

# Cast Iron

## Welding Notes

1. The defects on the welding surface of the casting or the repair welding area can be eliminated through the processes of machining, grinding, chipping and etc. Grease, filth, and other detrimental matter on the base metal can be cleaned using solvents; however, if the solvent permeate the base metal due to inclusion by capillary effect, increasing the temperature to 400°C will resolve this issue. If the grease is overwhelming and it infiltrates deeply in the surface of base metal, raising the temperature to 540°C will completely eliminate the grease.
2. V type groove angle : 60~80°;  
U type groove angle : 20~25°, root radius : 4.8~13mm (for heavy work use).
3. It is recommended to use the lower limit of suggested welding current according to the welding positions in order to achieve proper fusion with the base metal; furthermore, to obtain a smooth bead appearance, employing skilled welders is highly preferred.
4. Use string bead is mainly. If weaving is desired, the weaving width should not exceed 3 times the core wire diameter (the weld surface bead width is approximately 4 times of the core wire diameter). If weld groove is cavity type, the edge needs grinding in order to get wider groove face so that the repair surface can be smooth.
5. If the casting is heavy, in order to achieve even spread of welding heat, intermittent welding technique is recommended; in addition, keep the weldment in a constant lukewarm state during welding.
6. The hardness of HAZ is usually affected by base metal composition and cooling rate. An appropriate preheat can ease the hardening of HAZ. Dilution level might affect weld metal hardness which should be controlled by proper welding procedure and parameter, Normally, the dilution rate of single-pass welding is higher and leads to higher weld metal hardness.
7. When the weldment is the pressure part and there is big thickness difference between base metals to be jointed. Proper preheating will even the cooling and achieve better crack prevention.
8. Peening is appropriate when the weldment still remain at high temperature (about 540°C) after welding; however, it is inappropriate to apply at the root pass(es) and surface finishing pass(es).
9. Large weldment's weld metal cracks easily. Apply stud planting method on the weld groove face before welding to prevent crack. The stud diameter should be about 6.4~16mm. The planted depth into the base metal groove face should be about the stud diameter and the protruding part above the weld groove face is about 4.8~6.4mm. The stud should occupy 25-35% of the weld sectional area.