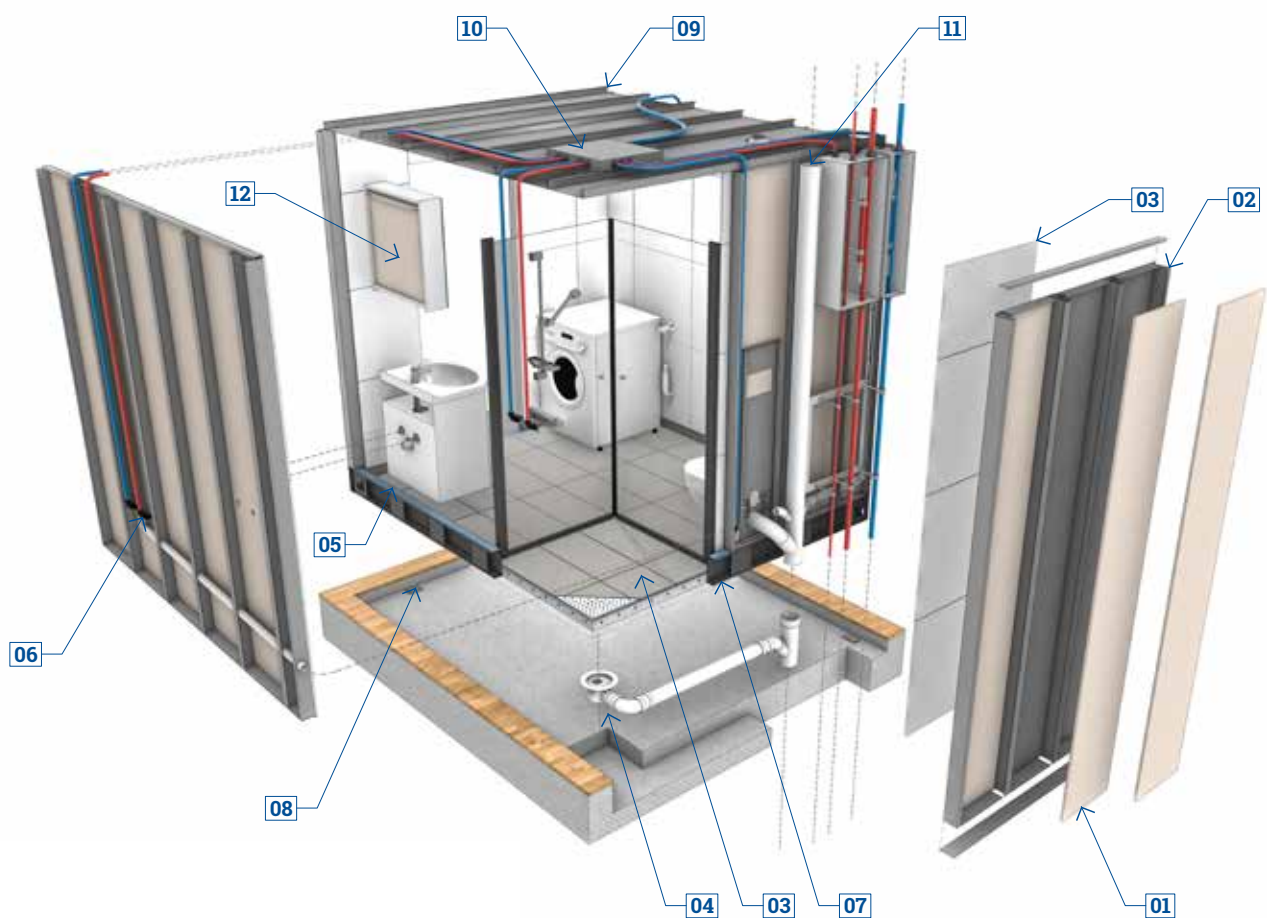


Part general project planning instructions

Prefabricated baths for residential buildings,
offices and hotels



- | | |
|-------------------------------|---|
| 1. GU9 - plasterboard | 7. Floor frame |
| 2. Wall cassettes Aluzinc 1mm | 8. EPDM rubber (10 x 100 x 50 mm) |
| 3. Granite ceramic | 9. Wet room ceiling |
| 4. Joists | 10. Distributor box Ceiling (400 x 400 x 95 mm) |
| 5. SCHÖNOX WSF membrane | 11. Partial waste trunk |
| 6. PART water lead-through | 12. Mirror cabinet |

1 Project planning instructions for prefabricated Part modules

This chapter contains project planning instructions that describe Part's quality-assured design with Part bathroom modules in standard versions.

1.1 Design and positioning bathroom modules

Bathroom modules are based on serial production and the condition that they are all similar within the respective bathroom types. A project will typically have a variation of two to four main types. Mirror image of bathroom types is not a cost driver.

1.1.1 Geometric design

The floor plan of the apartment and the bathroom affects the size of the module. Modules have size limitations with regard to production, transport and logistics.

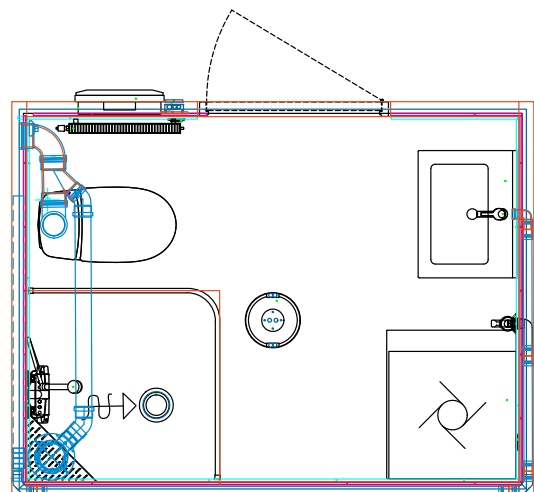
For normal transport the normal external dimension applies to the module's one side of 2470 mm. It gives an internal measurement of 2330 mm (module wall is 70 mm excl. ceramic surface layer). Any external installations affect the maximum dimensions of the module.

The other side of the module can have a maximum internal measurement of 4160 mm to be produced efficiently. Exceeding these measurements is possible but increases the cost and makes logistics more difficult.

Internal ceiling height is available in two standard heights, 2230 mm and 2300 mm.

The requirements for accessibility are satisfied by the project's architect. Part does not design its own floor plans but adapts the products to the project documentation.

Windows should be avoided to prevent risk of moisture damage.



Example of floor plan.

1.1.2 Location in the building

The wet room module can be freely positioned in the building with a 30 mm gap to a fixed wall. Waste for WC and shower are best placed towards the utilities shaft. Position of the washbasin and washing machine is secondary. A corner floor drain is recommended for minimal cut-outs in joists.

Normal recommended cut-out for the module is 90 mm. This includes 70 mm floor thickness, 10 mm soundproofing (supplied with delivery) and 10 mm trestling space. Part recommends 50 mm adjustment space for lowering around the module.

Part bathroom modules can be fitted with fixed feet from the factory to come up to the height of the joist solution that requires it. For example filigree or flat floor slab.

When positioning against a fixed trunk wall, access to the utilities shaft must be ensured. It is recommended that modules and shaft are positioned in line vertically through the whole building. This allows faster installations and higher degrees of prefabrication with the shaft solutions on the module on delivery. Final positioning of modules must be coordinated with other installations and adapted to the design/production.



Assembly/delivery

When the modules arrive at the building site they are wrapped with plastic packaging that permits outdoor storage. Take note that the roofs cannot take the weight of heavy snowfall. For transport, provisional transport feet are installed that are removed after lifting with a crane is started. Take care to note the routing of the waste pipe under the floor when using a forklift.

During intermediate storage of modules these are placed on fixed and flat surfaces to protect the waste pipe routing underneath.

The module arrives marked up with marking tape on two sides of the module. The marking has information such as project name, bathroom type, delivery number, identification number (for example apartment number), and Part's internal identification number.

When lifting with cranes, as few lifts as possible are recommended. CE marked lifting keys are supplied by Part in the first delivery. Use at least a 6 metre 4-part chain or spreader yoke to prevent pressure against the module's walls. Plan the lift, the keys will turn towards the centre so ensure that no external installations can be trapped.

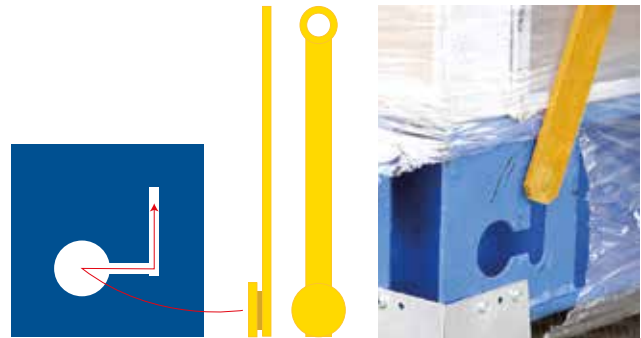
When installing, neoprene rubber (EPDM) blocks are installed in at least five points under the module. One in each corner and one under the door opening. More may be required for large modules or internal corners. These points must be balanced to maintain the fall of the floor in the module. Levelling is ensured by balancing the trestling points on the joists before installing the module.

1.2 Floor, Walls and roof

1.2.1 Floor

The bathroom module floor is made of reinforced concrete surrounded by a steel profile where the keyholes for the lifting keys are installed in each corner. Water-borne or electric underfloor heating can be chosen for the concrete.

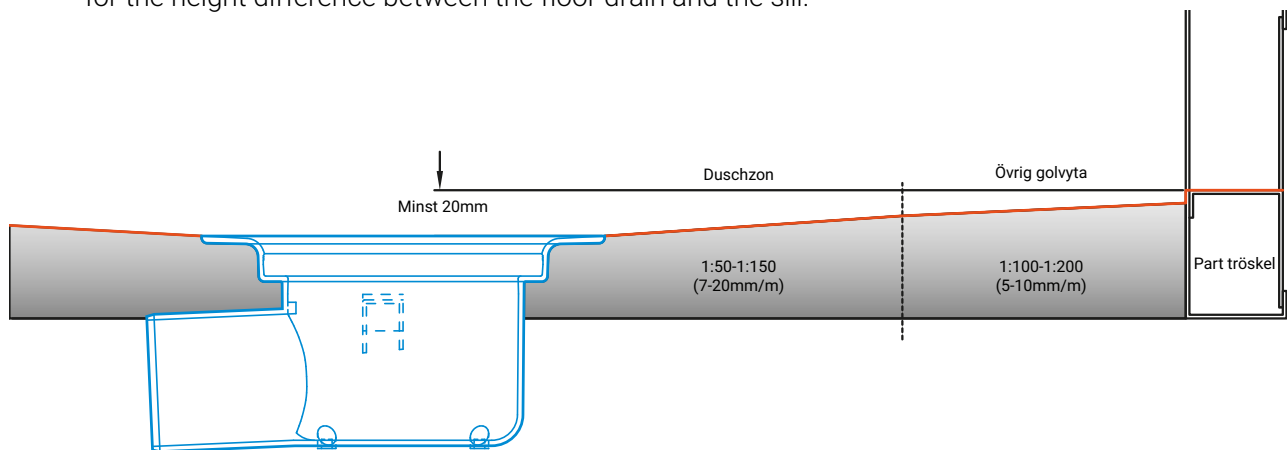
Floor drains used in Part modules are tested and approved in the type approved design.



Floor fall

The module is delivered to the building site with the correct fall on the floor according to the applicable regulations.

The sealed layer goes up to the module's sill and meets the requirements for the height difference between the floor drain and the sill.



1.2.2 Wall

The wall is made up of steel cassettes that are folded for rigidity. The cassette division is project-unique with reference to lead-throughs in the wall.

The cassettes consist of 1 mm aluzinc coated steel panels. A moisture resistant sheet is bonded to the outside of the cassette to give increased stability. The bathroom's inner layer is installed on the inside of the cassette, this is usually granite-ceramic.

Counterholds for heavy interior items are installed locally on the reverse of the wall. Wall construction permits post installation of the interior. Consideration must be taken of pipe routing in the walls. Instructions for post installation are delivered at the same time as the operating and maintenance instructions.

Part modules have stud support that is 70 mm deep excluding the surface layer. Walls that are against the rooms in the apartment are clad on site with one or two layers of plasterboard. The plasterboard can be installed horizontally because the distance between studs varies. In its basic version the design is not rated against fire or noise.

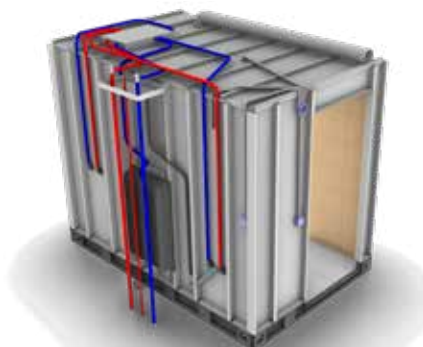


Wall construction:
1: Moisture resistant sheet
2: Steel cassettes
3: Surface layer

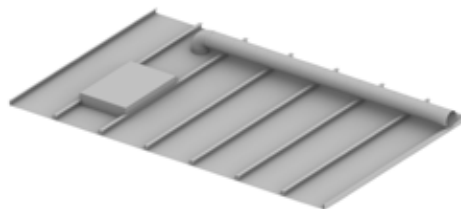
1.2.3 Roof

The roof of Part modules are made of polyester coated steel panels. The roof also consists of cassettes that are folded for rigidity. The roof is available in a range of different colours. The module's lighting and distribution cabinet are located on the roof. The distribution cabinet distributes water to all the tapping points in the Part module.

The roof has an inset of 35 mm from the outside of the Part module. This means that pipes can be routed into walls over the roof without coming into conflict with any panel cladding.



Distribution cabinet.



Roof seen from above
incl. ventilation pipes.



NOTE! Do not stand on the roof.
The roof is not dimensioned for weight from above, such as heavy snowfall or the weight of a person.

2 Quality and Environment

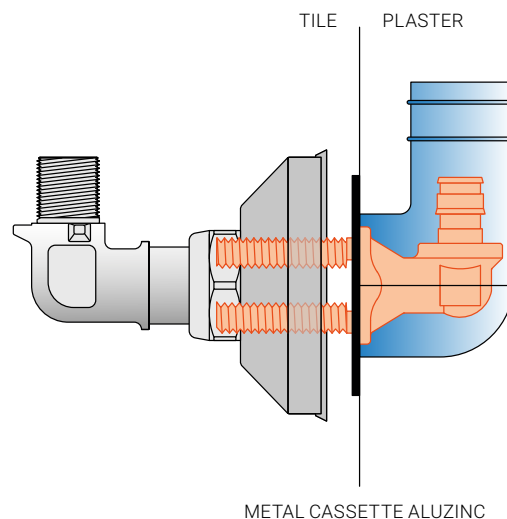
Part's modules are type approved by the independent organisation RISE in Sweden and Sintef in Norway.

Part's modules can be included in a Säker Vatten installation if the correct conditions are met. Approved installation instructions are then produced for the relevant module type. The installer connects the module according to the installation instructions and then provides the certification.

All interior is installed in the Part's factory and the lead-throughs are sealed using RISE approved methods. Instructions for post installation are available.

Lead-throughs for water and sanitation are made using Part's wall angles that are included in the type approval.

All Part modules are supplied with both sealing layers on both floor and walls. Even for small WC modules without a shower.



3 Technical installations

3.1 Waste water

Part modules are supplied with three to four connection points as standard. Individual project adaptation is possible. In those cases where the waste water from the washing machine passes the washbasin those can be connected together.

The connection points consist of:

- WC (Ø110 mm)
- Floor drain (Ø 75 mm/Ø 50 mm)
- Wash basin (Ø50 mm/Ø40 mm)
- Waste funnel washing machine (Ø40 mm)



Note that the image is general. Specific info applies to each separate project.

Wash basin/washing machine

Waste water from the wash basin is drawn through the module wall and does not affect the dimensions of the wall. See image to the right.



Floor standing WC

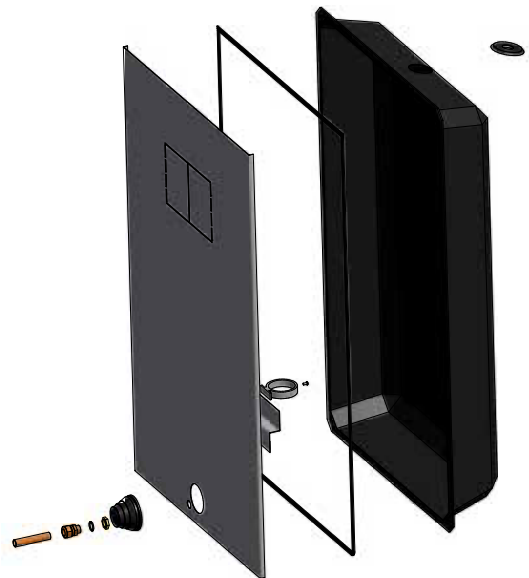
Waste water from a floor standing WC is installed under the module floor and in some cases requires a cut-out in the joists. The cut-out is made as a local groove where the waste water pipe can lie. The cut-out height from the bottom edge of the module floor is 140 mm for a Ø110 mm pipe. The width of the groove is generally recommended to be at least 300 mm. Project specific cut-out drawings are submitted at project start by Part.

Wall hung WC

Waste water from a wall hung WC comes out at the wall and therefore does not require any cut-outs in the joists.

Wall hung WCs can be supplied in three different versions.

1. Internal cistern, which only requires space for Ø110 mm pipe on the outside.
2. External cistern with associated cistern protection (leakage indication box outside the cistern). The box outside the cistern protrudes 140 mm out into the shaft. Leakage is led back in behind the WC seat and then runs down the wall to the floor. Inspection and replacement is from the outside.
3. Internal flat located box with cistern. Top cover available in ceramic or other material. Allows inspection via top cover. Allows side routing of the drain depending on location.



Leakage indication box, LI-Box.

Floor drain

The floor drain can be placed in a corner or more centrally in the shower zone. When placing centrally in the shower zone consideration of the floor panel size must be made to prevent cutting too close to the floor drain strainer.

Note that tiles larger than 10x10 in the shower zone must be cut diagonally. This can be avoided by placing the floor drain in the corner, then any tile will work. Part has a type approved solution for positioning floor drains in the corner.



Part corner drain.

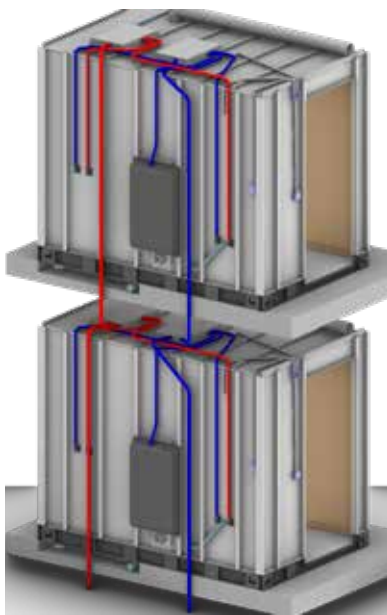
3.2 Tap water

Part module is type approved and equipped with LK's system for tap water installations. In standard form a Part module is supplied via a distributor cabinet placed in the roof.

On the module, two incoming feeds Ø20 mm (CW+HW) hang from the distribution cabinet down the shaft wall for connection to the trunks. Separate distribution cabinet or shaft base with inspection hatch must then be installed at the connections.

In the distribution cabinet on a Part module there is also space for preparations or installation of a water meter. Part does not install any supplied water meters but can supply and install them if desired. A nearby kitchen can also be supplied from the distribution cabinet via pre-installed Ø16 mm pipes that are supplied on the module to specified lengths (max. length 15 m).

Alternative solutions for standard version:



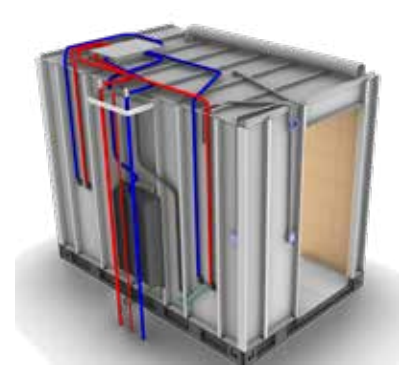
1. Double distribution cabinets in the roof (CW/HW) prepared to route joint-free trunks (max. Ø25 mm) between floors. More flexible pipes of the PE-X type with empty drain pipe RiR are installed between floors.



2. Trunk cabinet installed on the wall of the module, inspection hatch can be positioned against the inside of the module or against adjacent rooms.

The distribution cabinet on the roof of the module is fed from the trunk cabinet. The trunk cabinet can also be supplemented with telescopic trunks (extendable trunks between floor levels). These vertical trunks are created using LK-Pal universal pipes.

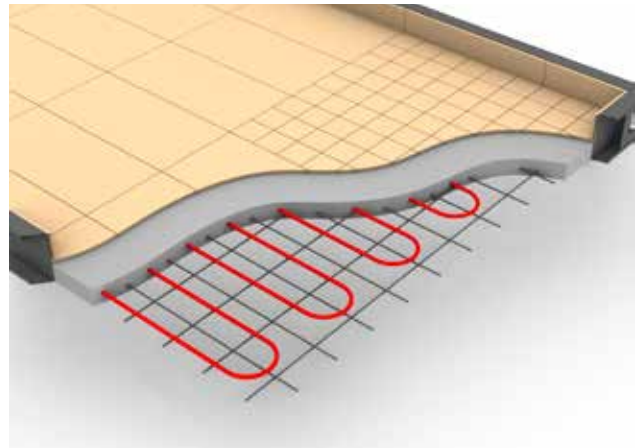
The telescopic function reduces the installation time significantly but still makes demands of the vertical shaft through the whole building.



3. Shaft base with leakage indication supplied and prepared for installation by Part on the module. Adapted project specifically.

3.3 Heating

The module can be equipped with water-borne or electric underfloor heating. Heating loops in the floor are cast into the concrete during manufacture. Part indicates where the loops are placed on drawings. The module can be equipped with radiator or towel rail.



Water-borne underfloor heating

Water-borne underfloor heating uses LK 12x2.0 PE-RT. These are supplied with a 2 m loop that is secured to the module wall in the standard version.

The module can be equipped with a thermostat and distribution/control of the underfloor heating in the bathroom. The module can be equipped with distributors that cover the whole apartment.

Electric underfloor heating

For electric underfloor heating the power output of the loops can be adapted to the project requirements. The heating is usually controlled using an electric thermostat on the wall.

The module's electric underfloor heating can be included in the residence's common system for control. The sensor cable is prepared for installation by a cast empty pipe. If Part supplies the thermostat, the sensor cable is installed at the factory.

Radiator

The module can be supplied with a wall radiator. Normally the radiator is supplied with a connector and thermostat at the factory. Flow/return is carried out using LK 12x2.0 PE-RT. These are supplied with a 2 m loop that is secured to the module wall in the standard version. Connected on-site to the residence's heating system.

Electric towel rail

The module can be supplied with an electric towel rail. Normally equipped with a thermostat.

Water-borne towel rail

The module can be equipped with a water-borne towel rail. Flow/return is carried out using LK 12x2.0 PE-RT. These are supplied with a 2 m loop that is secured to the module wall in the standard version. Connected on-site to the residence's heating system.

Heating distribution

The module can be fitted with all types of cabinet for distribution to the apartment.

3.4 Electrical

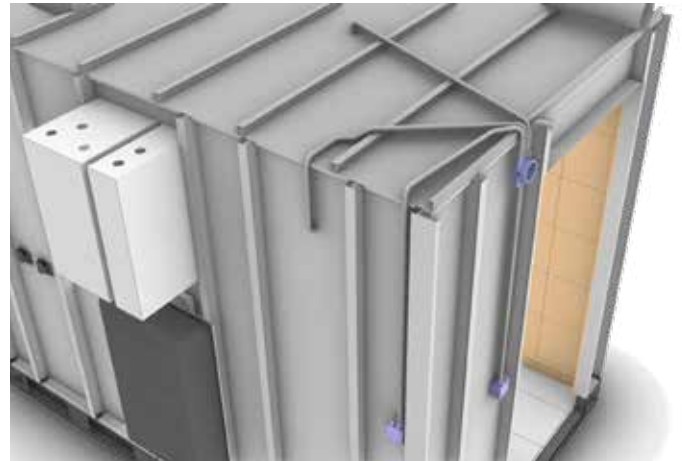
The module's electrical wiring is pre-routed from the factory and connected to Wago clamps in the terminal boxes located approx. 2.1 m above the completed floor on the handle side of the door wall in standard form. The location of terminal boxes can be adjusted as necessary. Electricity in the module is divided between up to three separate phases depending on which installations the module is to be prepared for.

Marking:

1. Washing machine (TM)
2. Tumble dryer (TT)
3. Other electrical (ÖVR)

The phases are connected to three separate terminal boxes for clarity.

The module is earthed and the earth cable can be inspected in the distribution cabinet on the roof. The installations are checked at the factory and measurement protocols are supplied with the operating and maintenance instructions.



Electrical/media control box

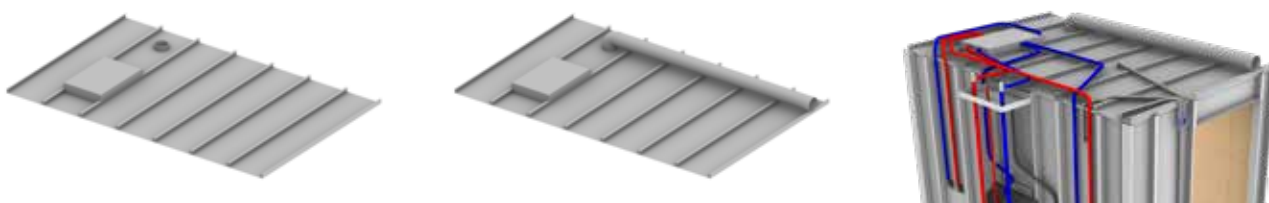
Part modules can be supplemented with an electrical and/or media control box installed on delivery. The control box fittings can be adapted for the unique requirements of the project. Control boxes that Part supplies have dimensions adapted for the module's design. For 1-layer plasterboard the control box bottom box has a frame. For 2-layer plasterboard no frame is required and the protrusion from the wall is less.

Note that interest in control boxes should be made at an early stage because these have a long delivery time.

3.5 Ventilation

In standard form the module is supplied with a pre-installed frame for connection of the ventilation duct on the roof. The accompanying device is supplied loose in the module to reduce the chance of damage during transport. The connection point can be located on either the walls or roof and positioning must be coordinated.

The module can also be supplied with pre-routed ventilation on the roof or the walls. Ventilation can be supplemented with a silencer, cleaning hatch, fire hatch and inspection hatch in the module roof.



3.6 Shaft solutions

A bathroom module with an integrated shaft solution simplifies and shortens the building time significantly. Supplement with a pre-installed and integrated trunk system for air, water and waste. The trunks are integrated in the bathroom module in the factory, and can be easily joined together between the floor levels at the building site.

Telescopic trunks (sliding tap water trunks) are pre-installed on Part modules, ready to slide either to the floor above or the floor below. All joints are placed in a distribution cabinet supplied by Part, where the module's water supply is already connected. Any kitchen pipes or pipes to extra WCs can be fed via the module's distribution cabinet on the roof.

Straight trunk pipes are pre-installed on the Part module and need to be supplemented with joints between the floor levels.

Partial trunk refers to that part of the waste water trunk that are delivered pre-installed on Part modules. All connection points from the module are then connected to the vertical section of the waste water trunk. The partial trunk can be supplemented with parts to connect other modules between floor levels.

Ventilation shaft means pre-installed ventilation ducts in the module's walls. The ducts are available in any size with or without insulation.

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