



The Shape of Hardbands

One additional factor to be considered regarding hardband dimensions is the shape. Bands should be slightly domed (convex). Concave bands are not acceptable. Bands should also be smooth and even. Start/stop areas of the weld should be ground down to provide a smoother transition.

You will notice the shape of the hardbands in the photo above and how they are crowned with a symmetrical convex shape. Also, the Postle/Hardbanding Solutions hardbanding gauge, as shown above, is a great tool for measuring height and width of existing and/or finished hardbands.

Please remember that we are only a phone call away if there are any questions about this, or any other issues with your hardbanding. Postle has technical representatives around the globe, so someone is always available to assist.

Hardbanding Dimensions

We frequently get questions about the dimensions for hardbanding such as: How high (proud) should the bands be? When should I reapply? How wide should the hardbands be? Hardbanding is applied to the tool joints of drill pipe, Heavyweight Drill Pipe tool joints and center wear pads, work string tubing upsets, and other OCTG products. We will try to simplify the most common hardbanding questions regarding dimensions.

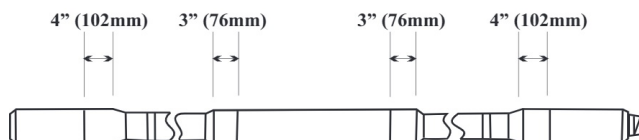
Drill Pipe

Hardbanding is commonly applied to the box end of tool joints of drill pipe, and sometimes applied to the pin end. Although not recommended, they can be applied flush (where it is applied within a machined groove). The resultant bands are flush with the OD of the rest of the tool joint. Hardbands are more commonly applied proud where it is welded to the surface of the OD and therefore increases the OD of that part of the tool joint. The height of hardbanding, according to the most recent Hardbanding Solutions specification is applied 1/8" proud with a variance of +/- 1/32". The risk in applying bands prouder than this specification is that they can create clearance problems. Elevators, BOPs, etc. limit the maximum acceptable OD. There are no clearance issues with flush hardbanding since the OD is not affected. There however *are* issues with flush hardbanding regarding tool joint wear and casing wear. Proud hardbanding stops tool joint wear whereas flush hardbanding allows the tool joint to wear as the hardbanding wears. Also, since the tool joint is always in contact with the casing with flush hardbanding, there is *no* casing protection. Proud hardbanding should never be applied closer than 3/8" to 1/2" to the edge of the shoulder of the 18° taper. Elevators use this 18° taper to lift the drill pipe. If the hardbands are too close to the taper, they can cause wear on the elevators as well as erosion cuts under the hardband.

The width of the hardbanding on the box end of tool joints is typically specified as 3". The most common configuration to create the 3" width is 3 – 1" hardbands. However, there are alternate configurations such as 4 – 3/4" hardbands. On the pin end 3/4" to 1 1/2" of hardbanding is typical

Heavyweight Drill Pipe

On center wear pads and heavyweight, the same 1/8" +/- 1/32" height recommendation would apply. In the drawing below, the typical hardbanding layout on Heavyweight Drill Pipe is represented



Work String Tubing

The most common configuration on work string tubing is to apply a single 1" hardband on the box end of the upset. Less frequently, the 1" hardband is applied to the pin end. The height and shape of the hardband is the same as described for drill pipe.

Reapplication of Hardbanding

On worn hardbanding, there are two considerations regarding dimensions. Old hardbanding should be sufficiently worn so that the new hardbands are not too proud. If there is still old material to be welded over, the combination of the height of the old bands along with the height of the new bands must be considered to not exceed the 1/8" +/- 1/32" limitation. Eccentric worn bands must be removed to tolerance on the thick side and or a partial band option applied. Partial bands must be over previous application of Duraband as well as approval from the pipe owner.

Yet another condition to consider is SmoothEdge™ Tool Joints. When to apply or reapply hardbanding is frequently misunderstood and often misapplied. SmoothEdge is a patented raised profile that provides a location for the hardband. The SmoothEdge feature must be worn from 1/32" to flush in regards to tong area OD to be reapplied over.

For previously applied hardbanding, it is important how much is still on the tool joint and how much longer it will last while drilling. If the used bands have less than 1/32" they should be reapplied. Otherwise, the tool joint and casing could see wear before hardbanding is reapplied so drilling conditions should be considered when making this decision.



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