

HENSLEY WELDING INSTRUCTIONS

The following general welding instructions should be followed when welding all Hensley products.

- Assure proper fit/spacing of parts to be welded.
- Clean all areas to be welded. Surfaces to be welded must be free from scale, grease, paint, water, etc. Dry, freshly-ground, buffed or sanded surfaces provide the best preparation for welding. The surfaces must be sufficiently clean so that there is nothing that may contain hydrocarbons or other impurities that can greatly affect the strength of the weld.
- Recommended filler materials:
AWS specification **A5.1**, class **E7018**, stick electrode for the SMAW welding process.
AWS specification **A5.2**, class **E70T-1** or **E71T-1** wire for the GMAW welding process.
These AWS specifications may be substituted with an equivalent specification from one of the following organizations:
 - BS**.... British Standard
 - CSA** . Canadian Standard
 - DIN** .. German Standard
 - JIS** ... Japanese Industrial Standard
 - NF**.... French Standard
- Preheat components that are to be welded to the recommended temperature. This can be done with burners or torches. Preheating with burners or torches is much more effective when the heat is applied from the bottom side of the work piece with insulating blankets on the topside. The blankets help disperse the heat evenly as well as retain the heat that has been input. Measure the temperature with a temperature-indicating crayon or an infrared thermometer from the **topside**. This will insure that the preheat is not just on the surface of the material, but a complete preheat through the thickness of the materials to be welded.
- Minimize welding time and heat input.
- Stringer beads are recommended for higher strength and to minimize distortion. The use of weave or wash beads should **NOT** be used. Arc strikes should be avoided or ground out.

- Remove slag completely after each pass.
- Maintain interpass temperature to same temperatures recommended for preheat.
- Cool slowly. Do not allow drafts or cool ambient temperatures to cool the parts or assembly. Cool down rate should **not exceed** 130°F/55°C per hour. If ambient temperature is **below** 40°F/5°C, the part should be covered in a thermal blanket to insure the cool down rate listed above is achieved, or the entire part can be postheated to 300°-400°F/ 149°-204°C for four hours and then air cooled.

General Precautions

- Do not overweld. Excess weld metal causes greater shrinkage stresses.
- Always use low hydrogen stick and wire electrodes. Stick electrodes should be kept in a heated rod box at 250°F (120°C) prior to use. Please refer to the electrode manufacturer's recommended procedures for storage and preservation of low hydrogen stick electrodes.
- Cracks are caused by (a) shrinkage stress, (b) hydrogen embrittlement, (c) rapid cooling after welding (allowing untempered brittle constituents to form in the heat affected zone), or a combination of the above.
- Preheating, interpass temperature and post heating and cooling rates are very important.

Warning: All persons performing welding and other maintenance work should wear OSHA approved safety equipment, such as hard hats, safety shoes and glasses, work gloves, and the proper lenses in welding gear.





SPECIFIC INSTRUCTIONS

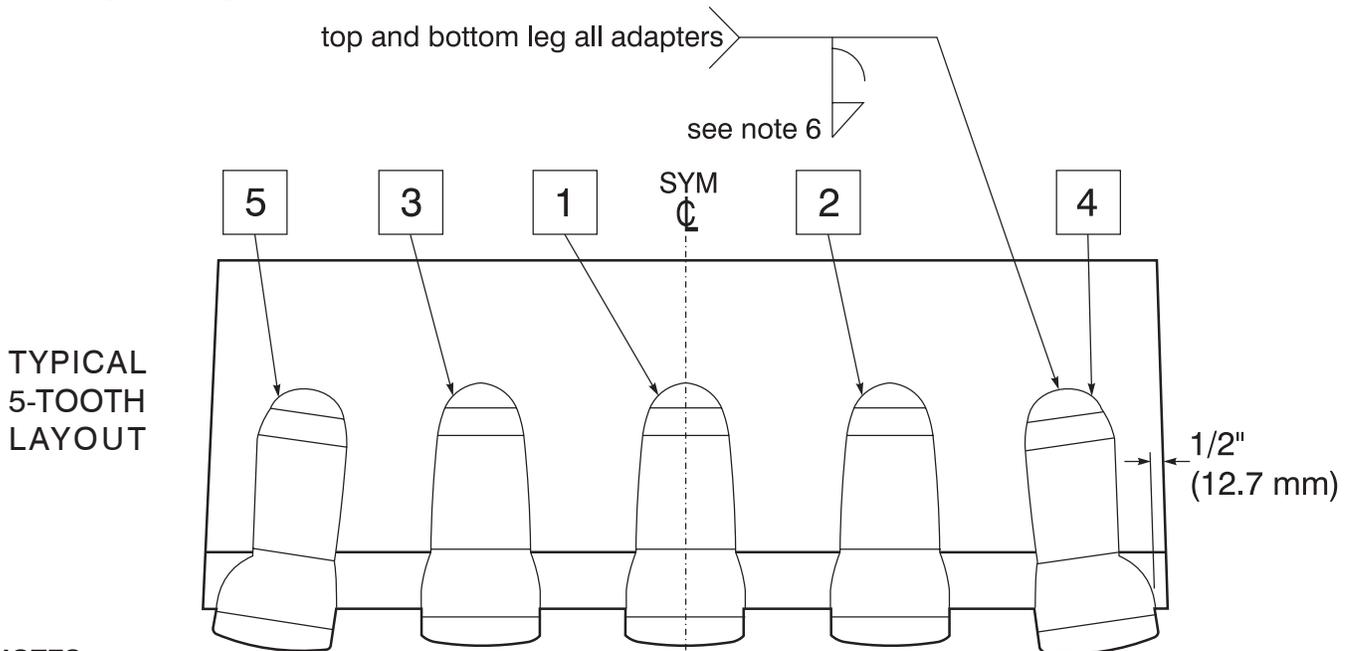
All **XS** 15 through 85 series adapters are cast from Hensley alloy #4S. The following table should be consulted for adapter preheat temperature, interpass temperature and cooldown rate. The temperatures are based on **ASTM A514** lip material.

PREHEAT TEMPERATURE (ASTM A514*)	COOLDOWN RATE
300°-400°F / 149°-204°C (DO NOT EXCEED 500°F / 260°C)	Cool down rate should not exceed 130°F/ 55°C per hour. If ambient temperature is below 40°F/5°C, the part should be covered in a thermal blanket to insure the cool down rate listed above is achieved, or the entire part can be postheated to 300°-400°F/149°-204°C for four hours and then air cooled.
INTERPASS TEMPERATURE (ASTM A514*)	
300°-400°F / 149°-204°C (DO NOT EXCEED 500°F / 260°C)	

NOTE!: The above table is for **XS** adapters only.

*For lip materials not listed, consult AWS or equivalent specs for preheat and interpass temps. For AWS weldability classification, **XS** adapters have a maximum carbon equivalency of .63.

Depending on steel grade of the lip that you use, pre-heating temperature may be required with different range and when it is higher than the mentioned temperature for adapters, please preheat with the higher range.



NOTES:

1. Notch corner adapters for 1/16" (1.58 mm) blade clearance. Edge of adapter should be 1/2" (12.7 mm) from edge of lip. Orient adapter to achieve cut width +1/2" (12.7 mm) [For example, 36-1/2" (927 mm) for a 36" (914 mm) bucket]. +3/4 / - 0. Add 3/8" (9.525 mm) X 45° weld prep on all trimmed surfaces.
2. Equally space remaining adapters. **IMPORTANT NOTE:** The **XS** system is a **side** pin system, be sure to allow enough space between adapters. Check fit with tooth and pin installed to allow proper clearance for pin installation and removal.
3. Preheat lip and adapter to recommended temperatures.
4. If weld groove does not permit 3/4" (19 mm) electrical stickout with GMAW equipment, use AWS specification A5.1 class E7018 SMAW stick electrode for the root pass. Use AWS specification A5.2 GMAW wire electrode for all remaining weld passes.
5. Alternate weld from the bottom side to the top side of the lip for all weld passes following the adapter weld sequence shown. Continue this process until the desired weld size has been achieved.
6. Fillet weld size to be 1/16" (1.58 mm) larger than weld prep.

If you have any problems, questions or comments regarding these procedures or this product, please contact Hensley customer service at 800-433-3144