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Lockjaw Half Arrow Welding Procedure

Welding Safety

Welding, cutting and any allied process are a significant safety risk. Before undertaking any of these processes ensure that all precautions have been considered or implemented as per welding safety standards AS1674: 2007 or ANSI Z49.1: 2005 or equivalent globally recognized standard.

Of particular note please ensure the following is adhered to:

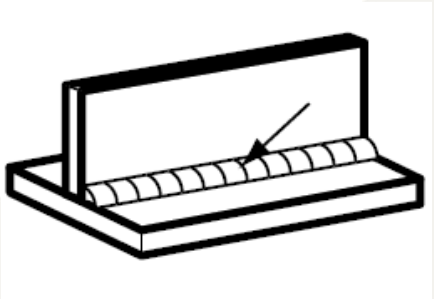
- Wear correct PPE including
  - Full sleeve non-flammable work wear. (No gaps)
  - Non-flammable welding gloves
  - Steel capped work boots
  - Safety glasses
  - Hearing protection
  - Full face welding shield
- Suitable ventilation is available for the person completing the operation.
- Welding is an electrical risk. Ensure the area where welding is to be conducted is not damp or wet.
- Welding is a fire risk. Ensure the area where welding is to be conducted is free of any thing flammable and that suitable fire extinguishers are easily available.
- If welding is to be conducted in an area where other people are working ensure welding flash shields are utilized.
- Good general housekeeping to ensure the work area is safe and free of clutter.
- Ensure appropriate tags for your work place and work environment are used.

Weld Preparation

The surfaces to be welded must be good and free from scale, grease, paint, water, or any other contaminants.

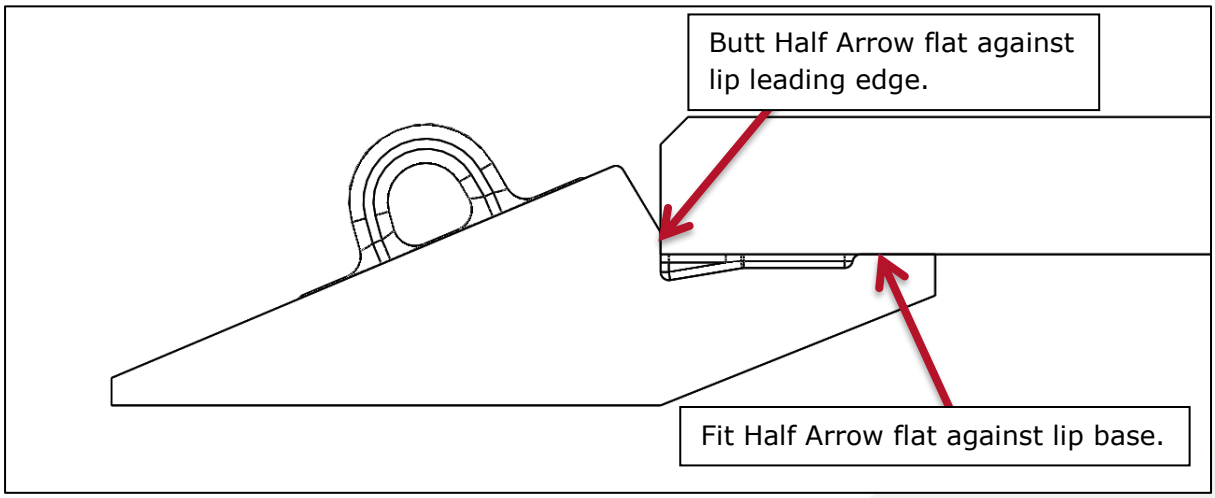
Welding Position

HORIZONTAL



2F / PB

Position Half Arrow segments on the bucket lip plate such that the base of the lip is flat against the Half Arrow lip face and the lip leading edge is butt against the Half Arrow lip step.



Welding Process

Welding may be completed by any of the following processes:

- Gas Metal Arc Welding (GMAW)
- Flux-cored Arc Welding (FCAW)

A combination of GMAW or FCAW can be utilised.

Consumables

Process	AWS	AS / NZS	ISO	Shielding Gas
GMAW	AWS A5.18 ER70S-4	2717.1: ES4-GC/M-W503AH		100% CO2 Ar + 10-15%CO2 Ar + 15-25%CO2
GMAW	AWS A5.18 ER70S-6	2717.1: ES6-GC/M-W503AH		100% CO2 Ar + 10-15%CO2 Ar + 15-25%CO2
FCAW	AWS A5.20 E71T-1 H8	17632-B: T49 3 T1-1 CA-K-U H10		100%CO2 Ar + 20-25%CO2
FCAW	AWS A5.18 E70C-6M H4	17632-B: T49 2 T15-1 MA K-U H5		Ar + 20-25%CO2
FCAW	AWS A5.20 E70T-7	17632-B: T49 Z T11-0NA-H15		NR
FCAW	AWS A5.20 E71T-8	17632-B: T49 Z T8-1NA-H15		NR

Thermal Treatment

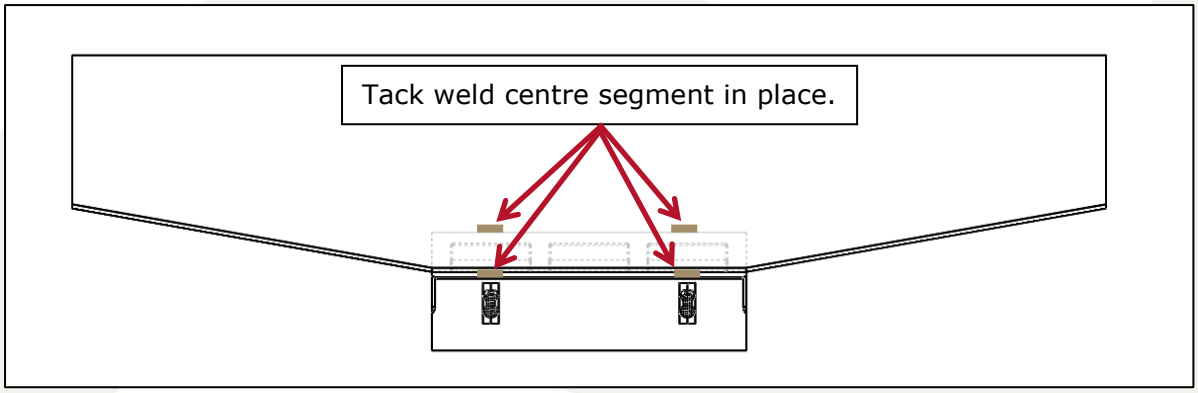
Material	Thickness	Min Preheat Temp	Max Interpass Temp
Talon Castings	All Weld-on Castings	150°C / 300°F	260°C / 500°F
ASTM A514 Steels	Greater than 63mm / 2-1/2"	120°C / 250°F	260°C / 500°F
400 -450 BHN Abrasion Resistant Steel	Greater than 63mm / 2-1/2"	150°C / 300°F	260°C / 500°F

Notes:

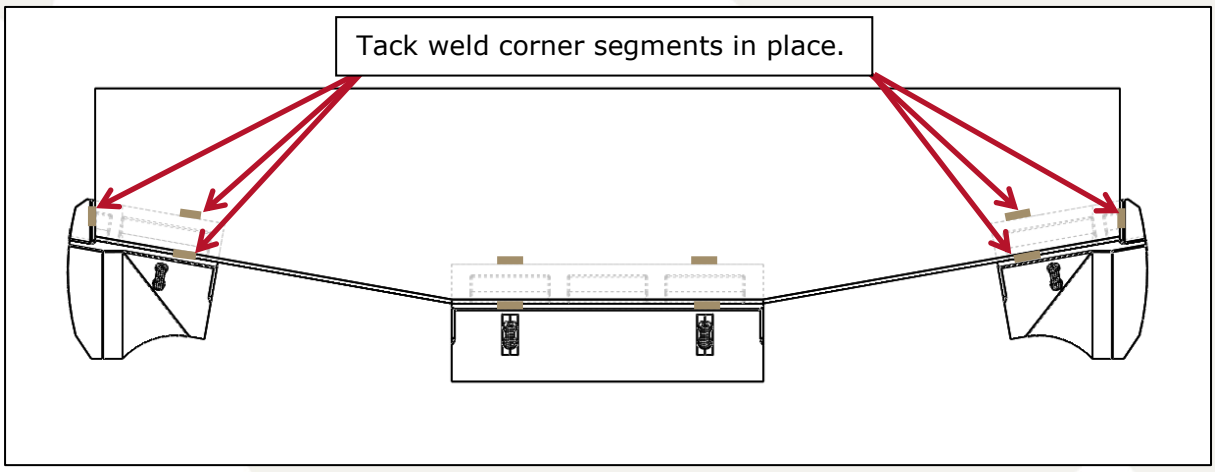
- If the ambient humidity is high and or the temperature is below 4°C / 40°F, the tabulated thermal treatment temperature should be increased by 27°C / 80°F. At no time should any material type or thickness be welded when the temperature of the steel is at or below 4°C / 40°F.
- All material within 100mm / 4" of the weld zone must be within the specified temperature.
- Cool weld slowly, for a minimum of 8 hours, utilising thermal blankets. Do not allow drafts or cool ambient temperatures to cool the parts or assembly. Cool down rate should not exceed 55°C / 130°F, per hour.

Welding Sequence

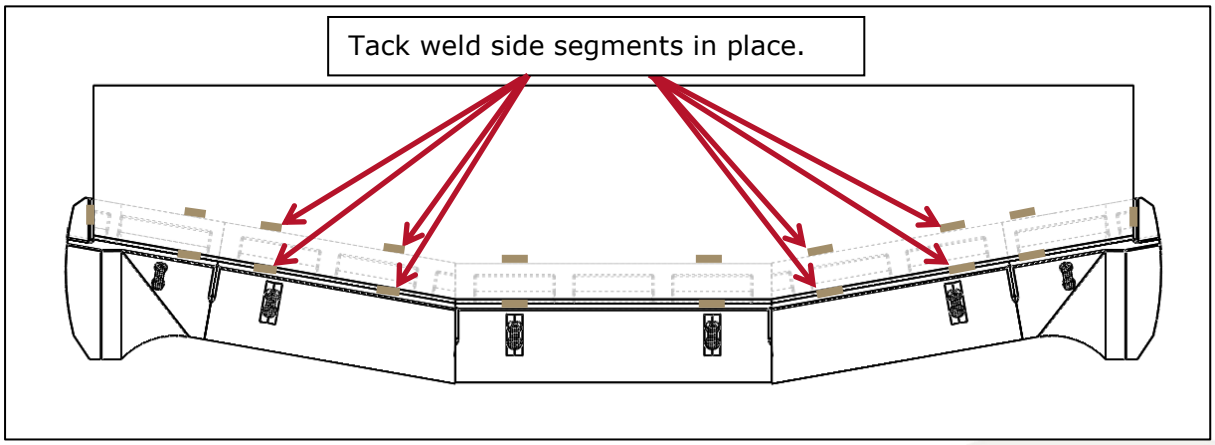
Place Half Arrow lip centre segment on to the lip first and tack in place with two 25mm / 1” tack welds on the bottom rear edge and two 25mm / 1” tack welds in the top weld gap.



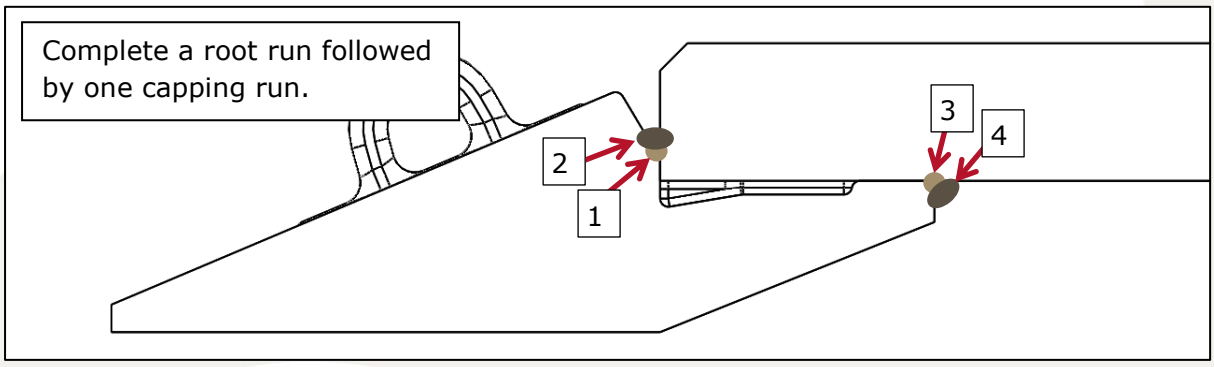
Place Half Arrow corner segments on the lip and tack in place with a 25mm / 1” tack weld on the bottom rear edge and two 25mm / 1” tack welds in the top weld gap.

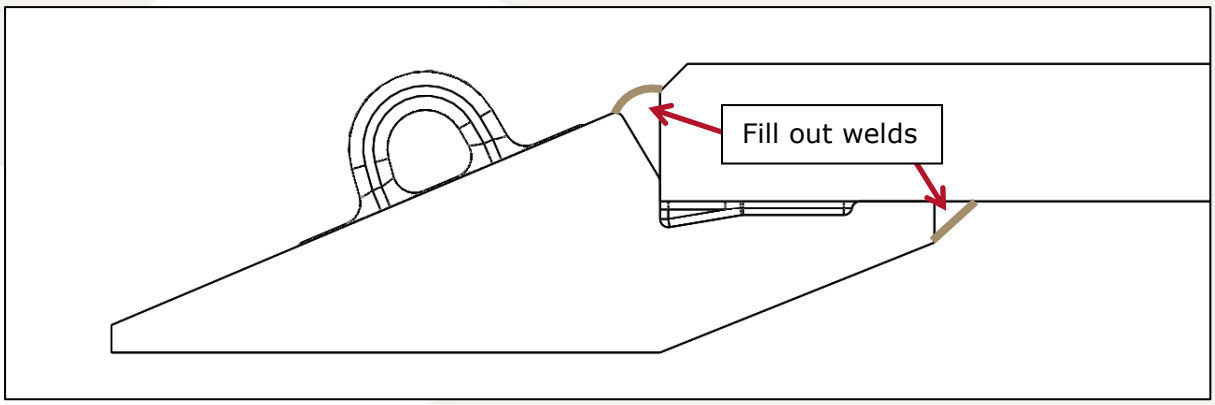


Trim Half Arrow side segments to suit lip. Place Half Arrow side Segments on to lip and tack in place with two 25mm / 1" tack welds on the bottom rear edge and two 25mm / 1" tack welds in the top weld gap.



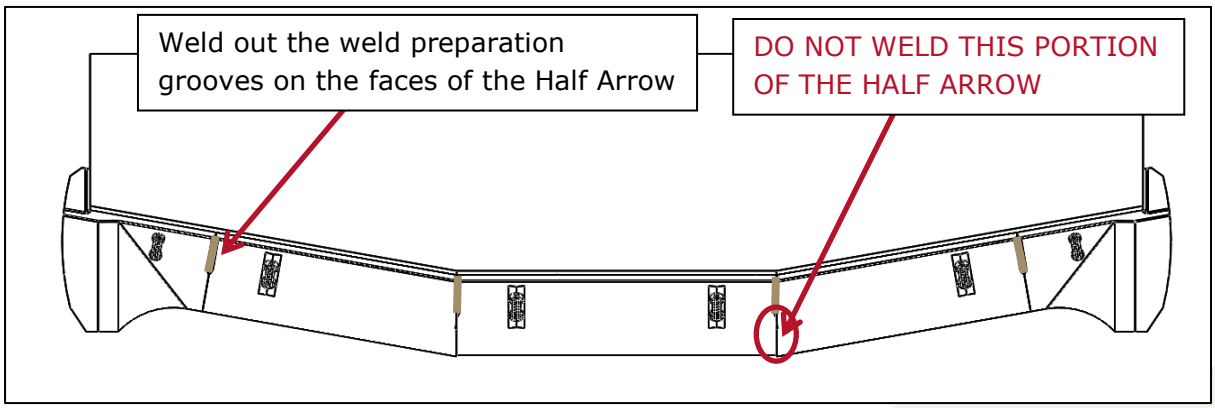
Complete a full root run and one capping pass along in the top weld gap followed by a full root run and one capping pass along the bottom edge of the Half Arrow. Following this proceed to fill out the welds as suits your welding equipment.





Finish the welding process by welding out the 90mm long weld preparation grooves that run down the face of the Half Arrow Segments.

NOTE: Do not weld beyond the weld prep provided. Do not weld to the tip of the Half Arrow segments. This WILL result in cracking of the Half Arrow and possible damage to the lip plate.



Weld Finishing

It is recommended that all finished welds are inspected for cracks using either MPI or Dye Penetrant Inspection. It is preferable to use the MPI process. Any cracks detected must be completely gouged out and filled with weld. Finish the repair with grinding and re-inspect for cracks.

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CHANGE REGISTER

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