

WELDING INSTRUCTIONS FOR MTG ADAPTERS

This "Welding Guide" is intended to assist customers with welding GET products. It is a general welding guide and is not all inclusive. Your specific application may require different welding practices. This welding guide is not intended to be used for joint design of buckets or other attachments. West-Trak accepts no responsibility for the misuse or misinterpretation of this information.

Welding Instructions

Processes - Welding may be done by any of the following processes:

- **Shielded metal arc welding (SMAW)**
- **Gas metal arc welding (GMAW)**
- **Flux-cored arc welding (FCAW)**

Consumable - Welding unalloyed and low alloyed consumables.

Unalloyed and low-alloyed consumables with tensile strength of up to 500 MPa should be used. Such welding consumables reduce the residual level in the joint and thus reduces the possibility of hydrogen cracking.

WELDING UNALLOYED & LOW ALLOYED FILLER CONSUMABLES		
PROCESS	EN CLASS	AWS CLASS
SMAW	EN ISO 2560-A E42X	E70X according to A5.1 or equivalent under A5.5
GMAW	EN ISO 14341-A G42X EN ISO 14341-A G46X	E70C-X according to A5.18 or equivalent under A5.28
		ER70S-X according to A5.18 or equivalent under A5.28
FCAW	EN ISO 16834-A T42X	E7XT-X according to A5.20 or equivalent under A5.29

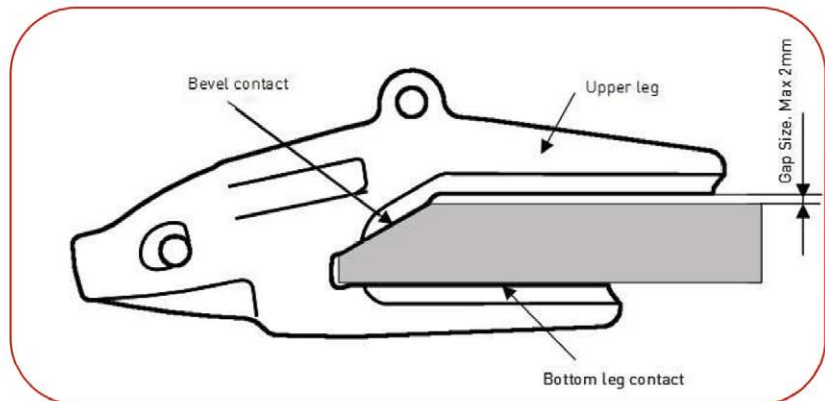
Note that 'X' may stand for one or several characters

STEP 1:

All mill scale, rust, paint, oil grease, arc air slag or moisture must be removed from the surfaces of any weld location. The surfaces must be sufficiently clean so that there is nothing that might contain moisture or hydrocarbons, which break down in the heat of the arc producing hydrogen, which can be absorbed in the weld and cause cracks. Removal may be accomplished by shot blasting, sand blasting, grinding or machining. Any porosity, burned-in sand or other defects visible on the weld prep surfaces must be removed by grinding or arc air gouging.

STEP 2:

Place adapter on the lip at the desired location from side to side. Bottom leg and bevel angle should be in full contact with the lip; as shown in figure below. Pack out the top leg if the gap is more than 2mm.



STEP 3:

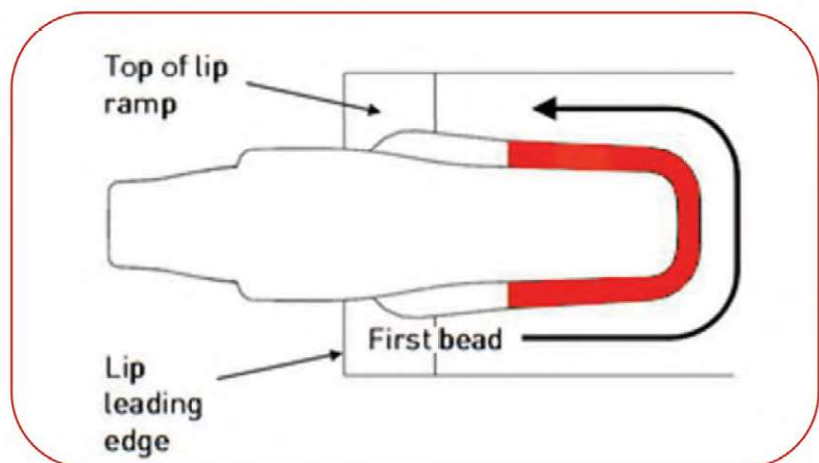
Preheat the top and bottom of Adapter/Lip to a temperature between 150C and 180C degrees and maintain this temperature throughout the whole welding process..

STEP 4:

Apply one 25mm long tack weld at the root of the weld groove on each side of the top leg, midway between the end of the leg and the trailing edge of the lip bevel.

STEP 5:

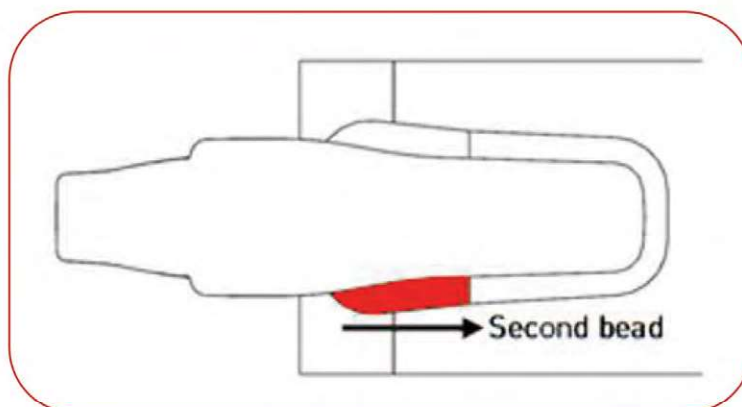
Begin welding at the center of top leg and weld one pass around the back of the leg to the centre of the opposite side.



ADAPTER WELDING INSTRUCTIONS

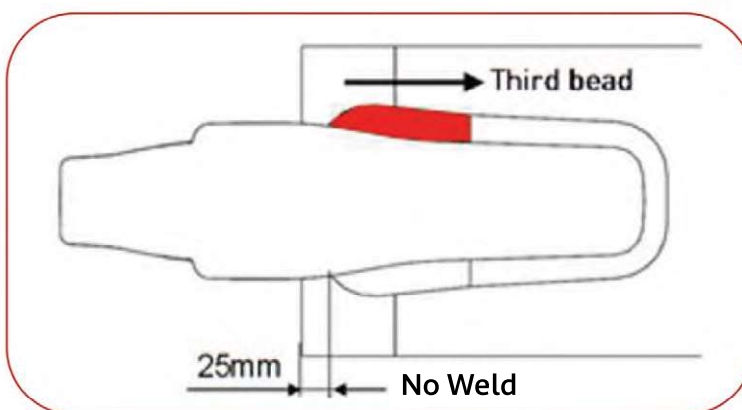
STEP 6:

On the initially welded side, begin welding at the front of the weld groove and proceed to the starting point of the first bead. Do not weld within 25mm of the lip leading edge.



STEP 7:

Place a similar bead on the opposite side of the top leg.



STEP 8:

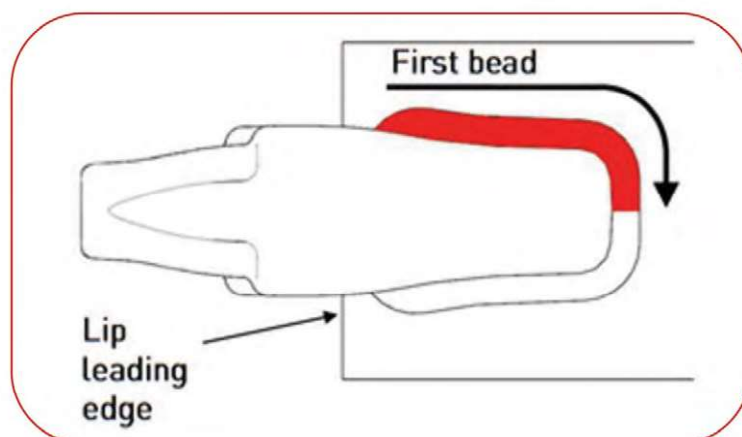
Repeat this sequence (steps 5, 6 and 7) three times. Vary the lengths of the weld beads slightly so that the start/stop positions are not at exactly the same location.

STEP 9:

Turn the lip over

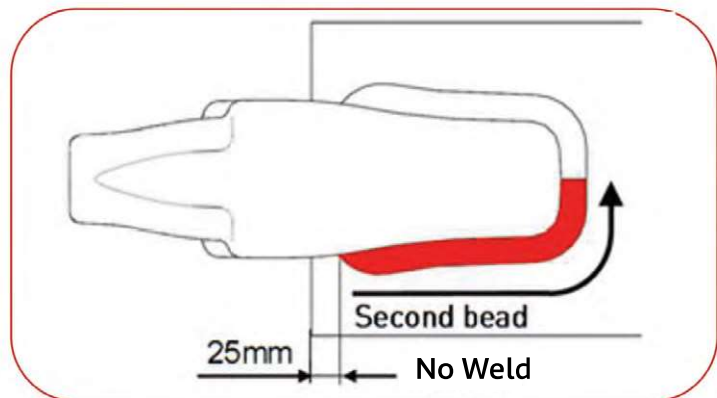
STEP 10:

Begin welding at the front of the weld groove on the bottom leg and weld to the back of the leg. Do not weld within 25mm of the lip leading edge.



STEP 11:

Begin welding at the front of the weld groove on the opposite side of the leg, joining the initial bead at the back of the leg. Do not weld within 25mm of the lip leading edge.



STEP 12:

Repeat this sequence (steps 10 and 11) three times. Vary the lengths of the beads slightly so that the start/stop positions are not at exactly the same location.

STEP 13:

If the adapter size requires additional weld layers, turn the lip over and weld three layers according to the sequence for the top leg (steps 5, 6 and 7).

STEP 14:

Turn the lip over again and apply three layers according to the sequence for the bottom leg. (steps 10 and 11)

STEP 15:

The leg sizes of the weld fillet must be flush and less than 3mm above the edge of the cast weld groove. In some adapter patterns, the weld groove height decreases near the leading edge of the lip.

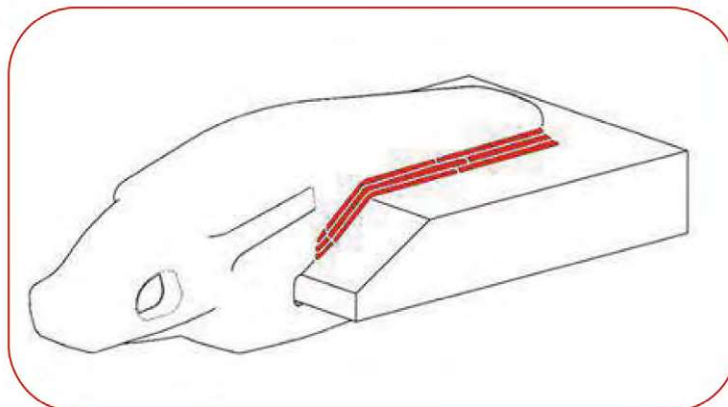
STEP 16:

Once welding is completed, cover all adapters with a thick welding blanket to allow slow cooling. Once adapters have cooled to below 50 degrees, post heat the lip and all adapters back up to 230-250 degrees to destress the welds. Cover adapters with welding blankets again to allow slow cooling.

ADAPTER WELDING INSTRUCTIONS

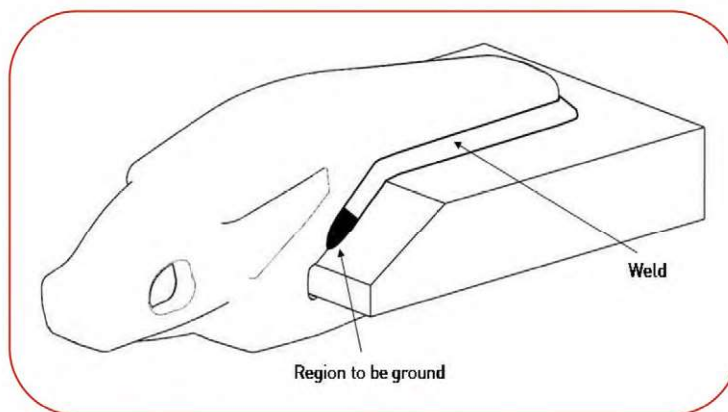
STEP 17:

When welding large adapters, considerable grinding effort can be saved by carefully positioning the starting points of the beads near the leading edge. Start each weld bead slightly behind those of the preceding layer so as to produce a "rounded" weld end.



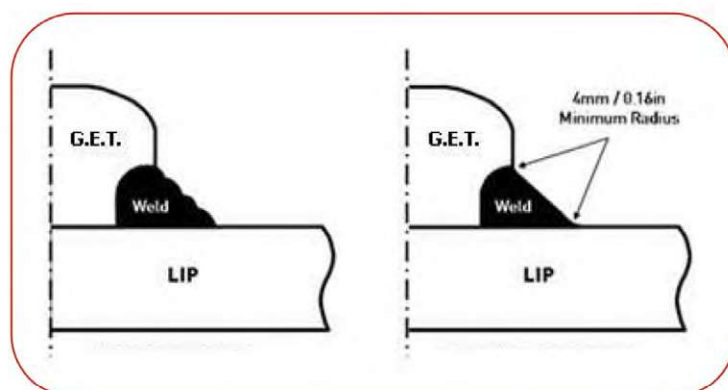
STEP 18:

All adapter welds need to be ground smooth 65-75mm back from the front edge as indicated in the figure. All welds on both the top and bottom sides should be ground in this area to reduce fatigue cracking. (Air-arcing the weld toes off will also help reduce cracking)



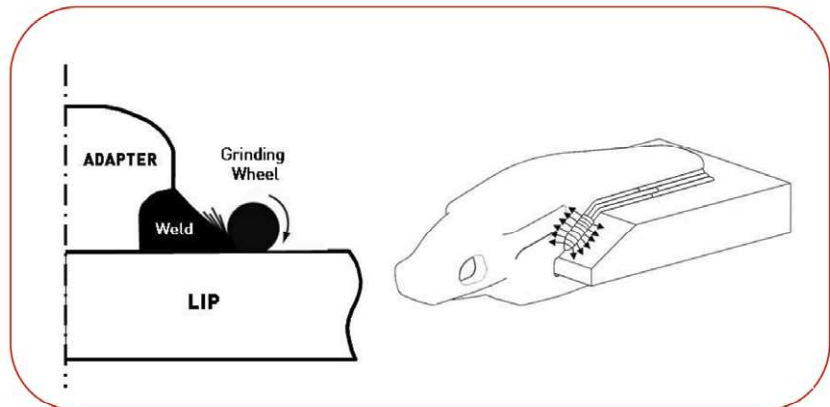
STEP 19:

Grinding shall produce a smooth surface free of roughness and unevenness associated with the weld beads. The toes of the welds shall merge smoothly with the lip and the adapter with a minimum radius of 45mm.



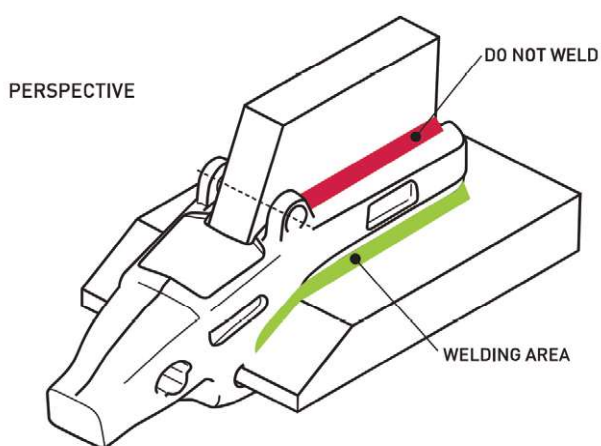
Grinding shall be done with the perimeter of the wheel and not the face. The grinding direction must be perpendicular to the toes of the welds as in the illustration.

Grinding at the toes of the welds can be done by the use of cone-shaped grinding wheels. For final grinding, the abrasive may be no coarser than 24 Grit.



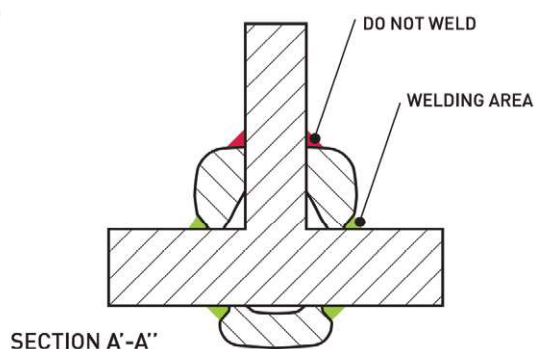
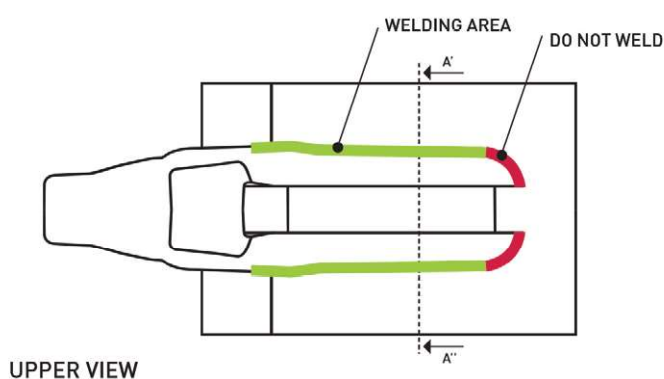
ADAPTER WELDING INSTRUCTIONS

WELDING INSTRUCTIONS FOR STRADDLE LEG ADAPTERS



WELDING AREAS

1. Place the adapter on the lip and ensure a good fit with the lip bevel
2. Follow the Adapter Welding instructions as on previous pages
3. Weld the bottom leg in the same way as specified for two strap adapters
4. Weld the top leg as specified in the following figures



Welding process

