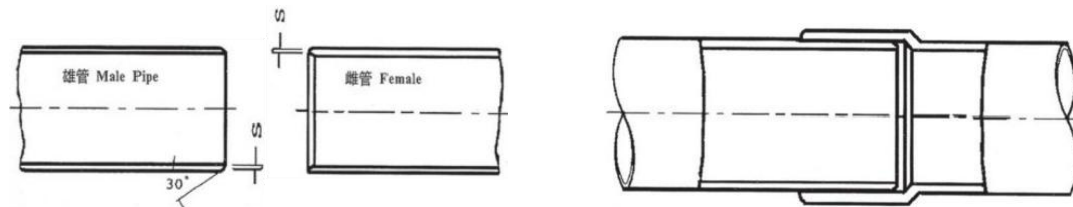


Installation of PVC-U Pipes

Installation Methods - This installation method is for reference only

1. One-time inserting method: This method is suited for connecting small diameter pipes. The installation process is as follows:

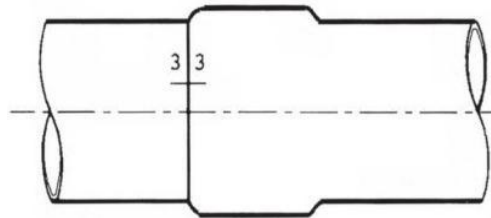
- (1) Whittle two edges of adapter with file or knife at 30° angle (whittling inside angle of female adapter and outside angle of male adapter) until edge thickness comes to about 1 mm (or 1/3 thickness if pipe thickness is over 4 mm). Referring to Figure 1.
- (2) Heat one edge of female adapter at 120-130 °C to make it soft (heating with blow torch or burning charcoal direct or with hot oil or hot sand indirect).
- (3) Smear outside edge of male adapter with adhesive averagely and then insert the edge into female adapter. The inserting depth is 1.2 - 1.5 times of pipe diameter for small diameter pipes, 0.8-1 time of pipe diameter for large diameter pipes in 4" or over.
- (4) After two adapters are connected and adjusted to alignment, cool them with wet cloth or cold water and wipe off the permeated adhesive.



2. Two-time tight inserting method: This method is suited for connecting medium diameter pipes. The installation process is as follows:

- (1) Whittle edges of two adapters at 30° angle, outside angle of male adapter and inside angle of female adapter, same method as one-time inserting method. But to whittle angle of large diameter pipes, first heat edges with blow torch to make it semi-soft, then whittle with knife and trim slightly with file. This can step up installation speed.
- (2) Heat female adapter edge at 120 - 130 °C to make it soft.

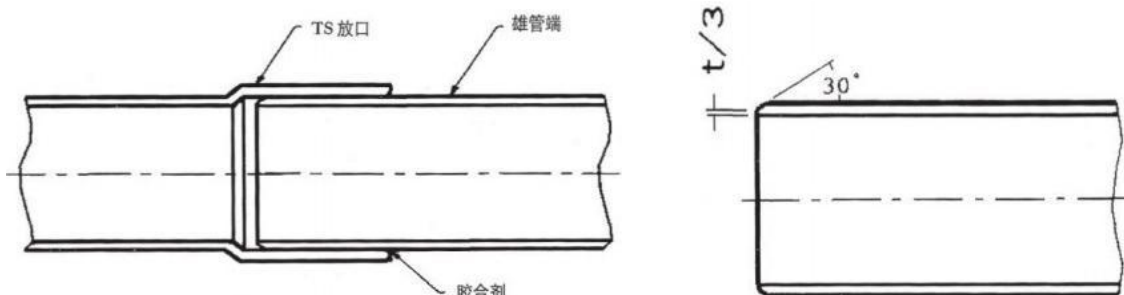
- (3) Prior to smearing male adapter edge with adhesive, spread the edge with lubricant such as butter and insert the lubricated edge into softened female adapter. After adjusting to alignment, cool them with wet cloth or cold water for formation.
- (4) Draw a line on connected edges parallel to pipe length direction, and write numbers on two edges to avoid confusion while connecting. Referring to Figure 2.
- (5) Pull out the male adapter and wipe off the lubricant smeared on two connected ends. Before connecting, smear edges of both male and female adapters with adhesive, then insert and locate the adapters along the drawn straight line mark.



3. TS unheating connection method:

This method is applied to the connection of pre-processed TS or injection fittings. It features its quick and easy installation and especially suitability in places where fire and smoking is strictly prohibited. It allows water to flow within a short time after installation (especially suitable for medium and large diameter pipes). The installation process is as follows:

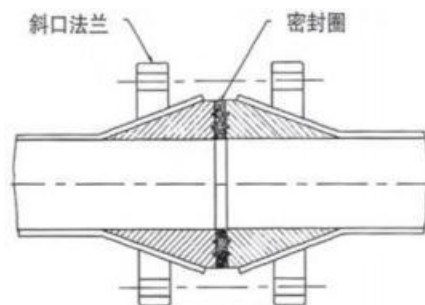
- (1) Whittle outside angle of male pipe, with file (heavy grain) in normal case. In case of large diameter pipe, because filing speed is slower and work efficiency is low, the most ideal way is to heat pipe end locally with a blow torch to make it in semi-soft state, then whittle along circumference with knife until the whole circumference is finished. If the tilt surface is slightly uneven, trim it with file again. Another way is to whittle with round saw knife, but usually this is adopted more frequently by plant operation and less by building site operation. Whittling should be done along 30° angle and remaining edge thickness should be 1/3t (as shown in Figure 3).
- (2) Wipe clear inside of fitting and outside of pipe end with Benzene or dry cloth. Then smear proper quantity of adhesive on both inside and outside of male and female pipes. As soon as part of the solvent volatilizes and adhesiveness is enhanced, insert forcibly in one breath, while rotating the pipe to let adhesive spread evenly (No need to rotate for large diameter pipes).
- (3) Do not remove connected pipes until 30-60 seconds after insertion.
- (4) If two pipes are found too loose in connection, smear adhesive once more, after first smearing gets slightly solid, then smear for a second time before connection.



4. Taper ring connection method:

If PVC-U pipe requires to use solvent belling, refer to Figure 4 to take metal taper flange and taper ring to make solvent belling, then connect them with packing and screw. The installation process is as follows:

- (1) Wipe clear inside of pipe edge and tilt side of taper ring with Benzene.
- (2) Heat pipe edge to make it soft. At the same time smear adhesive on tilt side of taper ring.
- (3) Put taper flange first and then taper ring into softened pipe edge. At this moment, have to make sure taper ring sticks out slightly of pipe edge and flat surface of taper ring stays vertical to pipe axis. Then cool them with water for formation.
- (4) Connect PVC-U solvent belling together or PVC-U solvent belling and valve together. The connection of belling and valve requires to cushion a packing and bolt them with screws.



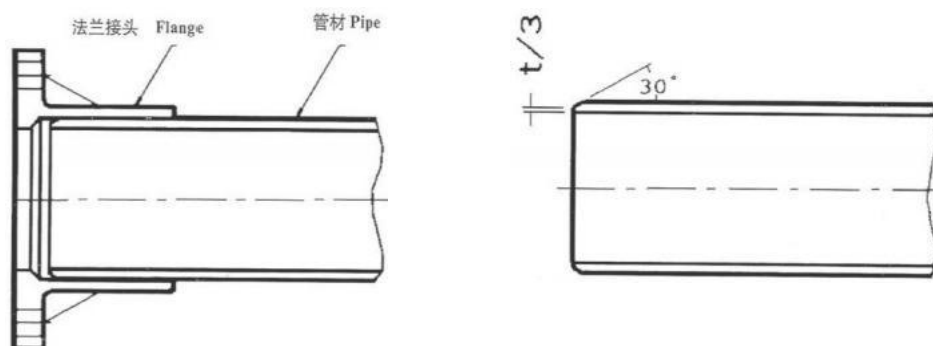
5. Installation of Flange:

- (1) The outside rim of PVC-U pipe should be whittled at a 30° angle. For pipes under 100mm (4"), trim with a file. Above 125mm (5"), heat first with a blow torch to semi-soft, whittle with a knife and then trim with a file.

(2) Sweep and clean the outside rim of the PVC-U pipe insertion part and the inside wall of the flange socket. Then smear rigid adhesive respectively and insert forcibly. For specifications above 125mm (5"), a thick board or wooden angle material may be hammered after inserting to strengthen sealing effect.

(3) Wipe the overflown adhesive with a piece of cloth.

(4) After flange and PVC-U pipe are connected, align the flange part with the flange bolt holes of valve, cushion a packing in between, and connect them with screws and washers. Screwing should be done diagonally to achieve even and close effect.



6. Installation of spigot (live sleeve pipe):

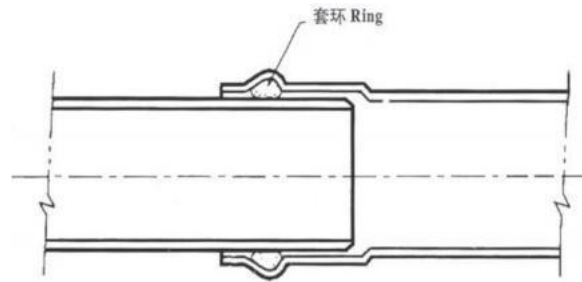
(1) Inspect the outside angle of male adapter.

(2) Take out the ring and wipe it clean, then put it back in.

(3) Smear the inside of ring and insertion part of male adapter edge with lubricant (usually soap water is used).

(4) Put an inserting length mark on male adapter edge (proper gap should be reserved between two adapters for allowing expansion and contraction. Usually about 10mm for small diameter, about 25mm for large diameter).

(5) Connect the male and female adapter (connect small diameter with man power, medium and large diameter should be connected with tensioner).



II. Notice Items of PVC-U Piping Installation:

1. Before concreting the floor of building, run water pressure test on the tap water pipe line according to the regulations of Article 5.0.2.5.0.3, Chapter V of CECS 41:92 "Design and Construction Acceptance Specification for Unplasticized Polyvinyl Chloride Pipes for Building Water Supply". The testing pressure shall not be lower than 0.6Mpa or 1.5 times of the maximum working pressure, and shall be maintained for 1 hour. Concreting can only be done when no leakage is observed. The above water pressure test is generally conducted separately for each floor.
2. Earth coverage over the pipe line is required when testing the water pressure of spigot pipe. If working environment permits, only the spigot joint part may be left uncovered. The purpose of earth coverage before testing is mainly to prevent the spigot joint from disconnecting during the water pressure test. If in the urban area with heavy traffic flow, generally it can be fully covered with earth before testing water pressure.
3. After pipe line construction, water pressure test must be done by section. The length of each section is about 500-1000M, testing hydrostatic pressure is 10kg/cm² or 1.5 times of working pressure, maintain for 1 hour and observe if there is any leakage phenomenon. Vent valve should be installed at higher elevation and pipe ends of the pipeline being tested.
4. Sand filling is required first for pipeline embedment, with a minimum thickness of 10cm. Pipes must not contact directly with stones.
5. Linear allocation governs the pipe for electric conduit on the building floor. If bending is required, a bend angle should be within 90°. The total bending angle of pipeline in a section (between two wiring boxes) shall not exceed 270°, and its wiring length shall not exceed 30M.
6. Prevent the assembled pipe for electric conduit use and wiring boxes from being destructed or damaged during concreting. If there is damage, repair it immediately to avoid affecting subsequent wire pulling work.
7. For pipes embedded in the floor, the number of pipes at one intersection should be 2 or less. It is not allowed to have 3 pipes intersecting at the same position.
8. During floor concreting operation, water and electricity workers should constantly stay on site to handle emergencies on piping.

9. The adhesive for water supply pipe must not contain toxic substances or substances that facilitate the growth of microorganisms, and must not have any impact on the quality of drinking water.
10. Anti-freeze facilities are required for pipeline construction in cold areas.
11. For pipelines with adhesive connection, indoor water pressure test must be conducted 24 hours after connection, and outdoor must be conducted 48 hours after installation.
12. After pipeline installation is completed, water test must be conducted immediately. Otherwise, the residual glue vapor will cause small cracks on the inner wall of the pipe, which can easily lead to pipe burst. Pay special attention to this, especially in winter.