



PVC-U pipe installation

PVC-U installation(Design、Installation、Construction should be subject to relative technical standard、regulation , this instruction only take as reference for design and construction.

1、Layout

- (1)Riser can be buried or slightly and should be equipped at girder and corner or water supply well
- (2)Pipeline should not designed and constructed near origin of heat, when the external surface of pipe reached 60℃ because of the origin of heat, appropriate action shall be taken in order to put the temperature down.
- (3)Riser should be constructed more than 400 mm away from utensil and geyser.
- (4)Pipeline should not get through flue or other accesses, when needed, proper action should be taken.
- (5)When pipe get through the external wall of basement, leak-proof action should be taken.
- (6)When riser get turn vertically in the middle floor, the construction of branch pipe and riser and horizontal pipe should be accordance with the parameter of the table below:

Floors of riser connected with sanitary instrument	Vertical distance(m)
≤4	0.45
5~6	0.75
7~12	1.20
13~19	3.00
≥20	6.00

- ①Vertical distance from the connecting spot of lowest branch horizontal pipe and riser to the bottom of riser should be accordance with the parameter of the table above
  - ②The horizontal distance between the spot of branch drainage pipe and the lowest horizontal pipe and the bottom of riser should be more than 1.5m;
  - ③The vertical distance between the branch drainage riser and the turning of riser should be more than 0.6m
- Notice: When diameter of the bottom of riser and drainage expand one more grade bigger, the vertical distance on the table above could be turn down to the next grade
- When the nominal height of the bottom of riser does not meet any parameter of the requirement of the table above, the branch drainage pipe of bottom floor should be excluded.

2、Slope of pipeline

Drainage pipe should be laid with a certain slope. Generally, industrial pipe can use the lowest slope accordingly whereas residential use should be applied stick to the relative standard.

3、Vent pipe、H-Pipe

- (1)Riser need constructed with stack vent and vent cap. Under circumstance of unable to meet the requirement, aeration valve should be applied.
  - (2)Stack vent should be no less higher than 0.3m in the building with no access to the roof for people and no less higher than the maximum thickness of accumulated snow. In the building with access to the roof for people, the height of vent pipe should be higher than 2m.
  - (3)The diameter of stack vent should not be smaller than the drainage riser.
  - (4)Vent pipe and drainage riser should be connected every other floor, H-pipe is prior to applied.
- The spot of connection of H-pipe and vent pipe should be 150mm higher than the edge of sanitary appliance.
- (5)Design of vent pipe
    - ①The smallest diameter of vent pipe should be confirmed with the table below;
    - ②When the length of vent pipe > 50m, the diameter should be the same with the sewage pipe;
    - ③The diameter of Joint vent pipe should not be smaller than the vent pipe;
    - ④Two and above sewage vent connected with on vent pipe at the same time, the diameter of vent pipe should be chosen according to the biggest sewage pipe in the table below and the diameter that chosen should not be smaller than any diameter of sewage pipe.
  - (6)When residential sewage riser and vent for waste water using the same vent pipe and connected by H-pipe,H-pipe can be connected with sewage and waste water riser on the different floors, but beneath the spot of lowest horizontal branch sewage pipe should be applied joint vent pipe.
  - (7)Size of distance between centers of H-pipe: dn<110, distance is 180mm, dn=160, distance is 220mm
  - (8)When connecting with H-pipe as vent pipe system, the bottom and top of H-pipe should be connected with sewage riser and waste water riser with H-tail fitting.

Vent pipe	Diameter of drainage pipe (mm)				
	50	75	110	160	200
Compliance vent pipe	40		50		
Ring vent pipe	40	40	50		
Vent pipe			75	110	160

4、Expansion Joint Of Pipe

- (1) The necessity of expansion joint
- Compare to cast-iron pipe, the pvc-u pipe has bigger coefficient of linear expansion, usually is 0.07mm/m·℃ , thus on drainage riser or longer suspended horizontal pipe should applied fixing
- Action in order to prevent the deformation of pipe, otherwise, the pipe might be deformed or even leading to burst.
- (2)w The calculation of length of deformation led by the difference in temperature
- The length of expansion caused by the difference in temperature of fluid of pvc-u pipe could be calculated according to the formula below:
- L—the length of pipe
- △L—expansion length
- α—coefficient of linear expansion, usually is 0.07mm/m·℃
- △L—difference in temperature
- (3)Installation requirement of expansion joint
    - ①When height of each floor are less or equal to 4 m, every floor should be applied an expansion joint on riser, when the height of each floor are more than 4 m, the quantity of expansion joint that should be applied shall be designed according to the expansion length.
    - ②The quantity of expansion joint that should be installed on each main horizontal pipe ought to be determined by the expansion length.
    - ③ When distance between Joining-flow fitting on the branch horizontal pipe and linear pipe is more than 2m, expansion joint should be applied, but the distance between each expansion joint should be no more than 4m, between two expansion joint must have a fixing bracket in order to control the direction of expansion.
    - ④Actual expansion length should no more than the maximum design expansion length.

Dn ( mm )	50	75	110	160
Maximum design expansion length	12	15	20	25

- (4) The place of expansion joint. The place of expansion joint ought to be close to the gathering place of water, the expansion joint of riser should be close to the connecting spot of branch pipe, make the move of branch pipe as small as possible in order to make the system work regularly.
- (5) The depth of insert depends on the ambient temperature of construction site, reserve 15-20mm in winter and 5-10mm in summer
- (6) The horizontal flow stop pipe that connected with many risers ought to apply elastic rubber, with this method, expansion joint is not necessary but the socket end must be fixed, the turning corner must equip dropping-against supporting.
- (7) Socket ends of expansion joint should face towards the direction that water flows.

5、Cleanoutand Examine port

- (1) The bottom and top of drainage riser should install examine port, the center of examine port is 1m away from ground
- (2) Drainage riser happen to at the corner of floor, cleanout or examine port should be applied.
- (3) Every six floors should have a examine port.
- (4) When the angle of turning of water flow is less than 135°, the main horizontal pipe shall set up an examine port or cleanout.
- (5) Horizontal pipe that connects 4 or above connectors of public construction would better apply cleanout.
- (6) linear distance between horizontal pipe and drainage pipe is longer than the parameter in the table below should set up examine port or cleanout.

Diameter (mm)	50	75	110	160
Distance (m)	10	12	15	20