

Document Version Control		
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LOCKJAW LOCK CAVITY HARDFACING WELDING PROCEDURE

OUTLINE

In some applications it is possible that the lock cavity protection may wash out faster than the component body. In this situation wear around the lock cavity can be improved by using hardfacing. Where a tougher surfacing material is deposited to a base by welding to reduce wear. This procedure details the recommended process to apply hardfacing to Talon Lockjaw lock cavities. This procedure will detail the application of hardfacing to a Talon Lockjaw Point, the same basic steps can be followed for application to Lockjaw Shrouds if required.

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 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
 - Respiratory protection
- 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 workplace and work environment are used.

WELDING PREPARATION

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

Preparation of the weld surfaces may be achieved by sand blasting, shot blasting, grinding, sanding, air carbon arc gouging, or a combination of any these processes.

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Should the air carbon arc gouging process be used, finish the surface by grinding to remove all carbon slag.

WELDING PROCESS

Hardfacing may be completed by any of the following processes:

- Shielded metal arc welding (SMAW)
- Gas Metal Arc Welding (GMAW)
- Flux-cored Arc Welding (FCAW)
- Others

A combination of GMAW or FCAW can be utilised.

Consumables

Process	Designation EN ISO 4063	Recommended Welding Wire/ Rod
SMAW	111	-
GMAW	131/135	Stoody 600
FCAW	136/138	-

For hardfacing layers, Stoody 600 wire is recommended for GMAW process. Most of the consumables for hardfacing do not have specific AWS classifications.

ELECTRICAL PARAMETERS

For newest weld parameters please refer to packaging or product data sheets on each product. Please note the person completing the weld should consider their personal preferences, weld environment, and welding machine utilised to determine the optimal settings to complete the weld.

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:

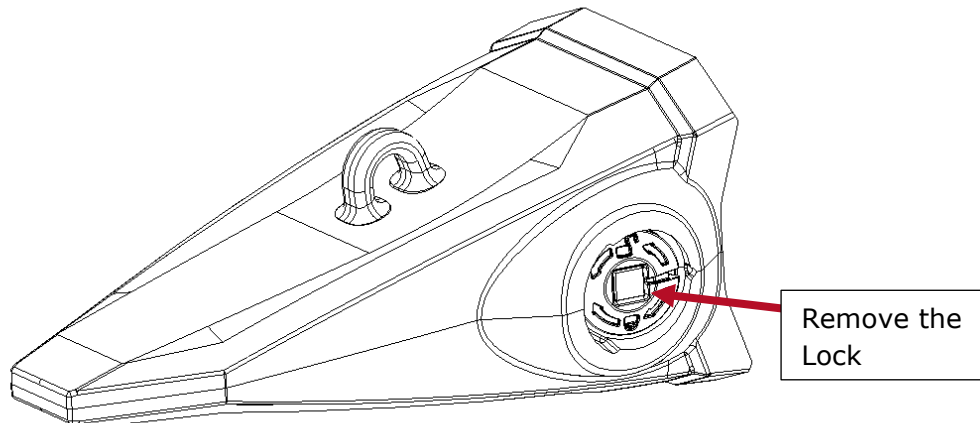
- If the ambient humidity is high and or the temperature is below 4°C / 40°F, the tabulated thermal treatment temperature should be increased by 27°C / 80°F. At no time should any material type or thickness be welded when the temperature of the steel is at or below 4°C / 40°F.
- All material within 100mm / 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.

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WELDING SEQUENCE

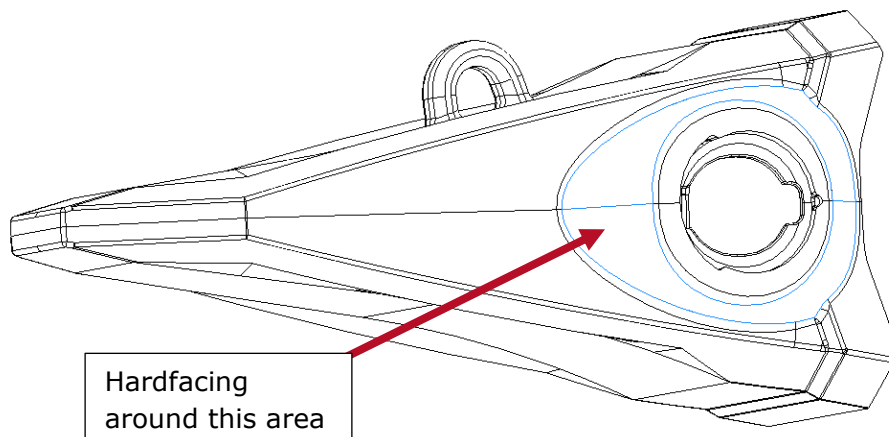
Talon Lockjaw products come supplied with a Lock installed in the lock engagement area. As such to preserve the parts integrity the lock must be removed prior to any heating or welding processes. Store the locks in a safe location so that they can be reinstalled after the component has cooled below 80°C (176°F).



Prepare the part surface that need to be welded according to the Welding Preparation section in this document. This helps eliminate porosity.

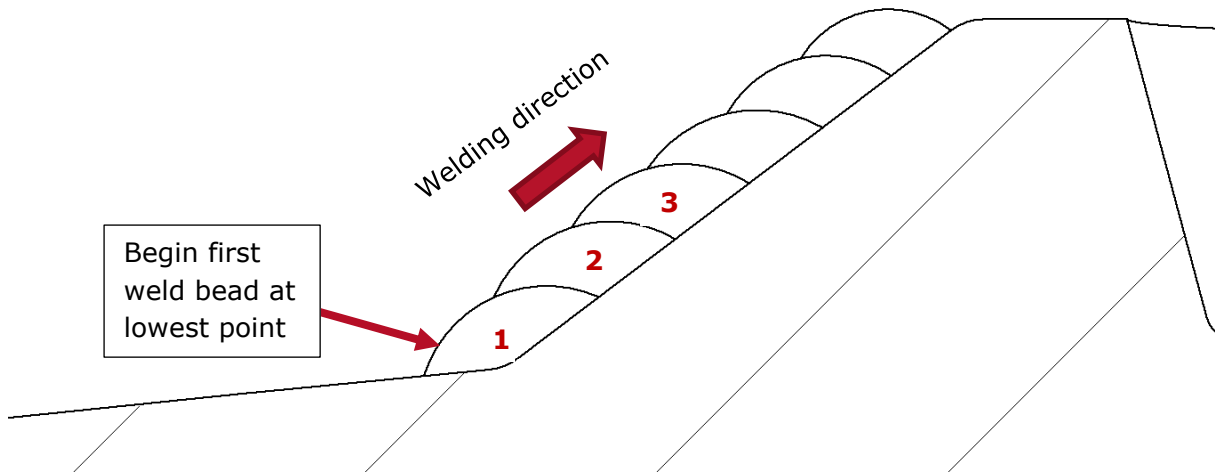
Preheat the Talon Points to 150°C / 300°F as specified in the Thermal Treatment section of this document before doing any hardfacing process. This helps to reduce the amount of thermal shock the part experiences during the process.

Hardfacing is to be applied around the lock cavity protection area to increase the resistance to abrasive wear.



Begin the first weld bead at lowest point. After each revolution, continue to stack up weld beads until the whole lock cavity protection is completely welded. The weld sequences and direction is demonstrated in the figure below. For best result, it is recommended that each layer of hardfacing be cleaned using needle gun or wire brush. It's not necessary however to remove all the slag.

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The hardfacing deposit should consist of no more than two layers and the total thickness should not exceed ¼" in most cases.

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 in the base component must be completely gouged out and filled with weld. Finish the repair with grinding and re-inspect for cracks. Grind off all the small fine welding particles on the part produced during the process as well.

CHANGE REGISTER

Rev	Date	Changes from previous version
0	16/01/2020	Original Issue