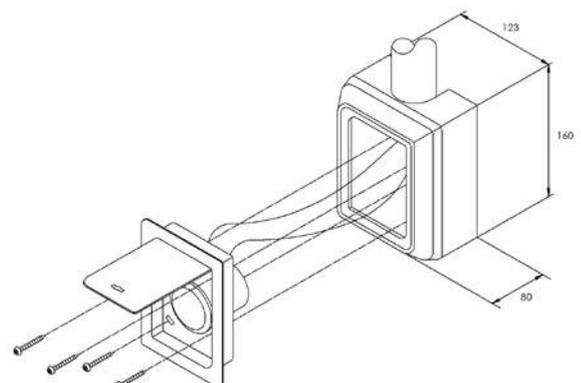
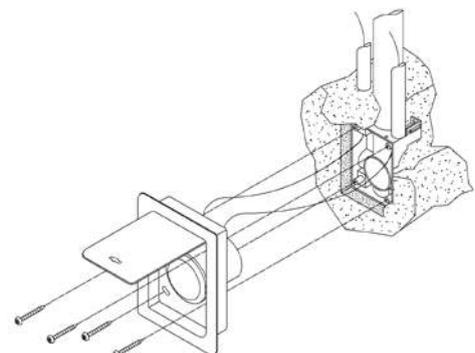
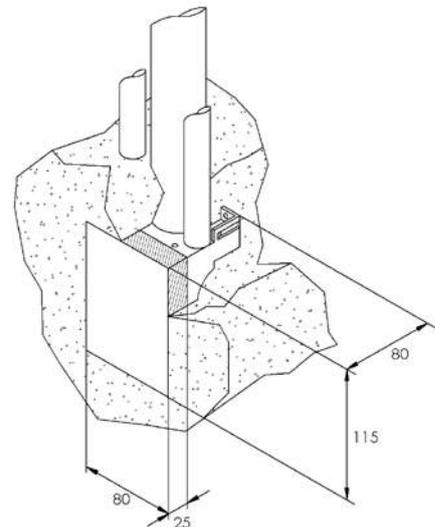
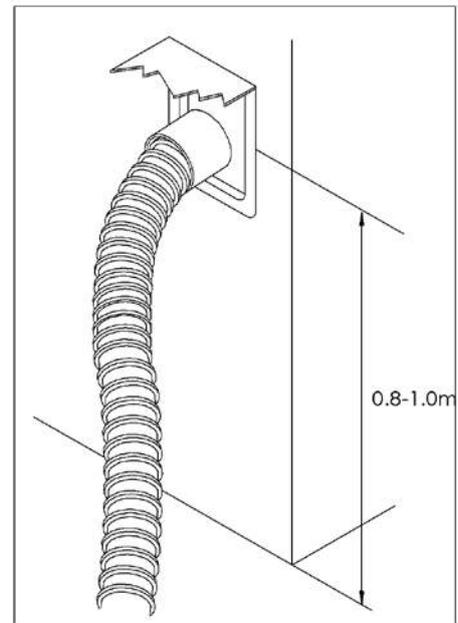
The walls in restaurant dining rooms and auditoriums are often so far from each other that the wall inlets must be installed on the floor or fixed furniture, such as the walls of buffet tables or the plinths of various fixed pieces of furniture. Avoid installing wall inlets on perimeter walls.

When installing the piping and the wall inlets in storage facilities, air-raid shelters, industrial facilities or other spaces where the piping can be visible, the pipes should be surface mounted using separate surface mounting equipment.

10.3. Wall inlet models

For professional use, use the steel wall inlets (RST). The plastic wall inlets are only intended for domestic use. The plastic wall inlet cover is difficult to open in the Manta system if the system is being used. The wall inlet may also be damaged.

For public spaces, we recommend using lockable wall inlets. Wall inlets without locks may be used in other spaces. The RST wall inlets are also available stoved white (RAL 9010, glossy) upon request.

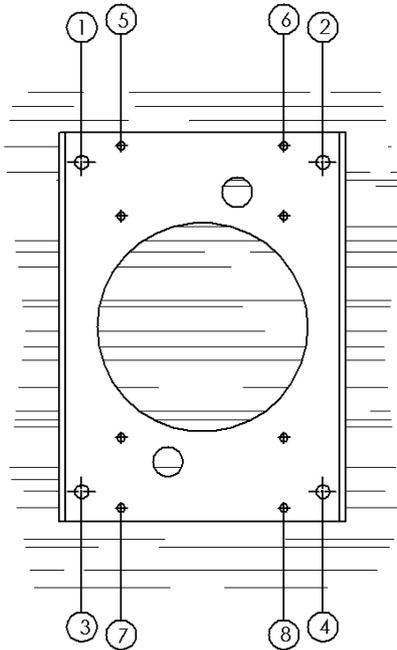




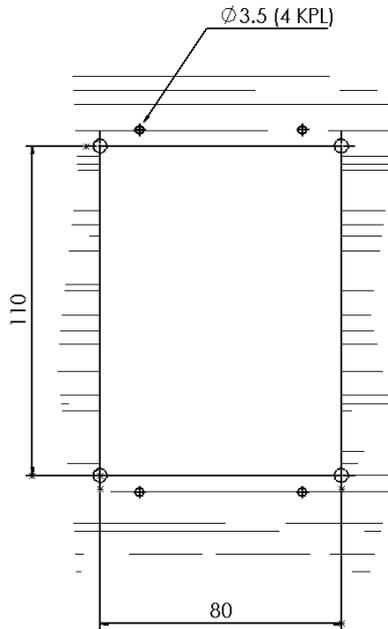
10.4. Installing the wall inlet to a slab wall using a mounting plate

The wall inlets are easiest installed on hollow walls with a wood or metal frame. Follow these instructions for installing the wall inlets on slab walls:

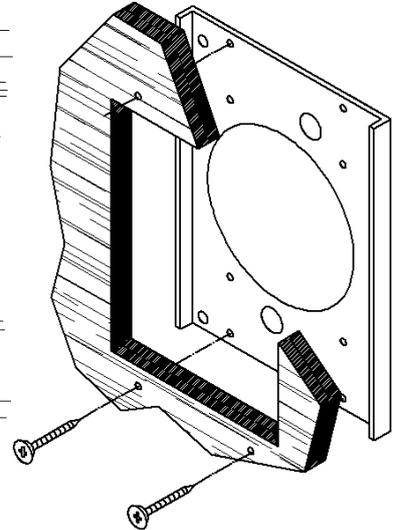
1. Select the installation height for the wall inlet.



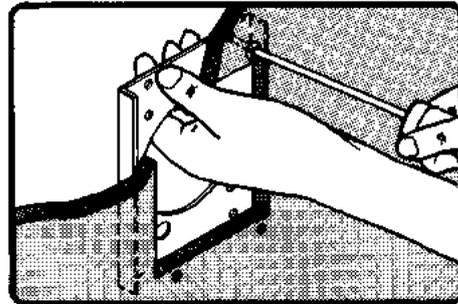
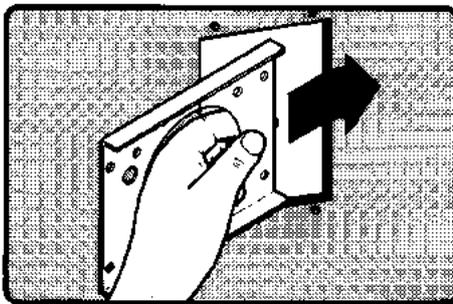
Use the mounting plate to draw the numbered holes on the wall.



Cut a hole in the wall. Use holes 1-4 as the corners. Drill the holes 5-8.



Attach the mounting plate to the wall using countersunk screws $\varnothing 2.9$.

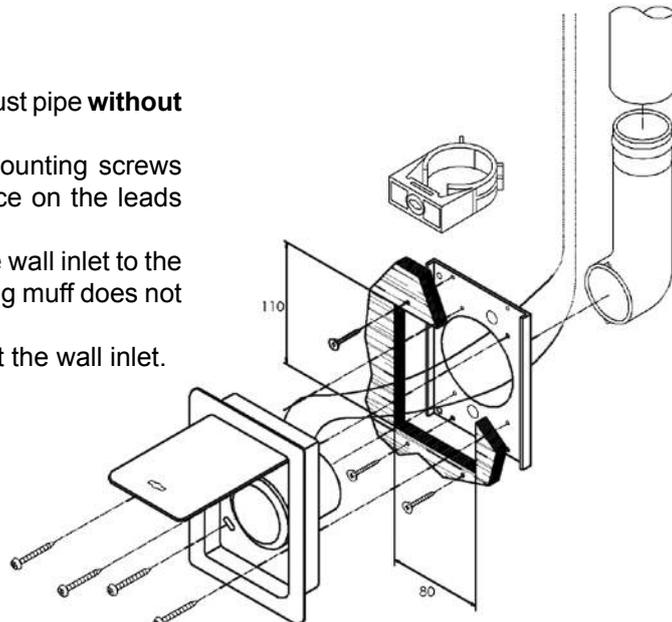


3. Push the elbow coupling of the wall inlet to a dust pipe **without sleeve**. Mount the dust pipe to the wall.

4. Fasten the low voltage leads to the lead mounting screws on the wall inlet. Leave 20 cm of working space on the leads outside the wall.

5. If necessary, shorten the coupling muff for the wall inlet to the correct length, or use an extension if the coupling muff does not reach the elbow coupling.

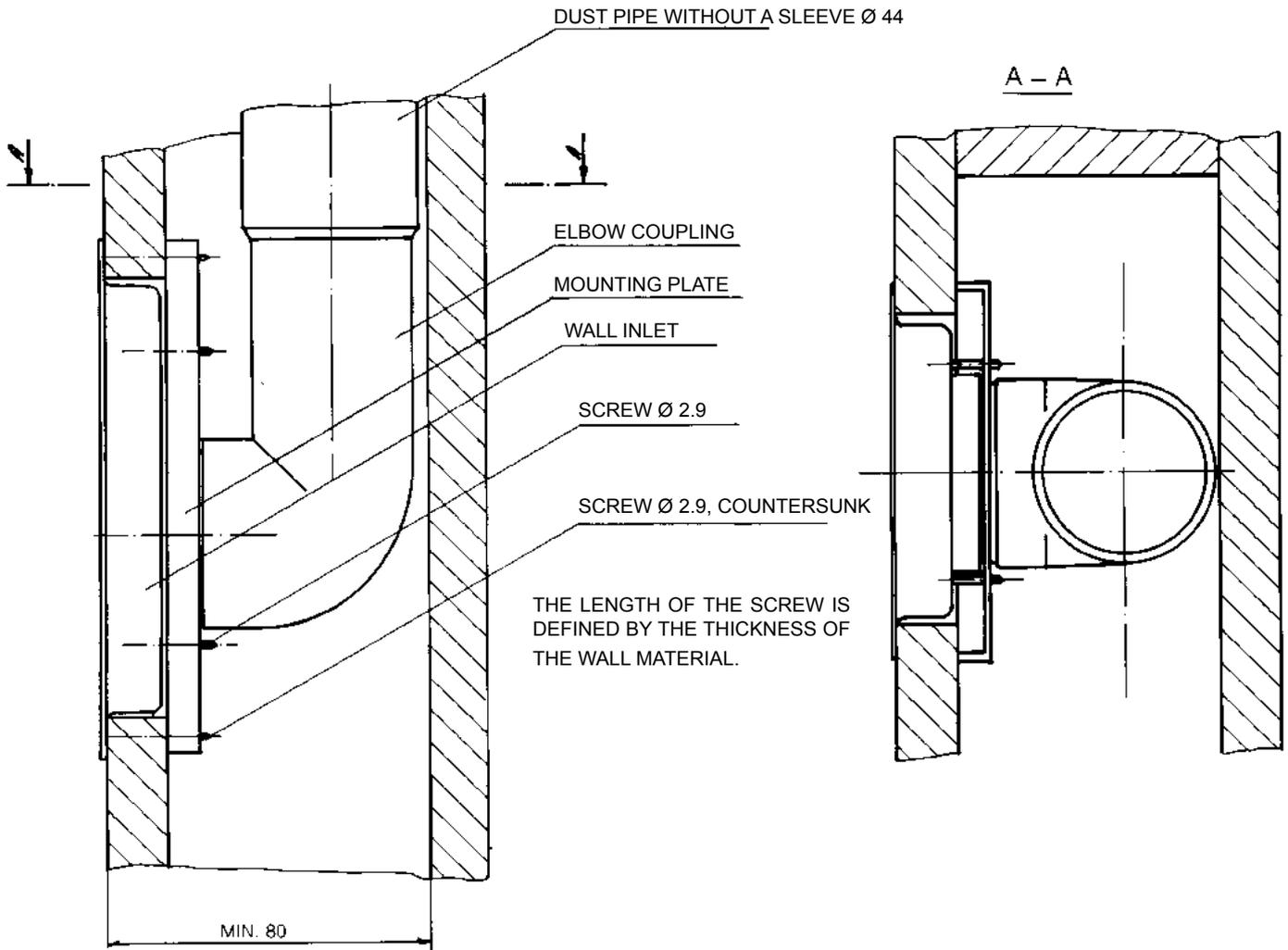
6. Use the mounting plate (accessory) to mount the wall inlet.



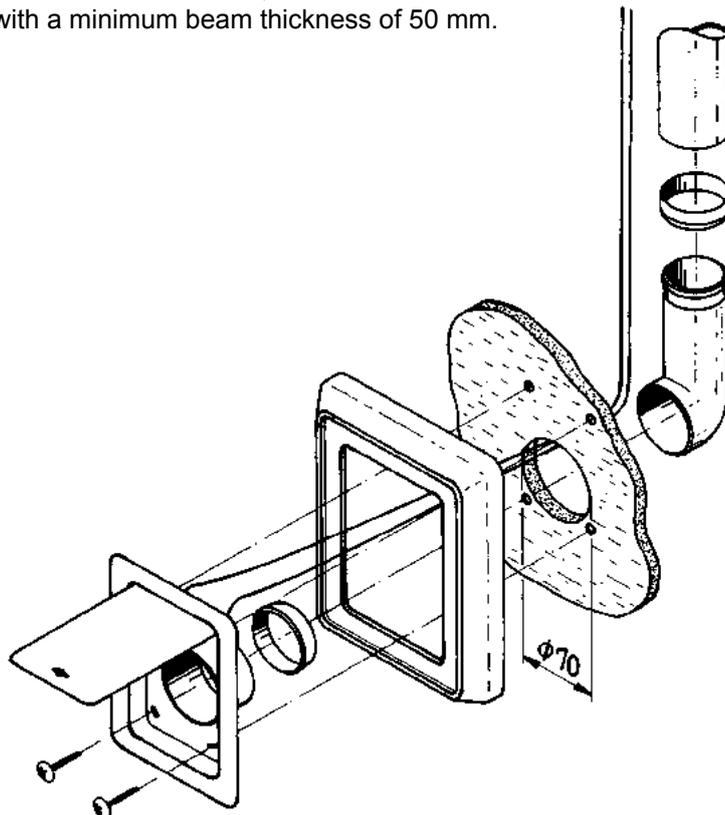


10.5. Beam thickness in flush mounting

When flush mounting a wall inlet, the minimum distance between the external surface of the wall inlet and the front surface of the rear wall slab is 80 mm.



If the beam thickness is less than 80 mm, use a frame RST for raised installation. In this case, the wall inlet can be installed on a wall with a minimum beam thickness of 50 mm.

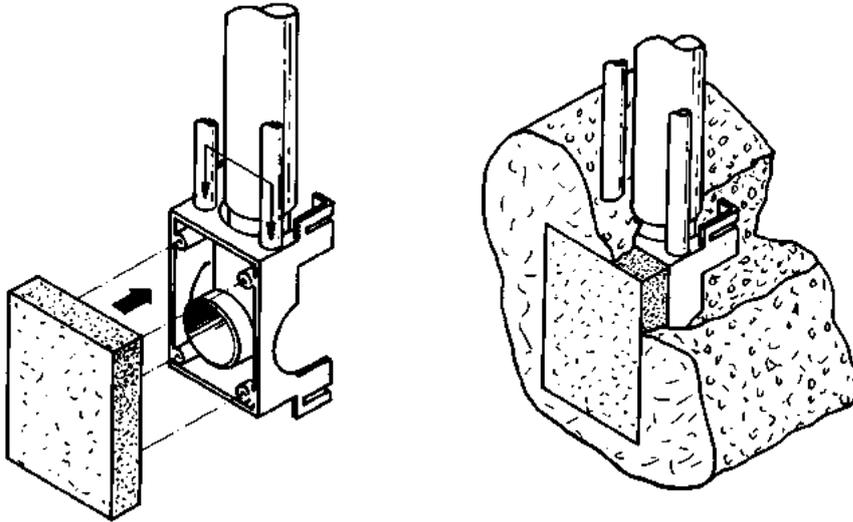




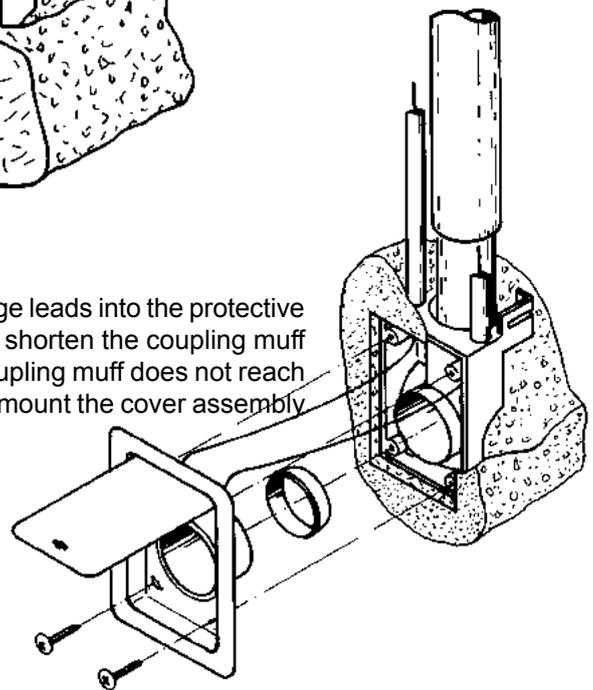
10.6. Installing a wall inlet on cast walls or floors

When installing a wall inlet in casting, use a mounting bracket and a protective cover to ensure the correct level of the wall inlet and to avoid concrete from entering the dust piping during installation.

1. Install the elbow coupling, low voltage piping, and protective cover on the mounting bracket. Tie the protective cover to the mounting bracket using special thread. Attach the mounting bracket to the casting mould with the front side of the protective cover level to the casting. Attach a cover strip on the protective cover, and use the strip to mount the mounting bracket correctly. This is to ensure that the piping and mounting bracket do not move during casting. Connect the elbow coupling to a dust pipe without a sleeve. The ends of the thread will help you to locate the mounting bracket after the wall surface is smoothed. Remove the strip that you attached to the protective cover before coating the wall.



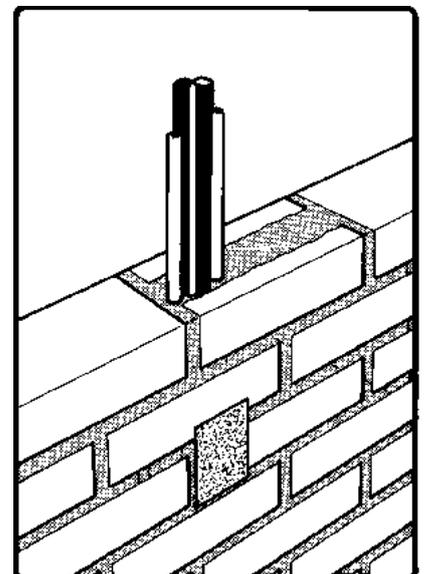
2. After casting, remove the protective cover and lead the low voltage leads into the protective tubing. Leave 20 cm of working space on the leads. If necessary, shorten the coupling muff for the wall inlet to the correct length, or use an extension if the coupling muff does not reach the elbow coupling. Connect the leads to the cover assembly and mount the cover assembly onto the mounting bracket.

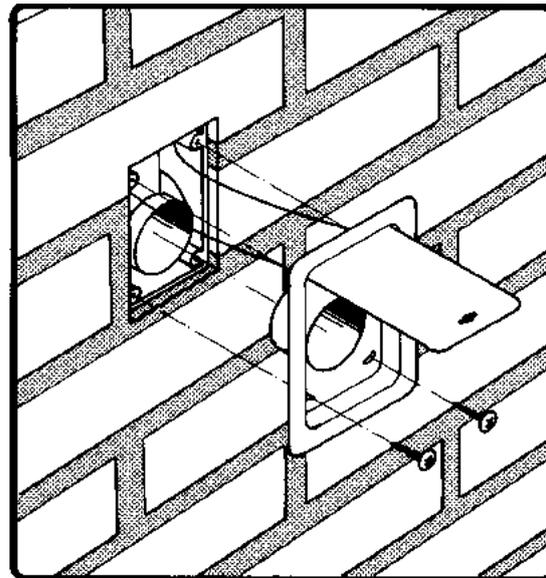
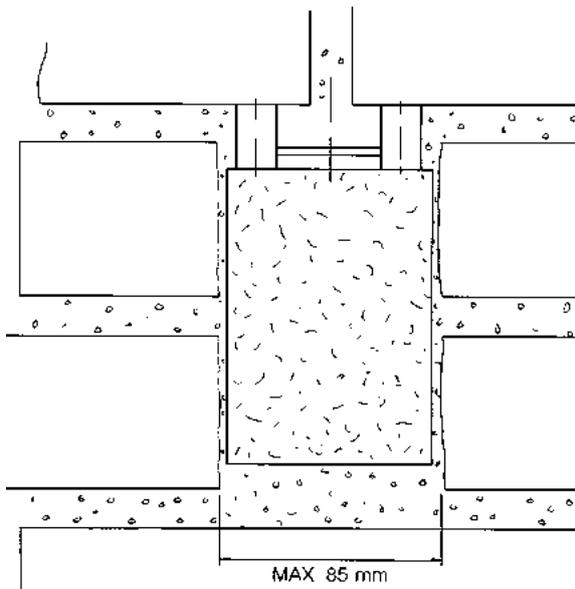


10.7. Installing the wall inlets to brick walls

Install the wall inlet to a brick wall by either cutting the bricks or making suitable grooved tiles for the dust piping. If the wall is coated, it can be completely masoned. Saw a hole in the wall for the pipe from the side that is to be coated. The space for the pipe can also be left during masonry.

Lead the low voltage lead to the wall inlet in protective tubing. Install the dust pipe, elbow coupling, mounting bracket, protective cover, low voltage lead, and the protective tubing to the finished groove. If necessary, shorten the coupling muff for the wall inlet to the correct length, or use an extension if the coupling muff does not reach the elbow coupling. Use filler to fill up the groove up to the level of the wall surface.





10.8. Surface mounting of wall inlets

In surface mounting, mount the wall inlets according to this picture. Consider the wall material in the installation.

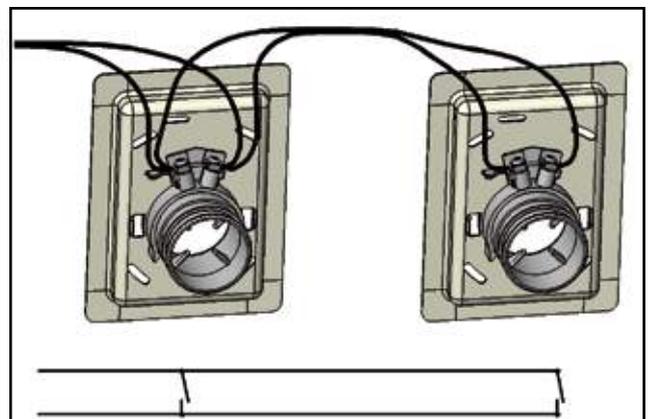
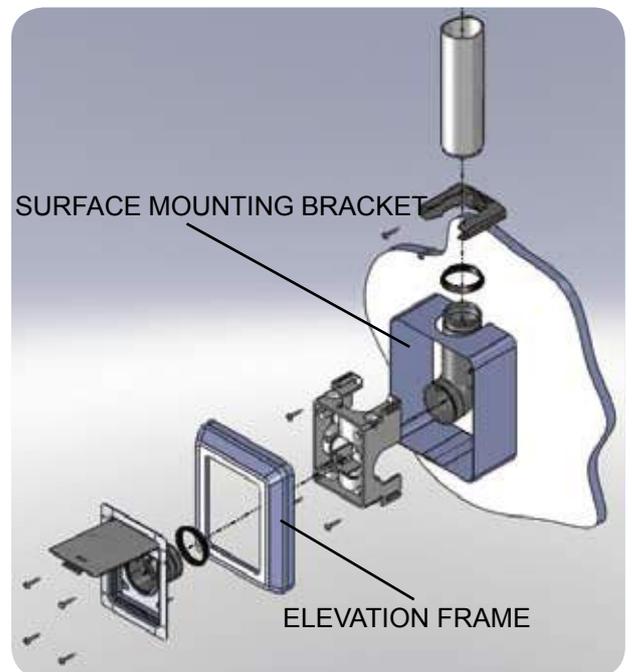
10.9. Shortening the coupling muff for the wall inlet

If necessary, shorten the coupling muff for the wall inlet to the correct length, or use an extension if the coupling muff does not reach the elbow coupling.

11. Starting circuit and turning on the system

Lead the low voltage lead first between the wall inlets, and finally to the central unit. A separate low voltage lead is delivered with each pipe line. This is called an electrical parallel coupling. The leads can be connected both ways to the wall inlet connectors and the control current box close to the central unit. The low voltage leads should run inside protective tubing. The protective tubing is particularly crucial when installing the piping to casting, masonry, or other places where changing the leads after potential damages is difficult. In other cases, such as when installing the leads to hung ceilings, the lead can be attached to the dust pipe with cable ties. The leads can follow the lines of the body piping, but they can also be led through the easiest possible route. Low voltage leads to separate central units may not be connected to each other. The leads must always be extended and branched in a junction box.

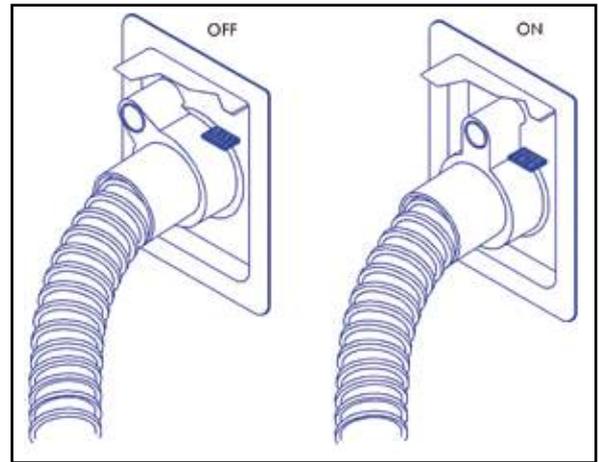
The central unit is started by using the micro switch on the wall inlet. The central unit has a power source feeding a 12/24 V potential to the control circuit. The voltage is led to the wall inlets using low voltage leads. The RST wall inlets have a reed relay, and the suction hose coupling muff has a magnet that closes the circuit when the suction hose coupling muff is connected to the wall inlet and the switch is turned ON.





Follow these instructions to start and turn off the central unit when using RST wall inlets:

1. Push the suction hose coupling muff to the wall inlet.
2. Turn the red start-up ring to ON. The central unit is started. Turn off the central unit by turning the start-up ring to OFF.

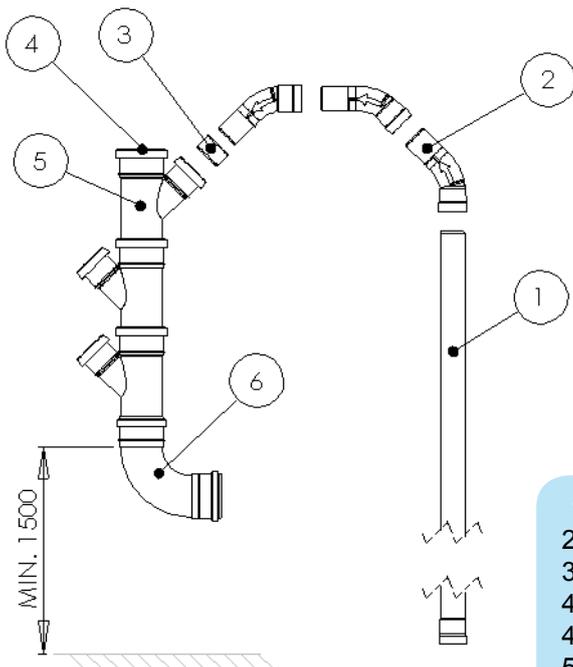


12. Connecting the central unit to the dust piping

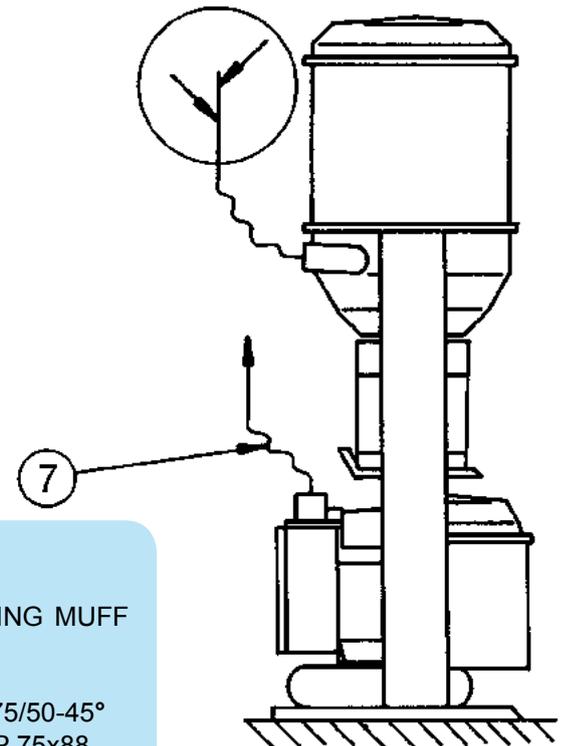
Lead a separate $\varnothing 44$ mm dust pipe from each cleaning area to the vicinity of the central unit. Connect the pipes to a vertical $\varnothing 75$ mm collector pipe using a single branch (5). Connect the sleeve corner of the collector pipe (6) to the central unit inlet coupling.

The correct rotation direction of the electric motor must be inspected when commissioning the central unit. If the rotation direction is incorrect, the connection of the phase connectors must be changed in the wall socket. The hose couplings between the central unit fan and the filter unit must under no circumstances be removed and cross-connected.

Before closing the structures, test that the system works following the completion of all installation work in the property.



1. DUST PIPE $\varnothing 44$
2. ANGLE 45°
3. CONVERTER COUPLING MUFF 44/50
4. PIPING PLUG HTP 75
5. BRANCH COUPLING 75/50- 45°
6. SLEEVE CORNER HTP 75x88
7. OUTLET CONNECTION 100 mm



13. Testing the system

1. Check that the piping system is airtight.

Close all wall inlets. Start the central unit by connecting the starting circuit with a wire, for example a paper clip in a U shape. Do not keep the central unit running for more than 1 minute. If air comes out of the exhaust pipe within 15 seconds of starting the unit, there is a leak in the piping system. Locate and fix the leak. Do not use the unit for more than 1 minute with all wall inlets closed, because when the turbine receives no air, it will overheat and may even be damaged. **Do not perform the air tightness check with overpressure.**

2. Check that the system works with all wall inlets.

Suck a small object into each wall inlet. The object can be a small rubber ball or an eraser, for example. Check that each object runs from the wall inlet into the dust canister. If the object does not reach the dust canister, locate and fix the blockage.



14. The Manta APC 3 central unit

The Automatic Power Control (APC) for the central unit is intended for increasing the power of the central unit automatically when more than one user enters the network.

The control unit recognises the change when several wall inlets are opened. The motor operating speed increases to ensure sufficient power for all users. Three wall inlets can be used simultaneously, if they are on separate lines. When a user stops using the system, the power decreases to facilitate the suction power according to the number of open wall inlets.

14.1. The automatic power control in the Manta APC 3 central unit

The basic adjustment of the Manta APC 3 central unit is designed for a system with three users and a maximum line length from the furthest wall inlet to the central unit of 60 metres per user. If there are only two users, an authorised Allaway servicing company may change this adjustment.

The inverter moment control line issues a frequency of 40-88 Hz depending on the number of simultaneous users when neither Preset line is used.

14.2. Preset rotation speeds

The central unit can also be controlled using fixed rotation speeds (PRESET 1 and PRESET 2). This method is used for cleaning areas at longer lines than the APC control line, where the APC control does not ensure sufficient suction power.

A Preset line should be used, for example in buildings with several floors where one area, such as a civil defence shelter, is further away. The various floors would operate as separate cleaning areas, with the civil defence shelter as the Preset line.

Example:

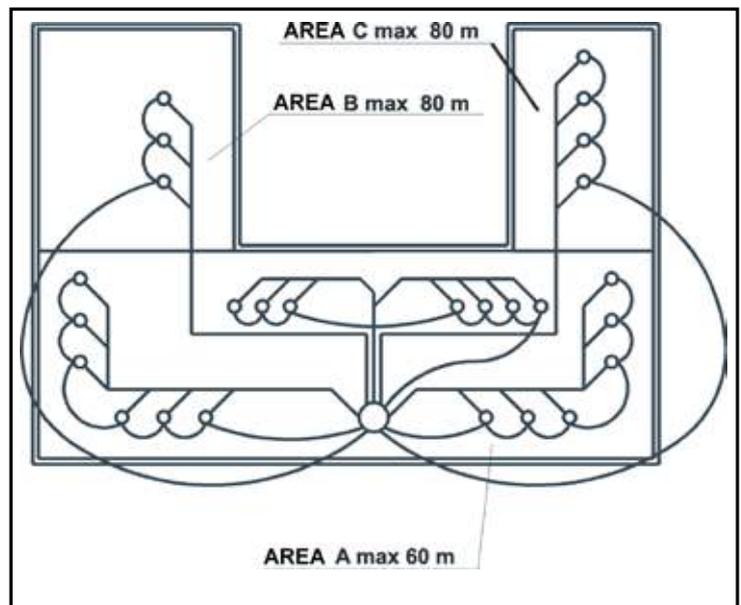
Usage situations, such as those shown in the figure on the right, may be solved using the preset rotation speeds PRESET 1 and PRESET 2. These may include needing three simultaneous users close to the central unit, and 1-2 users on longer lines when no users are cleaning near the central unit. In this case, normal moment control is abandoned, and the fixed preset rotation speeds are used by connecting the starting circuit from the wall inlets on the area in question to the control connectors PRESET 1 or PRESET 2. The frequency converter will issue a 58 Hz frequency separately from both lines. If both lines are used simultaneously, the device will issue a 64 Hz frequency. The PRESET control will bypass the APC control.

Area A can be used by three users simultaneously, if no users are on areas B and C. Only one person can be cleaning in areas B and C each, when no users are active in area A.

Please note! A separate low voltage lead comes to the central unit from each area.

○ = Wall inlet

○ = Manta central unit



15. Work description for the central vacuuming system (model)

You can download work specification templates for the various Manta models in Word format from www.allaway.com.

The Allaway Manta central vacuum cleaning system

1. Central unit (one of the following sections)

• Manta 3000

The Allaway Manta central unit is delivered equipped with a dust separator and by-pass canal fan. The by-pass canal fan must be equipped with suction and exhaust silencers. The central unit has a steel structure and stove enamel finish.

Main parts of the separator:	-	Dust collector
	-	Air filter
	-	By-pass canal fan
	-	Dust canister
	-	Control centre
Technical properties:	-	4.0 kW
	-	Amount of air approx. 108 l/sec.
	-	Maximum low pressure 32 kPa
	-	Noise level 70 ± 1.5 dB (A)
	-	Dust canister 34 litres. The dust is gathered in a replaceable plastic bag.

• Manta 6000

The Allaway Manta central unit is delivered equipped with a dust separator and by-pass canal fan. The by-pass canal fan must be equipped with suction and exhaust silencers. The central unit has a steel structure and stove enamel finish.

Main parts of the separator:	-	Dust collector
	-	Air filter
	-	By-pass canal fan
	-	Dust canister
	-	Control centre
Technical properties:	-	5.5 kW
	-	Amount of air approx. 108 l/sec.
	-	Maximum low pressure 40 kPa
	-	Noise level 69 ± 1.5 dB (A)
	-	Dust canister 34 litres. The dust is gathered in a replaceable plastic bag.

• Manta APC 3

The Allaway Manta central unit is delivered equipped with a dust separator and by-pass canal fan. The by-pass canal fan must be equipped with suction and exhaust silencers. The central unit has a steel structure and stove enamel finish.

Main parts of the separator:	-	Dust collector
	-	Air filter
	-	By-pass canal fan
	-	Dust canister
	-	Control centre
Technical properties:	-	Adjustable 4.0–7.5 kW power for up to three simultaneous users
	-	Amount of air approx. 178 l/sec.
	-	Maximum low pressure 33 kPa
	-	Noise level 75 ± 2 dB (A)
	-	Dust canister 34 litres. The dust is gathered in a replaceable plastic bag.

2. Piping system

Use Ø 44 mm Allaway dust pipes in the piping system, and use locking seals in the pipe connections. Other pipes may be used for special installation sites. Support the pipes according to the planning and installation instructions. Follow all HPAC and construction instructions for the pipe material in question.

Perforate the structures using pipe sleeves similarly to the perforation for water and heating pipelines. Consider the soundproofing. If the dust piping must cross the boundaries of fire compartments, use type approved firestop collars, for example.

3. Wall inlets

Only use Allaway RST wall inlets. A lockable RST wall inlet must be used for floor installations. Install the low voltage leads to the wall inlets along the pipe routes. Attach the lead to the side of the pipe using cable ties or tape. Install the lead to a protective tubing when installing the pipe in casting, masonry, or other places where changing the lead without protective piping is difficult.

4. Cleaning equipment

Cleaning equipment are delivered according to the order. Cleaning equipment includes a floor/carpet nozzle, furniture nozzle, radiator nozzle, crevice nozzle, telescopic wand, suction hose assembly (8 or 10 m), and the hose holder and its screws.

5. Inspections, commissioning, instructions and maintenance

Ensure that the piping is airtight using 25 kPa low pressure before covering the pipes with upholstery or other materials. When the work is finished, a commissioning inspection must be performed to inspect the operation of the system and the care taken in the installation. Draft a record for each inspection.



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