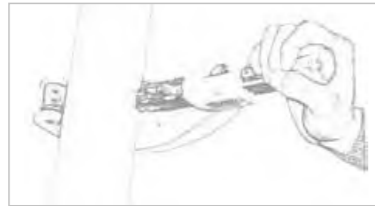
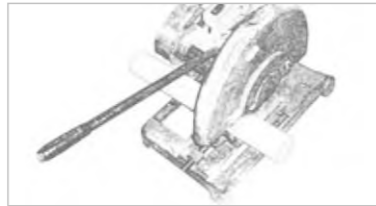


### Pointers During Connection:

1. Use pipe cutter to cut pipes instead of using the cutting machine:



✓  
【Correct】

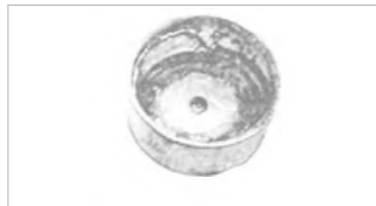


✗  
【Error】

2. Spigot and socket heater should be cleaned or changed before and after use:

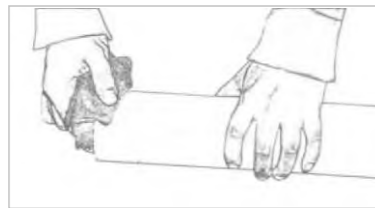


✓  
【Correct】



✗  
【Error】

3. Pipes and fittings need to be wiped clean before welding.

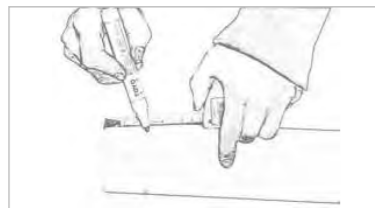


✓  
【Correct】

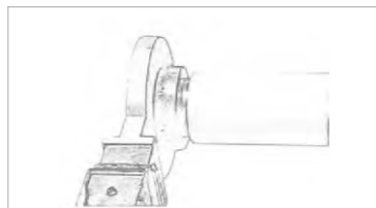


✗  
【Error】

4. Mark the insertion depth of pipe:

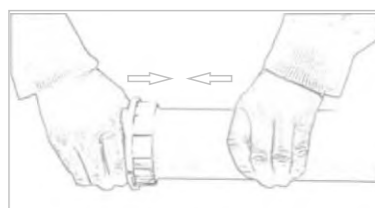


✓  
【Correct】

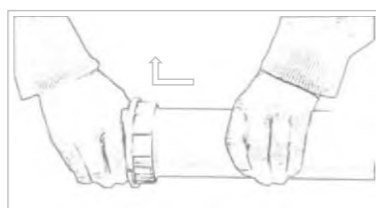


✗  
【Error】

5. Heated Pipe should be inserted into the socket as soon as possible, Insertion should reach required depth while avoid rotation.



✓  
【Correct】



✗  
【Error】

### Design

#### General Provisions

- Complying with state regulations, Kingbull PSP composite pressure pipe adopts metric system, taking dn as the designation of outer diameter, such as dn50, dn75 etc.
- Under different working condition, the designed pressure of residential plumbing and industrial water supply should not exceed values listed in the Table A.

**Table A The max. working pressure of PSP composite system at different water temperatures (Mpa)**

Max. working pressure Perennial Water Temperature	Pipe Diameter	50 -160
5°C ≤ t ≤ 20°C		2.0
20°C ≤ t ≤ 30°C		1.74
30°C ≤ t ≤ 40°C		1.48

- When the pipe is used as pressure pump outlet, the connection must be made according to the regulations for water-hammer prevention.
- Kingbull PSP composite pressure pipes are used as main riser of building water supply and end distribution. Due to the building pump room is usually located in a small space and operated under tough conditions, the seamless steel tube and shock damper are recommended to be used.

#### Design And Layout Of Pipeline

- PSP composite pressure pipe system is applicable for all common types of installation, such as: concealed, ground buried and surface installations. The concealed installation includes those in the wall, ceiling, floor or ducts.
- In the case of installation in the wall, the pipe can not be directly buried in the structure layer; for non direct buried refers to lay in the pipe well, above suspended ceiling, behind the decorative plate and lay in the elevated space of the floor. pipe for unfold mounting and non-direct buried, technical measures should be considered for pipeline temperature deformation;
- Concealed burial should be coordinated with the construction and structure, and taking appropriate protective measures. direct burial and non direct burial pipelines should adopt the double thermal fusion connection; connecting with metal pipe, valve, globe valve, water, etc., it should be used with threaded or flanged fittings, the location of installation should be convenient for operation and maintenance.
- Direct burial and non direct burial pipelines should adopt the double thermal fusion connection; connecting with metal pipe, valve, globe valve, water, etc., it should be used with threaded or flanged fittings, the location of installation should be convenient for operation and maintenance.



Fig (1)

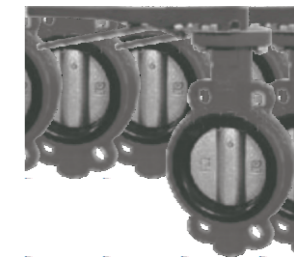


Fig (2)

Before mounting the butterfly valve, verify the kingbull PSP plastic flange can be opened after engaged with butterfly valve. The kingbull PSP plastic flange (dn63–dn160) shall be used combining with flanged butterfly valve.

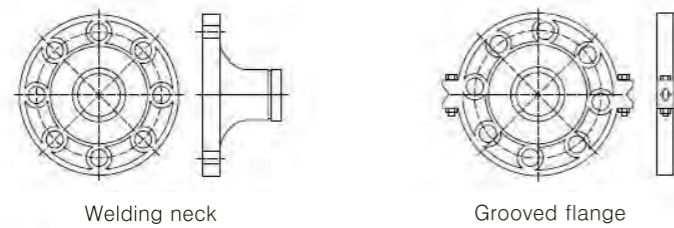


Fig (3)

- ⊙ Water supply vertical pipe for public area shall be laid inside of the pipeline well.
- ⊙ Surface water supply pipe shall be laid at corner or stud where there is large water consuming equipment nearby.
- ⊙ Surface water supply pipe shall not get through bedroom, storage room, chimney, air duct and power distribution room.
- ⊙ In case some pipe get through floor and concrete shear wall, a hole shall be reserved.
- ⊙ The pipeline shall keep certain distance from thermal source, to prevent the outer temperature of pipe exceeding 60 → owing to radiation from thermal source. Vertical pipe shall keep a distance from water heater or stove for at least 400mm, and at least 200 mm from hear supply pipeline. If conditions are not available, some heat insulation protective methods shall be adopted, but the min. distance shall be 120mm. avoiding making pipeline to crossing the expansion joints, settlement joint. If it must cross, it is necessary to adopt some effective measures, such as the movable bracket, flexible joint.
- ⊙ The gradient of horizontal pipe shall be at least 0.003, and inclines to drain point or distribution point. For pipeline laid underground or beneath the ground floor, there shall be location dimension. In case of some damage, some part of pipe shall be protected with steel bushing. No pipeline shall be inlaid in reinforced concrete constructions. In case of normal brick wall, the pipe can be inlaid with or without sleeves.
- ⊙ When pipeline enter through roof, floor, some effective waterproof measures shall be adopted. When pipeline enters through places where there are water proof requirements, such as outer wall of basement, rigid or flexible steel-made waterproof sleeves shall be used, as well as reliable impermeableness and fixing measures. When pool, water tank connect with ball float valve or other water inlet devices, there shall be reliable fixing measures to prevent the weight of ball float valve or other water inlet devices from acting on pipelines. Some support or bearing shall be installed near the valve, compensator and other pipeline equipments, to prevent the weight from acting on pipeline.
- ⊙ For pipeline mounted outdoor on surface, some antifreeze and UV Resistance solutions shall be carried out according to local weather conditions. When pipes lays in the outdoor or non-heating indoor room, the temperature is less than or equal to 5, it is possible to freeze, lightweight thermal insulation materials should be used to keep warm, if necessary, the thickness of thermal insulation materials can be calculated according to the ambient temperature and the heat conductivity of materials.

### Pipe Deformation Calculation And Compensation Measure

- ⊙ Non direct burial pipeline should be set up supports, hangers, laying pipelines should use the angular free arm to compensate the temperature deformation of pipeline; when the natural compensation is unavailable, compensator needs to be setup. Compensator settings should refer to the " specifications for building water supply and drainage design." compensator settings are advised at the length beyond 40 meters.

- ⊙ When using compensator, according to the compensation length of compensator to determine the greatest pitch between two fixed brackets, according to (Eq. 1) checking whether expansive force of the pipe is bigger than the working thrust of the compensator:

Formula (1):

$$N = \sigma \times A$$

$$\sigma = a \times E \times \Delta T$$

N — pipeline axial internal force (N);  $\sigma$  — pipeline thermal stress (N / m<sup>2</sup>);  
 E — pipeline modulus of elasticity; based on pipe-layer, taking value for 206 × 10 (N / m<sup>2</sup>);  
 A — pipe cross-sectional area (m<sup>2</sup>) (specific values see Table B);  
 $\Delta T$  — the differentials of average temperature and installation temperature (°C)

Note: the swelling force of the plastic layer is negligible;

**Table B Steel-plastic Pipe Cross-sectional Area Calculated Value**

Specification(mm)	50	63	75	90	110	160
Pipe cross-section(m <sup>2</sup> )	8.02×10 <sup>-4</sup>	1.24×10 <sup>-3</sup>	1.66×10 <sup>-3</sup>	2.11×10 <sup>-3</sup>	2.60×10 <sup>-3</sup>	7.88×10 <sup>-3</sup>

- ⊙ When using angular free-arm to supply natural compensation (Figure 4), the minimum free-arm length determined by the formula below: Free pipeline axial deformation caused due to temperature differences can be calculated by the formula (Eq. 2)

Formula (2):

$$\Delta L = L \times \alpha \times \Delta t_s$$

$\Delta L$  — pipeline stretching length (mm);  
 $\Delta t_s$  — the difference of pipe installation water temperature and the highest (low) water temperature (°C)  
 L — the pipeline length (m);  
 $\alpha$  — linear expansion coefficient (mm / • mK), taking 0.012

Free-arm can be determined by the formula (Eq. 3).

Formula (3):

$$L_z = K \cdot \sqrt{\Delta L \times D_n}$$

formula:  $L_z$  — Free-arm minimum length (mm); K — material ratio coefficient, generally taking 20  
 $\Delta L$  — stretching length from the fixed supports to the turning site of the long arm (mm)  
 $D_n$  — pipeline Nominal diameter (mm)