

TECHNICAL SAFETY BULLETIN

TSB No. 2202

STATUS: INITIAL RELEASE

SUBJECT: CLUSTER DRILL HARD-FACE WELDING

PRIORITY: 3-GENERAL

RELEASE DATE: 05/18/22

KEYSTONE TECHNICAL BULLETIN INFORMATION

The bulletin was created to provide instruction for hard-face welding on cluster drills. Hard-facing can increase the overall life of your equipment by reducing the amount of wear on the skin of your drill.

BULLETIN DETAILS

While hard-facing is beneficial for reducing wear, it is important to apply it properly. Please adhere to the following:

- DO NOT cross existing welds
 - Crossing over structural welds of the drill will increase material stresses and increase the potential for future cracking
- DO NOT hard-face the hammer modules, or the wear bars overlapping the hammer modules (if equipped)
 - Applying extra material to these surfaces may create a contact point against the inside of the hole
- DO NOT hard-face within ½" of any structural welds to include hammer module seams and face plate seams
- Preheating is not required, however, ensure the base material is 70-80°F prior to applying hard-face
 - Hard-face preheating requirement is driven by the base material's welding requirements
 - Due to low preheating requirements, hammer removal is not necessary
- Main locations for hard-facing include the outer surface of the wear bars and the bottom surface of the base plate on the drill
 - If the base plate exhibits excessive wear, the side, or outer diameter, of the base plate may also include hard-face within the bottom 3" of the drill
 - If hard-facing the side of the base plate, be cautious not to cross the seam weld of the base plate, as it may be difficult to identify when worn
 - DO NOT hard-face the skin of the drill between the wear bars

BULLETIN DETAILS (continued)

- The patterns for applying hard-face should be lines parallel to existing seams (when applicable) or patterns that do not cross
 - No checker or diamond patterns
 - Beads should be spaced $\frac{1}{2}$ " to $\frac{3}{4}$ " apart
 - Examples shown below:



Figure 1 – Proper pattern on base plate



Figure 2 – Incorrect pattern on base plate

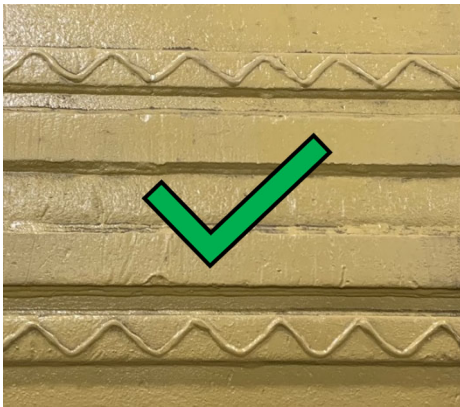


Figure 3 – Proper pattern on wear bars



Figure 4 – Incorrect pattern on wear bars

RELATED EQUIPMENT

Keystone Cluster Drills, Keystone Hole Openers, Keystone Core Barrels