Uponor underground ventilation

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Uponor UVS

The Uponor UVS ventilation system is suitable for underground installation. Problems caused by low ceilings and difficult duct routing can be solved by putting parts of the ventilation system underground. Underground ventilation systems offer further structural engineering solutions that could result in lower building costs and additional usable surfaces. By positioning the fan room in the basement, Uponor tower solutions can be fully utilised to avoid taking up space in the form of interior shafts. With a ground-coupled supply air intake, the air is preheated in the winter and cooled in the summer which saves energy. Uponor systems are installed below and outside of the building while inside, standard sheet metal ductwork is used.

Uponor UVS is well tested and has been in use for many years. The Uponor UVS system is ideal for buildings such as schools, hospitals, industries, office premises, apartment buildings, industrial and commercial buildings, etc. It can be used in either newly constructed or older renovated buildings.

The ductwork is made of plastic materials, i.e. Polypropylene (PP) Ø 200-500 and Polyethylene (PE) Ø 600-2500. Chemically resistant materials can withstand a significant amount of stress, have a long service life and low thermal conductivity which means, in most cases, that no insulation of the supply and exhaust ducts is needed if laid underground beneath the building. The ductwork is coloured blue to indicate that it is used for ventilation and also, to avoid confusion with other pipes used for wastewater and stormwater.

Why choose Uponor UVS?

- Offers new structural engineering solutions.
- Contributes to an improved construction economy.
- Space saving and contributes to a reduction in the overall construction height.
- Enhanced architectural freedom.
- Flexible and impact resistant construction.
- Watertight sealing solution - can be installed in areas with a high water table.
- Good thermal and acoustic insulation.
- Extensive and adapted product range.
- Smooth inner surface with low frictional resistance.
- Good chemical resistance.
- Opportunity for customised solutions.

Technical information

Colour coding
Uponor UVS system is coloured blue to indicate that it is used for ventilation. The colour is dissimilar to that of storm-water and wastewater pipes, reducing the likelihood of confusion to a minimum. If excavation work is required, the colour of the pipes will give an indication of what they are used for.

Recyclable material
pipes and fittings are manufactured in Polyethylene (PE) and Polypropylene (PP), both of which are recyclable.

Air culvert
By using the Uponor tower solutions and positioning the air inlets outside of the building and the ventilation ducts underground, warm air is produced in the winter and cool air in the summer. Efficiency is determined by the length and depth of the trench as well as the air flow rate. The duct should preferably be laid at a frost-free depth of around 1.5 m depending on where in the country it is. For maximum efficiency, the duct should measure no less than 25-30 m in length and have a low air flow rate.

Fire safety information
Polypropylene (PP) and Polyethylene (PE) are combustible materials. Traditional fire dampers must be installed in areas that are sectioned off. PP and PE plastics are composed of carbon and hydrogen atoms. During combustion, a reaction with oxygen occurs that results in the production of water and carbon dioxide.

Radon
Uponor UVS is sealed tight, preventing any radon gases from entering the ventilation system. Uponor wall sleeves or any other type of radon safe solutions which retain a tight seal between plastic and concrete should be used for duct routing through basement walls and foundation plates.

Chemical resistance
The materials have a good resistance to most of the substances to which they are likely to be exposed. For information about resistance to a specific substance, go to uponor.se/infra.

Pressure drop
Pressure drop charts relating to conventional ventilation ducts of sheet metal can be used to calculate the pressure drop of Uponor UVS.

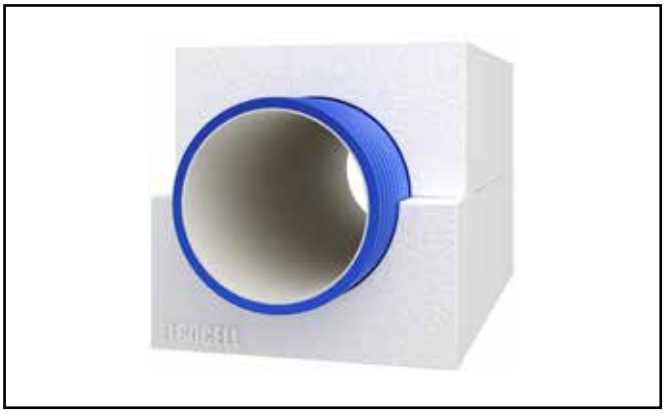
Static electricity
Polypropylene (PP) and Polyethylene (PE) act as insulators and do not conduct electricity. An air flow of more than 15 m/s together with a particle laden air stream however, in unfavourable conditions, lead to static electricity and high voltage in the ductwork. This problem is eliminated when the pipes are located underground. In an open installation, however, the excess voltage is led off via a copper wire that is screwed onto the exterior of the pipe and then earthed.

Operating temperature
The PE material requires a constant air temperature of between -40 °C and +45 °C. Maximum temperature allowed in the short-term is +80 °C. The PP material requires a constant air temperature of between -40 °C and +60 °C. Maximum temperature allowed in the short-term is +95 °C. The material becomes more rigid and less impact resistant at low temperatures and more pliable at high temperatures.

System and material data

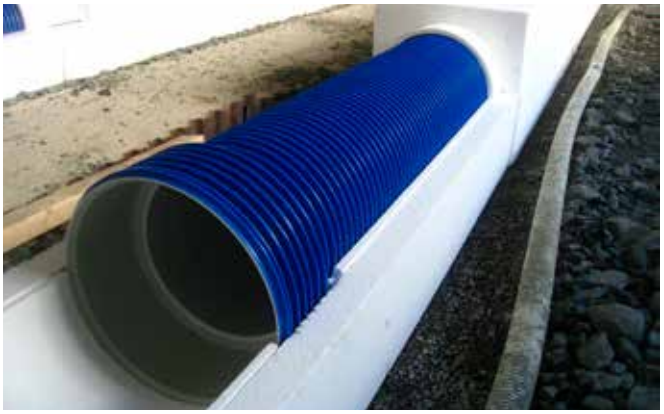
Properties	Unit	PP material	PE material
Density	kg/m^3	900	940-960
Linear thermal expansion coefficients	mm/m · °K	0.15	1.18-0.20
Thermal conductivity	$W \cdot m^{-1} \cdot K^{-1}$	0.20	0.40
E-module 3 min	MPa	1400-1600	600-800

Suspension
In the case of pile foundations, when there is a risk of severe subsidence, the ductwork underneath the foundation plate should be secured to the construction above. Suspension brackets of stainless steel should be used together with pipe brackets measuring no less than 100 mm at Ø 200-500 and 300 mm at Ø 600-2500. The installation of the suspension brackets should ensure that the pipe is supported on at least half of it's circumference. A suspension bracket should be mounted next to every sleeve at a maximum distance of 1.5 m at Ø 200-315 and 2 m at Ø 400-2500.



Tightness
Uponor UVS is a sealed and reliable system. The joint seal is secured by applying a high packing pressure during and after installation. Uponor ventilation pipes are tightly sealed but should still, in areas where the water table is high, be tested for leakages in line with NS3420-V before being backfilled.

Insulation/heat loss
Polyethylene (PE) and Polypropylene (PP) are low thermal conductivity materials and insulation is usually not needed when the ductwork is located underground beneath the building. However, insulation is generally necessary when the ductwork consists of heated air pipes that are not located underground beneath the building. However, insulation may still be necessary if the ductwork is placed externally to the building. The simplest way to insulate is to use polystyrene insulation boxes such as Elgocell EPS PIPE - VENT. However, other types of insulation such as ground insulation boards, etc., may also be used.



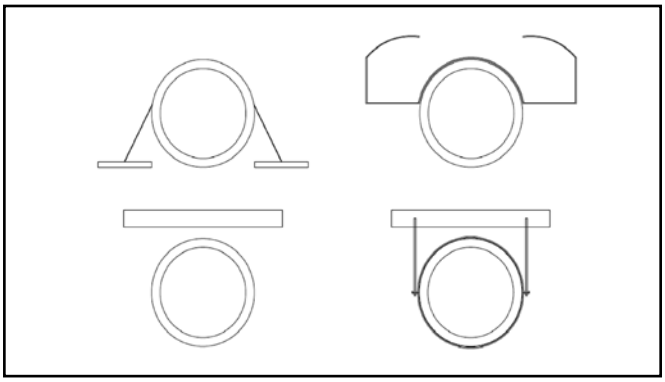
Packaging/cleaning
All pipes and pipe fittings are delivered pre-packed. No packaging should be removed prior to installation. Most general cleaning products and detergents may be used to clean the ductwork without causing damage to the pipes.

Technical information

Groundwater level installation

When installing at groundwater level, the ducts should preferably be laid at a slight incline to the lowest point so as to facilitate elimination of possible condensation. If positioned correctly, the ventilation ducts underneath the building will not need to be secured as the actual weight of the building and the filling material around the pipe keep the ducts in place. Unless the water table level can be lowered, it may be necessary to suspend the pipes during installation. If the ducts are laid freely in a fine-grained material outside of the building, they may have to be weighed down to prevent any uplift. When laid in a more coarse-grained material at a depth greater than the diameter of the pipe, the weight of the backfill material is usually sufficient. The simplest way in which to weigh down a pipe is normally by using Geotextile, anchor plates or casting the pipe in concrete. The table below indicates in kg/meter weight is required to prevent flotation when the entire duct is under water.

Di	Load in kg/meter
200	25
250	40
315	60
400	125
500	195
600	330
800	560
1000	855
1200	1235
1400	1660
1600	2180
2000	3390
2500	5310



Requirements specification - Uponor requirements dimension 200-500

The following is a comparison with the requirements of Nordic Poly Mark for SS-EN 13476 and an indication of the high additional product requirements imposed by Uponor.

Requirements specification - Uponor requirements

Properties	Reference to SS-EN 3476, NPG/PS 103:2006	Nordic Poly Mark SBC EN13476	Uponor additional product requirements
Impact resistance - pipe	0 °C; drop 1.0 m	10 °C; drop 1.0 m	0°C; drop 2.5 m -20 °C; drop 2.0 m
Ring flexibility - pipe	30 % of Di	30 % of Di	60 % av Di
Pipe joint tightness with sealing ring	Requires sleeve and spigot end deformations of 5 % and 10 %. SS-EN1277, DS-EN1277: Requirement B (deformation) must be met.	Requires sleeve and spigot end deformations of 10 % and 15 %. SS-EN1277, DS-EN1277: Requirement B (deformation) must be met.	Requires sleeve and spigot end deformations of 20 % and 30 %. SS-EN1277, DS-EN1277: Requirement B (deformation) must be met.
	≤ dim 315 = 2° > dim 315 = 1,5° SS-EN 1277, DS-EN 1277: Requirement C (deflection angle) must be met.	≤ dim 315 = 2° > dim 315 = 1,5° SS-EN 1277, DS-EN 1277: Requirements D (deformation and deflection angle) must be met.	≤ dim 315 = 4° > dim 315 = 3° SS-EN 1277, DS-EN 1277: Requirements D (deformation and deflection angle) must be met.
Long-term properties of the sealing ring	100-year value at 1.5 bar	100-year value at 1.5 bar	100-year value at 2.0 bar
Sealing ring	To comply with SS-EN 681-1 or -2 at 45 °C	To comply with EN 681-1 or -2 at 45 °C	To comply with EN 681-1 or -2 at 60 °C
Resistance to a combined external load and high temperature. EN 1437:1998	To comply with SS/EN 681, DS/EN 681 parts 1 or 2 at 45 °C	To comply with SS/EN 681, DS/EN 681 parts 1 or 2 at 45 °C	

1) The following applies

- **Vertical deformation: ≤ 9 %**
- **Deviation from straightness of bottom inlet: ≤ 3 mm**
- **Bottom inlet radius: ≥ 80 % of original**
- **Weld joint gap: ≥ 20 % of material thickness**
- **Tightness at 0.35 bar/15 min: Leakage must not occur**

Marking dimension 200-500

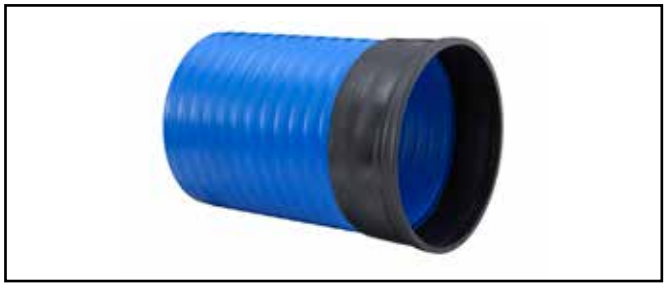
Below is an illustration and explanation of Uponor underground ventilation markings.

uponor	Ventilation	UVS	PP	450/400	SN8
Manufacturer	Area of use: Ventilation	Product system	Material: Polypropylene	Ext./Int. diameter	Ring stiffness classification

UD	❄	⑤	09 06 2016 13
Area of use UD = underneath and outside of buildings	Ice crystals. Manageable at low temperatures.	Manufacturing unit ⑤ = Fristad	Date and time of manufacture: day/month/year/hour

Requirements specification - Uponor requirements dimension 600-1000

The following overview is a comparison of the requirements that must be met according to SS/EN 13476 and Nordic Poly Mark. These requirements apply in addition to regular production controls.
For up to date requirement specifications, go to www.uponor.se/infra.



Requirements specification - Uponor requirements

Properties	Reference to SS-EN 13476	Nordic Poly Mark SBC EN 13476
Impact resistance - pipe	0 °C; drop 1.0 m	-10 °C; drop 1.0 m
Pipe joint tightness with elastomeric sealing rings	Requires sleeve and spigot end deformations of 5 % and 10 %. SS-EN 1277: Requirement B (deformation) must be met.	10 % and 15 % deformations of sleeve and spigot end as per SS-EN 1277 are required: Requirement B (deformation) must be met.
	The following joint deflection angle is required: ≤ dim 315 = 2° dim 315-630 = 1.5° ≥ dim 630 = 1° SS-EN 1277: Requirement C (deflection angle) must be met.	The following joint deflection angle is required: ≤ dim 315 = 2° dim 315-630 = 1.5° ≥ dim 630 = 1° SS-EN 1277: Requirements D (deformation and deflection angle) must be met.
Resistance to a combined external load and high temperature as per EN 1437:1998.	No requirement	Only the dimensional requirement up to 315 mm requirement see 1)

Marking dimension 600 - 1000

uponor	09/06/2016
Manufacturer	Date and time of manufacture day/month/year

UVS	Ø 1000	⑤	1150
Product system	Internal diameter	Manufacturing unit ⑤ = Fristad	Batch number

Requirements specification - Uponor requirements dimension 1200-2500

The overview below lists the requirements imposed in connection with the manufacturing of Uponor UVS. For regular production controls, the internal product requirements of Uponor shall apply in line with factory standards 750 and SS-EN 13476.

Requirements specification - Uponor requirements

Properties	Reference to SS-EN 13476 and SBC EN 13476	Uponor requirements
		Factory standard 750 in compliance with SS-EN 13476 and SBC EN 13476

Marking dimension 1200 - 2500

Uponor	23/2016
Manufacturer	Date and time of manufacture-week/year

Art. No. 1051453	Ø 1200	L 6000	Info
Article number	Internal diameter	Pipe length	Order No. and project

Pipe labelling should be done on top of the pipe packaging.

Acceptance inspection and management

Acceptance inspection

An acceptance inspection should be carried out as soon as possible following the delivery of products to the job-site specified. All products should be checked against the delivery note upon arrival. It is important to check all products upon arrival as liability is then transferred to the recipient.

Transport

The pipe sleeves should be packed in a staggered manner to ensure that they lay free and unobstructed. When not pre-bundled, no pipes must protrude more than 1 m over the back of the delivery vehicle. In the case of pre-bundled pipes, however, the rearmost wooden frame should rest on and not beyond the truck bed.

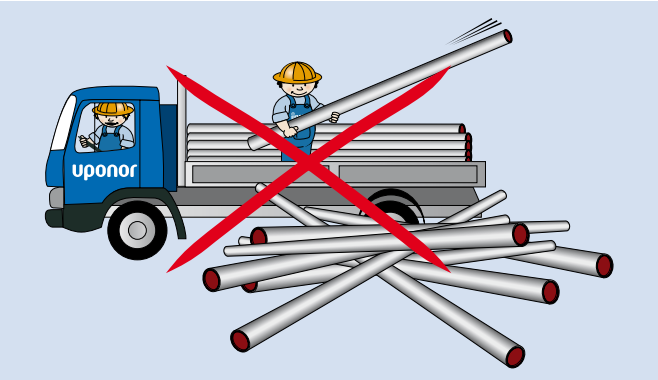
Handling

Pipes and pipe fittings must never be tipped but should be carefully lifted off the truck. Large bundles of pipework should be offloaded using lifting slings, or a forklift truck. Make sure the site area is prepared for the arrival of goods. We recommend that delivery is made as close to the installation site as possible. Loose pipes should be kept flat and held together with latches and packaging frames. The pipes should not be stored on top of sleeves. Transportation of products around the site should be kept to a minimum. The pipes and pipe fittings should generally be handled and transported as carefully and as little as possible. If stacking pipes on-site, make certain that the stack of pipes is safe and secure. Transport, handling and storage is carried out using the original packaging. Pipes and pipe fittings should therefore be kept in their original packaging as provided by the factory for as long as possible.

The impact resistance of plastic materials decreases in falling temperatures and should therefore be handled with extra caution in cold conditions.

Recommended maximum pipe stacking heights.

Ø 200-500	4 bundles
Ø 600-800	3 layers
Ø 1000	2 layers
Ø 1200-2500	1 layer



Installation of pipes and fittings Ø 200-315

Installation of pipes and fittings should be carried out according to local standards.

The pipes should be lifted into the pipe trench either manually or by using lifting slings. Keep the pipes in their original packaging and make sure they are not damaged when moved.

1. Fit the sealing ring in the second groove from the spigot end. Apply Uponor grease to both the sleeve and sealing ring.

2. Use a wooden block to avoid damaging the elbow during assembly. Alternatively, use an iron bar or a spade.

3. The pipe should be fitted to the sleeve base plate. Make sure there is no gap between the pipe end and sleeve base plate Directional changes of ≤ 4° are achieved by a joint deflection at Ø 200 ≤ 315.

4. The pipes should be fitted to the sleeve base plate. Make sure there is no gap between the pipe end and sleeve base plate Directional changes of ≤ 4° are achieved by a joint deflection at Ø 200 ≤ 315.

Installation of pipes and pipe fittings Ø 400-500

Installation of pipes and fittings should be carried out according to local standards.

The pipes are lifted into the pipe trench with lifting slings. Keep the pipes in their original packaging and make sure they are not damaged when moved.

1. Use a jigsaw or handsaw to cut the pipe to the desired length. Saw in the groove between two ribs. Once cut, use a knife or file to remove any excess burr. Fit the sealing ring in the second groove from the spigot end. This ensures optimal tightness.

2. Apply Uponor grease to the sealing ring and inside the sleeve to facilitate assembly.

3. The simplest way in which to install the pipes is to push the pipes together with the digger bucket. Remember to use a bucket spacer so as not to damage the pipes. Elbows and other pipe fittings are most easily assembled by attaching ratchet straps at both ends that are then pulled together.

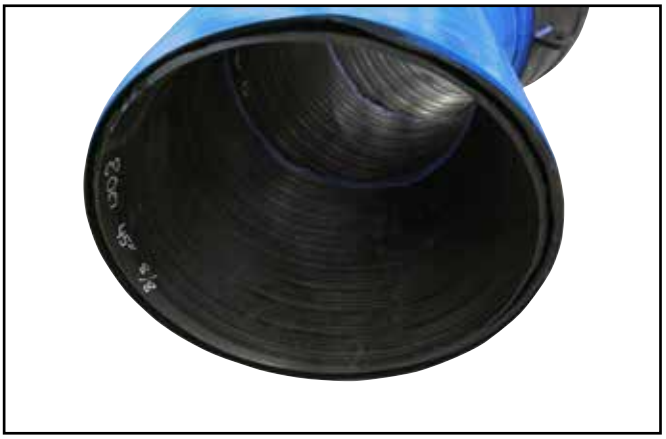
4. The pipe should be fitted to the sleeve base plate. Make sure there is no gap between the pipe end and sleeve base plate Directional changes of ≤ 3° are achieved by a joint deflection at Ø 400 ≤ 500.

Installation of pipes and pipe fittings Ø 600-1000

Installation of pipes and fittings should be carried out according to local standards.

The pipes are lifted into the pipe trench with lifting slings. Keep the pipes in their original packaging and make sure they are not damaged when moved.

Remove all packaging and clean the pipe ends to remove any sand particles or other contaminants from the assembly surfaces. Make sure the gasket is facing the right way and correctly in place. Apply Uponor grease on the sleeve gasket.



When cutting the pipe, mark the length of the pipe and cut along the line with a jigsaw or sabre saw. NB! When cutting the pipe, open up the end of the pipe, as shown in the picture, to allow for the pipe to fit easily into the sleeve. When opening the end of the pipe profile, the outer wall of the pipe folds down and acts as a chamfer, preventing the sealing ring from getting damaged during assembly.
Measure the depth of the sleeve and make a note of the measurement obtained on the insertion sleeve before starting to assemble the different components.

The simplest way in which connect pipes is to push them together with the digger bucket. Remember to use a spacer between the digger bucket and pipes.
Assembling pipes with the help of a machine requires extreme caution and control. The assembling of pipes is best done using two lever hoists attached to ratchet straps or assembly ears. To facilitate assembly, assembly ears have been pre-welded onto elbows and other pipe fittings. Two sections are welded onto the end of each pipe for dimensions ≥ 600 mm. Align the pipes both horizontally and vertically. To facilitate assembly, support the insertion sleeve with, for example, a board. Pull at the same rate to ensure that the spigot end enters the pipe sleeve in a straight manner. If the spigot end enters the pipe sleeve at an angle, the pipe will get stuck and the entire process will have to be repeated. If the packing pressure is high, the anchor points may have to be moved during assembly.

An external visual inspection of the joint should be carried out to ensure that the entire insertion depth is inside the pipe sleeve. Directional changes of ≤ 1° are achieved by a joint deflection at Ø 600-1000.

Installation of pipes and fittings Ø 1200-2500

Installation of pipes and fittings should be carried out according to local standards.

The pipes are lifted into the pipe trench with lifting slings. Keep the pipes in their original packaging and make sure they are not damaged when moved. Pipes and pipe fittings measuring Ø 1200 or more are manufactured to exact lengths as per drawings.
For detailed positioning of the different parts, please study carefully the drawing from Uponor.

1. Remove all packaging and clean the pipe ends to remove any sand particles or other contaminants from the assembly surfaces. To facilitate assembly, apply Uponor grease on both the sleeve gasket and the spigot end of the pipe. Check that the gasket is folded inwards and not damaged.

2. The simplest way in which connect pipes is to push them together with the digger bucket. Remember to use a spacer between the digger bucket and pipes. Assembling pipes with the help of a machine requires extreme caution and control. Assembly is best done using two lever hoists attached to ratchet straps or assembly ears. To facilitate assembly, elbows and other parts have been fitted with assembly ears. Two ears are welded onto each pipe end for dimensions of ≥ 1200 mm.

3. To facilitate assembly, support the insertion sleeve with, for example, a wooden board. Pull at the same rate to ensure that the spigot end enters the pipe sleeve in a straight manner. If inserting the spigot end at an angle, the pipe might get stuck as a result of which, the entire process has to be repeated. If the packing pressure is high, the anchor points may have to be moved during assembly.

4. A visual inspection of the joint exterior is recommended to ensure the gasket has not become distorted. The edge of the spigot end should fit snugly against the sleeve.
Directional changes of ≤ 1° are allowed.

Assembly of other components

Ventilation tower

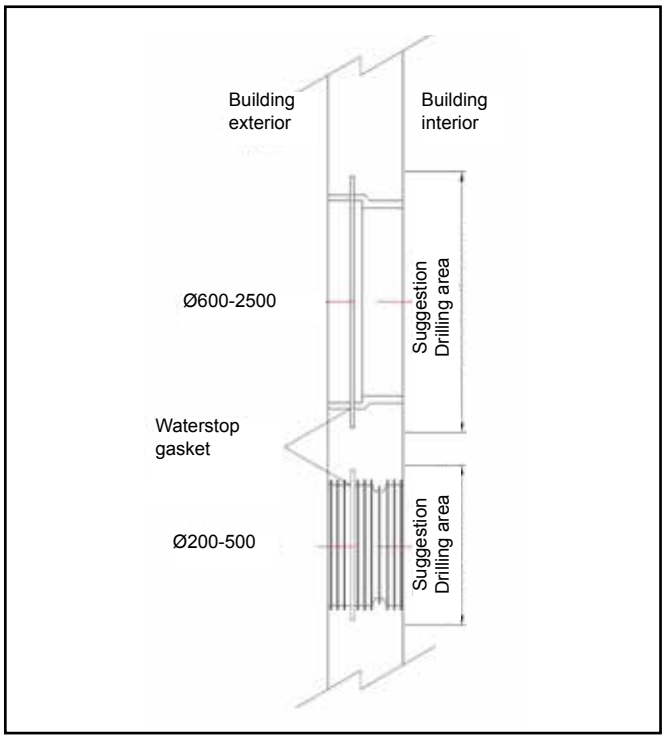
The tower is fitted with lifting lugs for safe handling when the tower is lifted into place. An excavator or crane is required to lift the tower. The tower should be positioned on a 300 mm thick base of macadam. To facilitate connection with pipe-work, push with the excavator bucket or crane. A lever hoist can also be used. The tower is fitted with one end sleeve for pipe connections measuring Ø 200-1000 mm. For measurements of Ø 1200-2500, the tower is generally fitted with one spigot end to facilitate connection to pipes with sleeves.

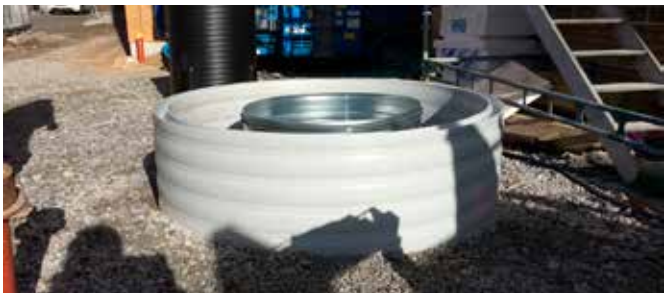
Ventilation cap

Lift the ventilation cap in the lifting lugs and place the cover on top of the tower. The lower edge of the cap is perforated with holes. Use the holes to pre-drill into the tower as shown in the picture. The accompanying black spacers are used to ensure that the cap is positioned in the centre of the tower. The correct distance is measured inside the edge of the ventilation cover, i.e. between the cap and the tower. See picture. Secure the cap with a wood screw. We recommend a stainless steel acid-proof wood screw.

Wall sleeve

To facilitate connection of pipes, the wall sleeve should be placed with the sleeve facing outwards from the building. Make sure to fit the waterstop gasket that comes with the wall sleeve. The gasket should be fitted onto the outward-facing sleeve. The wall sleeve is manufactured according to the thickness of the wall into which it is to be cast. The wall sleeve comes with a collar of pre-drilled holes. Use these holes to attach the wall sleeve to the cast.





When installing the combination cap, make sure to connect the air outlet in the tower to the exhaust duct located in the middle of the cap.

Attach the cap to the lifting lugs and lift it into place.

Pre-drill holes in the tower before attaching the tower cap.

Refer to the distances provided and illustration shown. Use the distances to make sure the cap is centred on top of the tower.

Areas of use

Underground car park

Underground car parks often lack the space needed for straightforward designs and duct routing. By positioning underground ventilation systems and ducts beneath or on the side of a building, additional space is freed up to facilitate the construction work. A safe and space-saving solution. Uponor system solutions are delivered to the upper edge of the foundation plate/basement wall from where traditional sheet metal ducts are used. Access hatches are usually positioned on the metal sheet inside of the building, prior to the plastic duct. See illustration 1.

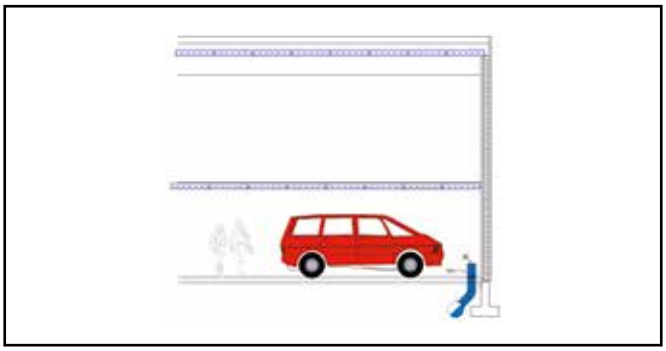


Illustration 1

Industrial premises

Problems caused by low ceilings and difficult duct routing can be solved by placing sections of the supply and exhaust air system underground. Underground ventilation systems offer further structural engineering solutions that may result in lower building costs and additional usable surfaces. The ventilation ducts can be placed so as not to interfere with production, overhead cranes and other equipment. The fan rooms can be located in the basement while the location of supply and exhaust air units is solved with the help of an Uponor tower on the outside of the building. Uponor systems are installed below and outside of the building while inside, standard sheet metal ductwork is used. Access hatches are usually positioned on the metal sheet inside of the building, prior to the plastic duct. See illustrations 2 and 4.

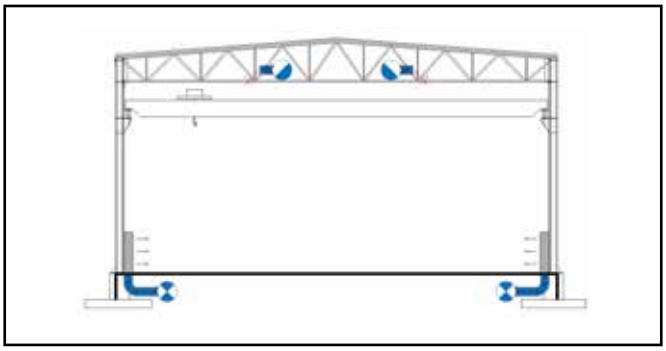


Illustration 2

Tower solutions

The fan rooms can be located in the basement while the location of supply and exhaust air units is solved with the help of an Uponor tower on the outside of the building. Uponor towers can be used to serve more than one aggregate. The geothermal system provides a positive supply air effect with warm air in the winter and cool air in the summer. As a result, energy consumption is reduced. To facilitate elimination of any possible condensation, the duct is laid at a slight incline from the fan room to the tower. Wall sleeves are used to prevent water or radon to seep through the basement wall. Uponor systems are installed beneath and outside of the building while sheet ducts are used along the interior of the basement wall. Access hatches are usually positioned on the sheet inside of the building, prior to the plastic duct. See illustrations 3, 4 and 5.

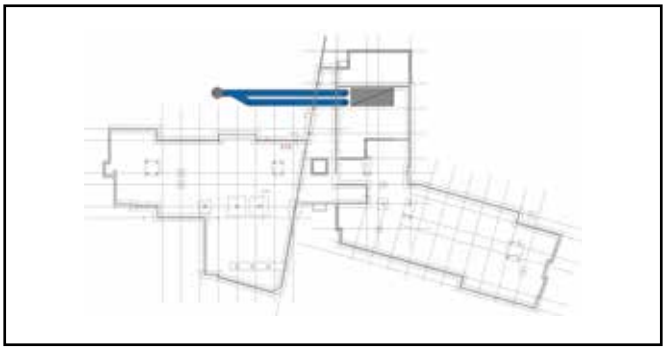


Illustration 3

Supply and exhaust air distribution

Problems caused by low ceilings and difficult duct routing can be solved by putting sections of the supply and exhaust air system underground. Underground ventilation systems offer further structural engineering solutions that may result in lower building costs and additional usable surfaces. The fan rooms can be located in the basement while the location of supply and exhaust air units is solved with the help of an Uponor tower on the outside of the building. Supply and exhaust ducts located underneath a building do not usually have to be insulated due to the very small amount of heat loss. Uponor systems are installed below and outside of the building while inside, standard sheet metal ductwork is used. Access hatches are usually positioned on the metal sheet inside of the building, prior to the plastic duct.
See illustrations 4 and 5.

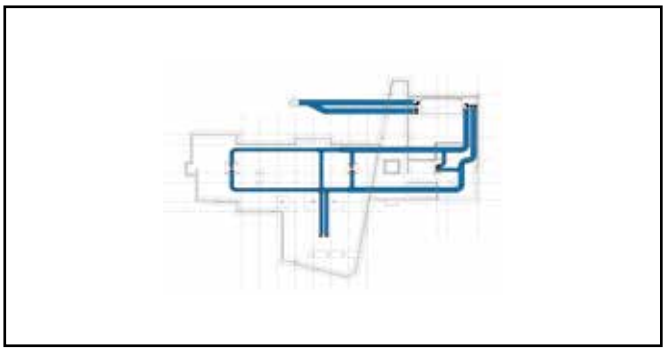


Illustration 4

Shared or external technical room

The fan room can either be located separately to the building or shared by several buildings. The supply and exhaust air flow is then distributed between the buildings below ground. The supply and exhaust air units located outside of the building will need to be insulated while the units located underneath the building will not need any insulation due to the insignificant amount of heat loss. Access hatches are usually positioned on the metal sheet inside of the building, prior to the plastic duct. See illustration 5.

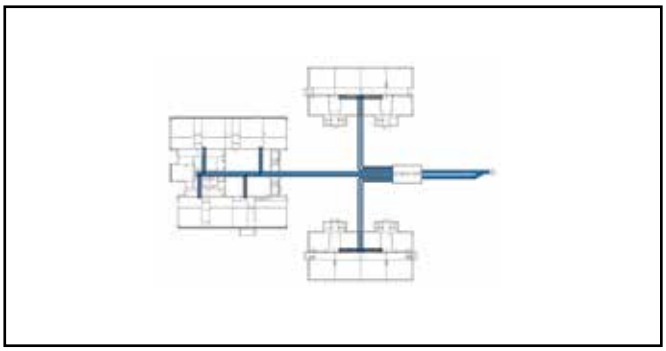
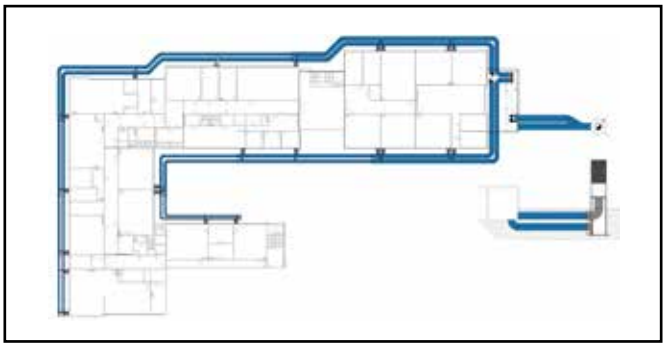


Illustration 5

Areas of use

Renovation of existing buildings

There is often not enough space in renovated buildings for the redesigning of existing ventilation systems. Problems caused by low ceilings and difficult duct routing can, however, be solved by locating sections of the supply and exhaust air system underground. Ductwork and branch ducts can either be located exterior to the building or trenches can be dug inside the building. Access hatches are usually positioned on the metal sheet inside of the building, prior to the plastic duct. See illustrations 3, 4 and 6.



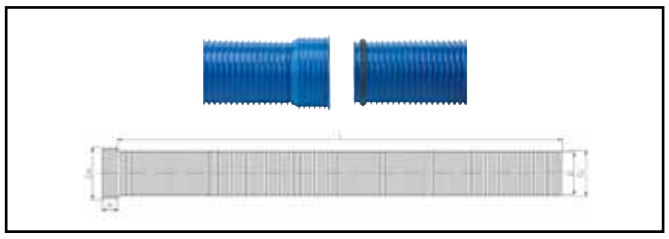
Product range

Pipes

Lengths other than 6 meters for Ø 600-2500 are available upon request.

NB! Ø 1200-2500 are manufactured to exact lengths as per drawing and cannot be cut on- site. Ø 200-1000 are delivered at lengths of 6 meters and can be cut to size on-site.

Uponor No.	Nominal diameter (D)	Sleeve depth (M)	Interior/exterior dimensions (Di/Dy)	Exterior sleeve dimension (Dm)
1051446	200	119	175/200	224
1051447	250	133	220/250	277
1051448	315	150	277/315	346
1051449	400	170	396/450	488
1051450	500	204	492/560	605
1000747	600	220	600/675	723
1000757	800	250	800/900	955
1000787	1000	300	1000/1125	1185
1051453	1200	160	1200/1370	1350
1054842	1400	210	1400/1580	1560
1051454	1600	210	1600/1780	1760
1051455	2000	210	2000/2180	2170
1051456	2500	210	2500/2740	2720

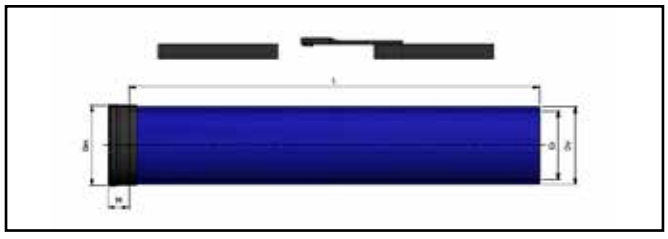


Pipe construction Ø 200—500 PP

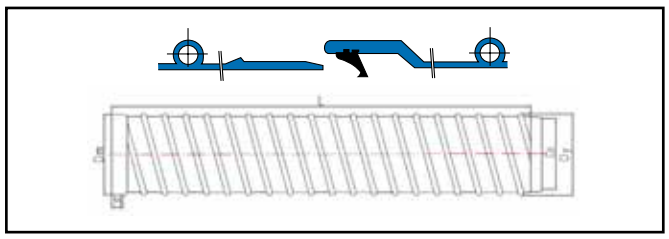
Sealing ring

NB! 2 sealing rings per unit.

Sealing ring Uponor No.	DN-pipes
1053656	200
1053657	250
1053658	315
1050363	400
1050364	500



Pipe construction Ø 600-1000 PP



Pipe construction Ø 1200—2500 PE

Double pipe sleeve

NB! 1 sealing ring per pipe length.

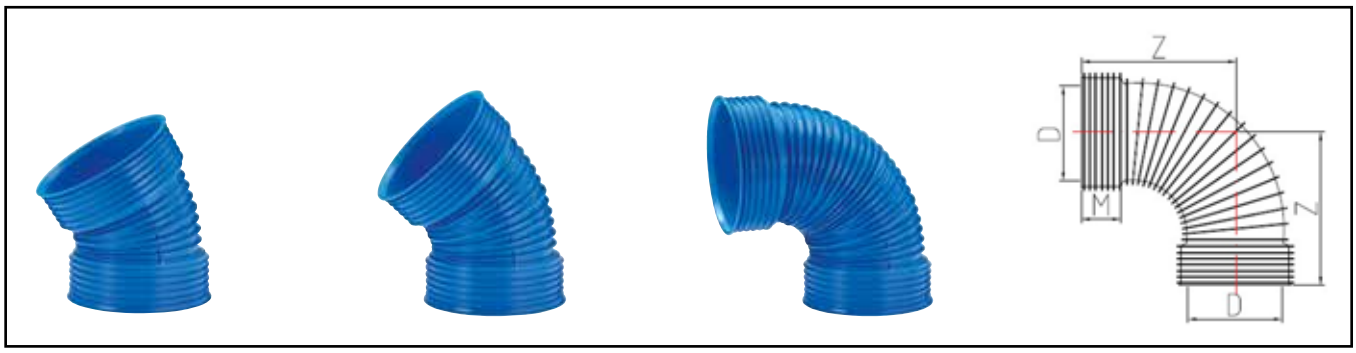
Double pipe sleeve Uponor No.	Double pipe sleeve Total length
1053656	200
1053657	250
1053658	315
1050363	400
1050364	500

Product range

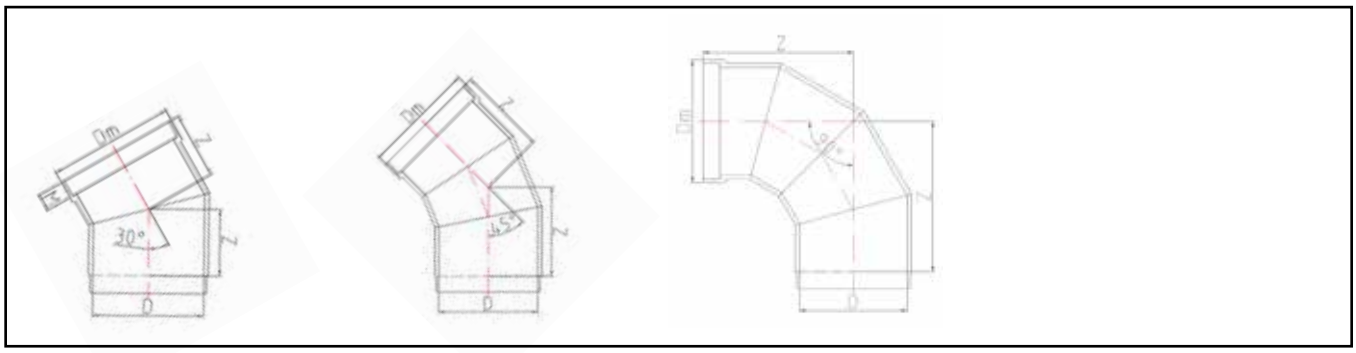
Elbows 30°, 45° and 90°

Customised elbow angles or dimensions are available upon request. Ø 600-2500 elbows are manufactured with mounting loops to facilitate installation. 2 sealing rings per elbow are required for smaller elbows of Ø 200-500.

DN	M	30° Z mm	Uponor No.	45° Z mm	Uponor No.	90 Z mm	Uponor No.
200	96	148	**1051472**	163	**1051467**	182	**1051462**
250	113	173	**1051473**	196	**1051468**	216	**1051463**
315	134	212	**1051474**	240	**1051469**	260	**1051464**
400	182	300	**1051475**	363	**1051470**	626	**1051465**
500	210	340	**1051476**	410	**1051471**	704	**1051466**
600	220	500	**1000754**	750	**1000749**	950	**1000748**
800	250	500	**1000784**	800	**1000759**	1200	**1000758**
1000	300	600	**1000797**	900	**1000789**	1400	**1000788**
1200	160	600	**1051499**	900	**1051503**	1500	**1051507**
1400	210	600	**1054832**	975	**1054833**	1600	**1054834**
1600	210	600	**1051500**	975	**1051504**	1650	**1051508**
2000	210	600	**1054861**	1050	**1054865**	1800	**1054873**
2500	210	700	**1054862**	1250	**1054866**	2100	**1054874**



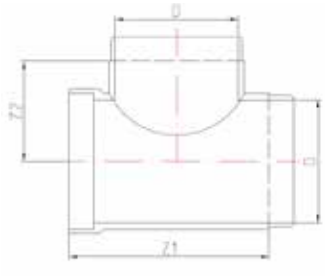
Elbows Ø 200-500



Elbows Ø 600-2500

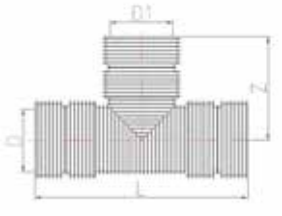
Product range

T-pipe 90°



Uponor No.	DN1/DN2	Z1	Z2
1054981	600 / 600	1100	700
1054982	800 / 800	1300	830
1054983	1000 / 1000	1500	1000
1054984	1200 / 1200	1800	850
1054985	1400 / 1400	2000	950
1054986	1600 / 1600	2200	1050
1054987	2000 / 2000	2550	1250
1054988	2500 / 2500	3200	1500

T-pipe 90°



200 Uponor No.	250 Uponor No.	315 Uponor No.	400 Uponor No.	500 Uponor No.	DN1 DN2
1051477	**1054850**	**1054851**	**1054853**	**1054856**	200
	1051478	**1054852**	**1054854**	**1054857**	250
		1051479	**1054855**	**1054858**	315
			1051480	**1054859**	400
				1051481	500

Building dimensions L and Z

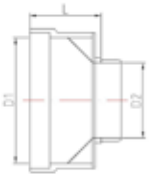
Uponor T-pipe Ø 200-500

	200		250		315		400		500	
	L	Z	L	Z	L	Z	L	Z	L	Z
200	660	310	700	340	800	385	1100	465	1050	540
250			770	390	850	435	1210	480	1100	565
315					950	460	1210	560	1180	620
400							1400	690	1320	740
500									1450	730

Product range

Reduction

Concentric reducers are supplied as standard. Eccentric reducers are available upon request.

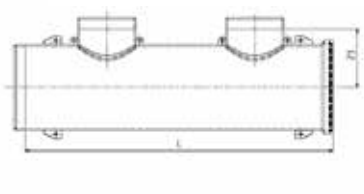


DN 1/ DN 2	250 Uponor No.	315 Uponor No.	400 Uponor No.	500 Uponor No.	600 Uponor No.	800 Uponor No.	1000 Uponor No.	1200 Uponor No.	1400 Uponor No.	1600 Uponor No.	2000 Uponor No.	2500 Uponor No.
200	**1051488**	**1051489**										
250		**1051490**	**1051491**									
315			**1051492**	**1051493**								
400				**1051494**	**1054845**	**1054847**						
500					**1054846**	**1054848**						
600						**1054917**	**1054889**					
800							**1054835**	**1054890**				
1000								**1054891**	**1054892**			
1200									**1054893**	**1054894**		
1400										**1054836**	**1054895**	
1600											**1054837**	**1054896**
2000												**1054897**

Product range

Branch connection

90 degree branch connections are pre-welded at the factory for installation on site. Each connection is listed as a separate part, specifying the L2 distance measured from the sleeve (L2) and the total length of the pipe (L). A pipe can have more than one branch ducts. Z1 dimension branch ducts, as shown in the table, are supplied as standard. Other dimensions are available upon request.



Main duct Branch connection	600 Uponor No.	800 Uponor No.	1000 Uponor No.	1200 Uponor No.	1400 Uponor No.	1600 Uponor No.	2000 Uponor No.	2500 Uponor No.
315	**1054902**							
400	**1054838**	**1054839**	**1054905**					
500	**1054840**	**1054841**	**1054906**					
600		**1054875**	**1054900**	**1054901**				
800			**1054876**	**1054903**	**1054878**			
1000				**1054877**	**1054879**	**1054904**		
1200					**1054880**	**1054881**	**1054883**	
1400						**1054882**	**1054884**	**1054886**
1600							**1054885**	**1054887**
2000								**1054888**

Branch connection Z1

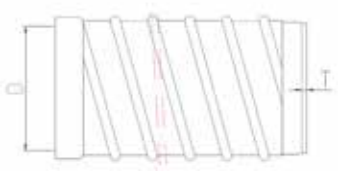
Standard building dimensions

Main duct Branch connection	600	800	1000	1200	1400	1600	2000	2500
200	570	670						
250	570	670	770					
315	570	670	770	870				
400	530	640	750	850	950			
500	560	680	790	890	990	1090		
600		790	900	1030	1130	1230	1430	
800			940	1070	1170	1270	1370	1620
1000				1140	1240	1340	1440	1690
1200					950	1050	1250	1500
1400						1050	1250	1500
1600							1250	1500
2000								1500

Product range

End cap

Dimensions of 1200-2500 are fitted with fully welded sealed end caps. Dimensions of 200-1000 come with outer end caps that are fitted on-site.
Dimensions of 200-500 should be supplemented with 1 sealing ring.



Uponor No.	DN	End cap plate thickness
1051482	200	15
1051483	250	15
1051484	315	15
1051485	400	15
1051486	500	15
1054989	600	20
1054990	800	20
1054991	1000	20
1054992	1200	30
1054993	1400	30
1054994	1600	30
1054995	2000	30
1054996	2500	30

Grease

Tube comes with an applicator

Package	RSK No.	Uponor No.	Weight in grams per package	Quantity per package
Tube	3115136	**1003502**	1000	12
Tube	3115185	**1003501**	225	20

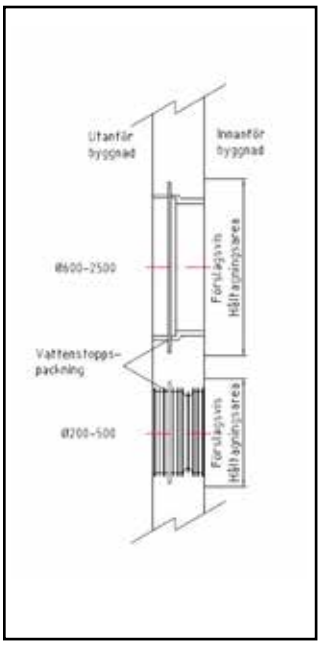
Product range

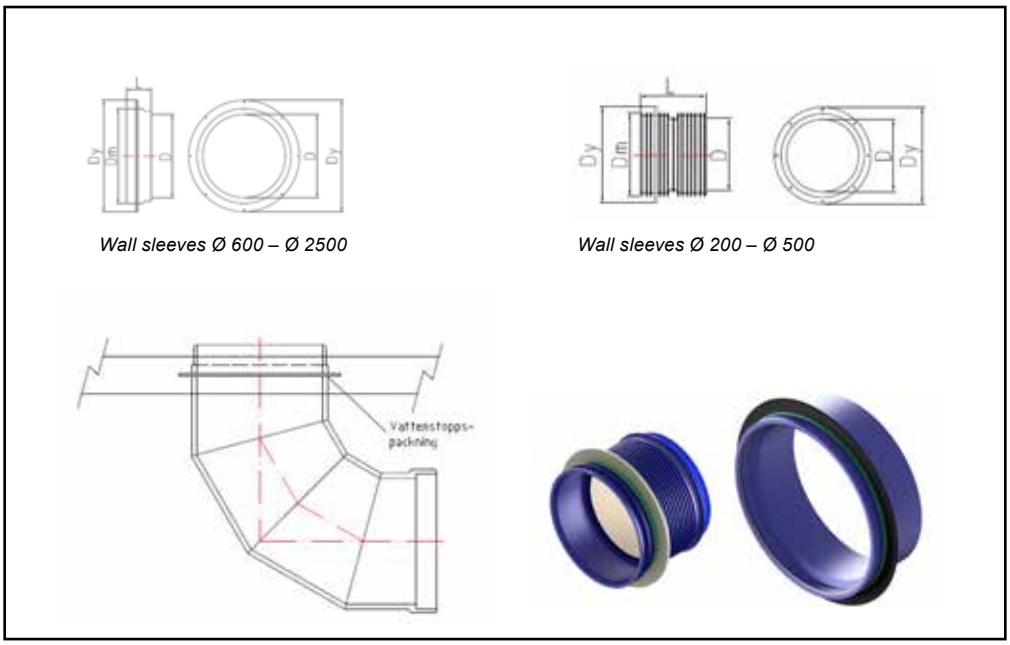
Wall sleeve

Wall sleeves are used for routing through basement walls and foundation plates where there is a risk of a high water table or radon. The wall sleeve acts as an effective barrier against any possible seepage of water/radon around the ventilation pipe. The wall sleeve is available in dimensions of Ø 200-2500 mm and comes with a watertight gasket. All wall sleeves are manufactured according to the thickness of the wall into which they are meant to be cast. When ordering wall sleeves, please specify the thickness of the wall in question. When drilling holes in an existing wall, circular or square holes are recommended as shown in his table.

Wall sleeve Uponor No.	DN	External sleeve DM	Wall collar Dy	Area b x h
1054867	200	224	370	420 x 420
1054868	250	277	420	470 x 470
1054869	315	346	485	535 x 535
1054870	400	488	630	680 x 680
1054871	500	605	740	790 x 790
1054907	600	723	910	960 x 960
1054908	800	955	1140	1190 x 1190
1054909	1000	1185	1370	1420 x 1420
1054910	1200	1350	1550	1600 x1600
1054911	1400	1560	1760	1810 x 1810
1054912	1600	1760	1960	2010 x 2010
1054913	2000	2170	2370	2420 x 2420
1054914	2500	2720	2920	2970 x 2970

** Area based on a total clearance of 50 mm (25 mm on each side of the collar). Check that there is enough clearance for safe filling of concrete.*





Wall sleeves Ø 600 – Ø 2500

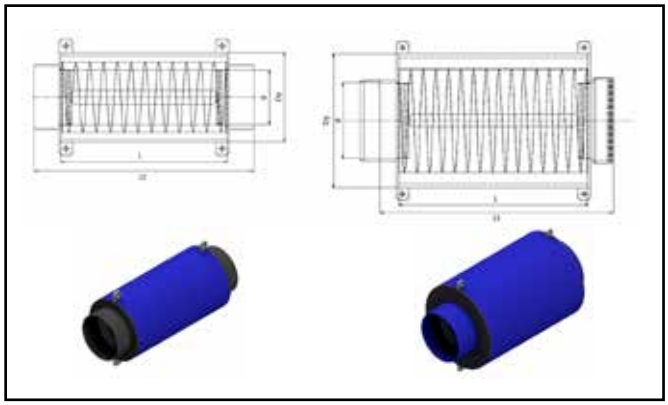
Wall sleeves Ø 200 – Ø 500

The illustration shows dimensioned incisions in a wall with cast sleeves.

Product range

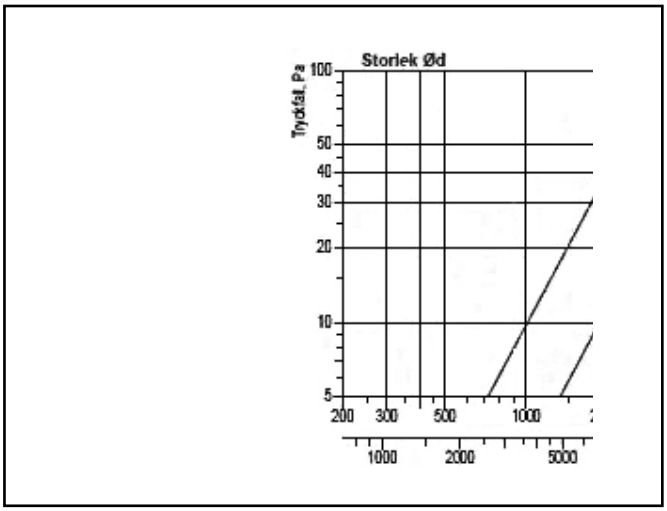
Silencer

When there is not enough space inside a building for installing silencers, we recommend using Uponor UVS silencers. Uponor UVS silencers are supplied encapsulated for installation directly into the ground. The silencers provide an effective way in which to prevent the transmission of sound. Uponor UVS silencers are supplied complete from the factory.



Pressure drop

The pressure drop of silencers Ø 200-400 is the same as that of the duct. For silencers Ø 500-800, please see the pressure drop chart.



Silencer

Uponor No.	DN Pipes	D mm Sound trap	Exterior dimensions Dy mm	Lengths L	Lengths Lt	Attenuation data (frequency curve Hz) 63	125	250	500	1k	2k	4k	8k
1054918	200	200	450	1200	1560	3	5	15	30	37	46	25	12
1054919	250	250	450	1200	1600	2	4	11	25	30	39	14	10
1054920	315	315	560	1200	1615	2	4	10	22	38	28	12	9
1054921	400	400	680	1200	1590	2	4	8	18	25	20	10	8
1054922	500	500	780	1200	1660	4	12	19	29	40	37	22	15
1054997	600	600	880	1500	2160	5	9	20	32	36	33	21	19
1054998	800	800	1090	1500	2240	4	7	20	29	35	30	17	16
1054999	1000	1000	1300	1500	2380	6	8	22	35	36	30	25	22
1055000	1200	1200	1500	1500	2000	5	7	17	26	34	30	21	19

Contact Uponor for other lengths and dimensions.

Product range

Tower solutions

The tower comes as standard in the colour of light grey (RAL 7035) but black is also available upon request. The towers can be fully customised on an individual basis to accommodate the heights, dimensions and connections required. The Uponor towers are convenient and factory-made solutions for installation on-site. They offer long-term, safe and high performance solutions. The towers are made of Polyethylene (PE) and adapted to withstand the Nordic climate. The Uponor caps are made of Alu (5052) seawater resistant aluminium. The caps come separately and should be bolted to the top of the tower. The tower base is fitted with a 110 mm diameter drain that leads directly into the ground. Alternative drainage options must be considered in areas where a direct drainage into the ground is not possible due to high water table or radon. The ducts are laid at a slight incline towards the tower to facilitate elimination of condensation. The drainage prevents rainwater from collecting at the bottom of the tower during heavy rainfalls and winds. The drainage also allows for cleaning and flushing the tower, as and when needed.

Product range

Customised tower designs

The Uponor towers have thick walls and can be adapted to meet the requirements of our customers. Drilling can be done directly into the tower. Before it is possible to drill directly, the tower is usually clad with sheet metal on a framework of wood. Any adjustments is made by the contractor on site. The tower caps area available in the RAL colour of your choice.

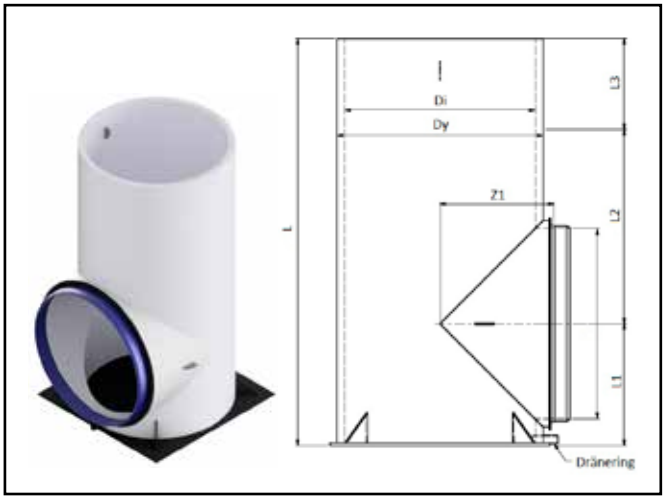
Product range

Supply and exhaust towers

The supply air cap has a pressure drop of 3-8 Pa. The exhaust air cap has a pressure drop of 3-5 Pa. These pressure drops are subject to compliance with the air flow rates recommended. The cap is not included in the tower and must be ordered separately.

Supply and exhaust air towers

Uponor No.	Di/Dy	L	L1	L2	L3	Z1	d
1055017	600/652	3250	550	700	2000	500	600
1055018	800/869	3550	650	900	2000	600	800
1055019	1000/1092	3800	800	1000	2000	750	1000
1055020	1200/1304	4000	900	1100	2000	850	1200
1055021	1400/1530	4200	1000	1200	2000	950	1400
1055022	1600/1735	4500	1200	1300	2000	1050	1600
1055023	2000/2182	4900	1400	1500	2000	1250	2000
1055024	2500/2724	5350	1600	1750	2000	1500	2500



Dimensioning

Recommended maximum air flow rates.

DN	Supply air m³/tim	Exhaust air m³/tim
600	4 200	7 000
800	7 000	12 500
1000	11 000	20 000
1200	16 500	28 000
1400	21 000	39 000
1600	29 000	50 000
2000	45 000	80 000
2500	70 000	120 000

Supply and exhaust air caps

DN	Height m[m]	Aluminium Supply air Uponor No.	Enamelled Supply air Uponor No.	Heating cable Supply air Uponor No.	Aluminium Power output W	Exhaust air Uponor No.	Enamelled Exhaust air Uponor No.
600	410	1054941	1054949	1054973	468	1054957	1054965
800	504	1054942	1054950	1054974	738	1054958	1054966
1000	567	1054943	1054951	1054975	1044	1054959	1054967
1200	693	1054944	1054952	1054976	1530	1054960	1054968
1400	788	1054945	1054953	1054977	2052	1054961	1054969
1600	819	1054946	1054954	1054978	2394	1054962	1054970
2000	1103	1054947	1054955	1054979	3996	1054963	1054971
2500	1355	1054948	1054956	1054980	6102	1054964	1054972

Product range

Combined ventilation cap

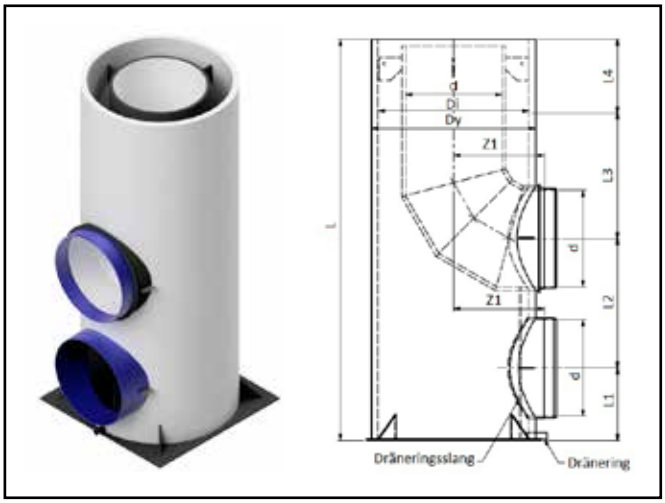
The combination cap has a pressure drop of 3-8 Pa at the recommended air flow rates. The tower is made of Polyethylene (PE) and comes as standard in light grey.

RAL 7035 although black is also available upon request. The cap is made of Alu (5052) seawater resistant aluminium and comes in the RAL colour of your choice. Please specify correct RAL code when ordering.

Combination tower

Uponor No.	Profile	Di/Dy	L	L1	L2	L3	L4	Z1	d
1054923	55	600/652	3950	450	800	700	2000	500	400
1054924	55	800/869	4150	500	900	750	2000	600	500
1054925	55	1000/1092	4350	550	1000	800	2000	750	600
1054926	55	1200/1304	4350	550	1000	800	2000	850	600
1054927	55	1400/1530	4800	650	1250	900	2000	950	800
1054928	55	1600/1735	5350	850	1500	1000	2000	1050	1000
1054929	55	2000/2182	5650	900	1650	1100	2000	1250	1200
1054930	55	2500/2724	6650	1200	2150	1300	2000	1500	1600

Cross-sectional illustration of tower and cap



Dimensioning

Recommended maximum air volume.

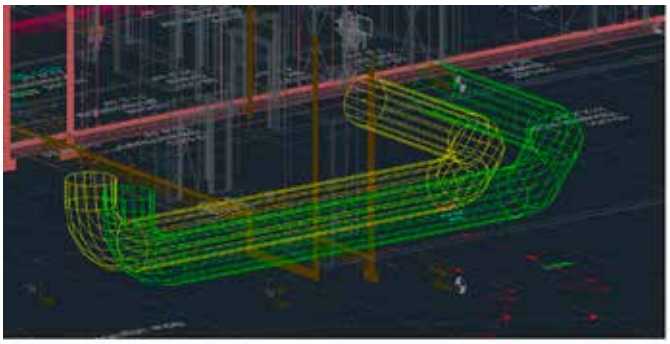
DN	Maximum air volume m³/tim
600	3 200
800	5 000
1000	7 000
1200	8 000
1400	13 000
1600	20 000
2000	29 000
2500	50 000

Combination cap

DN	H mm	Aluminium Uponor No.	Enamelled Uponor No.	Heating cable Uponor No.	W
600	410	**1055001**	**1055009**	**1054973**	468
800	504	**1055002**	**1055010**	**1054974**	738
1000	567	**1055003**	**1055011**	**1054975**	1044
1200	693	**1055004**	**1055012**	**1054976**	1530
1400	788	**1055005**	**1055013**	**1054977**	2052
1600	819	**1055006**	**1055014**	**1054978**	2394
2000	945	**1055007**	**1055015**	**1054979**	3420
2500	1103	**1055008**	**1055016**	**1054980**	4986

CAD applications

Uponor UVS is available in MagiCAD for both AutoCad and Revit.



Notes

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