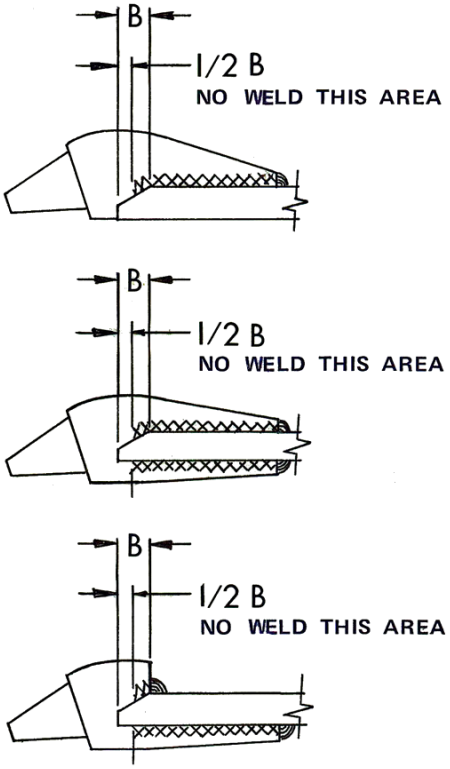
TYPICAL ADAPTER WELDING INSTRUCTIONS

The adapters may be attached to products of various material compositions and heat treatments, and under differing environmental conditions. This information must be considered as general in nature. For more specific instructions it is recommended that a welding engineer and/or supplier of welding products be contacted.

1. Thoroughly clean oil, paint, dirt, and rust from all areas to be welded. Before preheating, allow shanks to be stored at an ambient temperature of 75ºF for a minimum of 8 hours.
2. Locate adapter in the proper location and tack weld rear end of the adapter shank. (Lip protectors should not be installed until all welding of the adapters is complete.)
3. Preheat the adapter shank and adjacent material fully through the joint (approximately 3 inches from weld) to 400ºF to 600ºF using a preheating torch. (Care should be taken not to over heat the material locally.) A 500º temperature indicating crayons (tempil stick) or paint should be used to ensure the proper preheat and inter-pass temperatures.
4. Use 3/16 inch diameter, type 7018 low hydrogen, welding rods. (It is recommended that weld rods be purchased in small hermetically sealed containers to ensure fresh rods. Packages that have been opened should be stored in a dry place and possibly baked prior to use in accordance with suppliers instructions to prevent excess moisture.)
5. Start welds at rear of the shank and proceed towards the blunt of the cutting edge of the blade, using multi-pass technique, and place weld beads alternately on each side of the shank forming a fillet weld.
6. Stop weld bead 1 inch from cutting edge of the blade to prevent excessive stress concentration. Care should be taken not to let the inter-pass temperature drop below the preheat temperature. Welding heat input should also be minimized by use of stringer bead technique rather than weave bead technique. (Use of smaller diameter rod and multi-pass technique helps prevent excessive heat build-up yet maintains preheat temperature throughout the welding period.
7. After each pass of the welding rod, remove all slag.
8. Complete the fillet weld such that the horizontal and vertical leg is approximately ¾ inches.
9. If fillet weld is to be made across aft end of the shank, completely grind out all tack welds prior to welding to avoid cracking.
10. Allow welds to cool slowly to room temperature. Drafts of air on the weld should be avoided. Light peening of the toes may also be beneficial.
11. When finished welding, use a die penetrant to determine any defects in the welds.



WELDING INSTRUCTIONS, Disclaimer and general comments:

1. Not all H & L products are produced for weld connections. Teeth, Uni-Forged and Cast alike are not manufactured for repair, resurfacing and/or hardfacing. The welding of these "Wear Parts" can destroy the Heat Treat integrity and may cause irregular wear patterns or possible product failure. H & L does not warranty any Tooth, Adapter and/or any other Wear Part when repair or hardfacing of product has been introduced.

2. The patented H & L Flexpin, in general is not heat resistant. In all weld pre-heating applications of Adapters, please make sure Flexpins are not installed as complete assemblies. H & L recommends Flexpin installation only on attached to bucket and cooled Adapters.

3. The general data in these welding instructions are based on the performance and reliability of H & L Teeth.

NOTE . . . . . because of the various welding conditions, and the existence of many weld electrode types and suppliers, H & L does not guarantee and the user should not assume that the data be exactly as stated. H & L recommends your local weld electrode supplier or Welding Engineer be consulted when specialized welding specifications are required.