

STRUCTURAL WELDING

TRU KROCARB plate can be fabricated by welding the mild steel substrate using standard mild steel or low hydrogen electrodes. The following details are a general guide to welding TRU KROCARB.

Care must be taken to ensure that all structural welds stop short of the hardfacing alloy layer. The only welding carried out on the hardfaced side of the plate will involve the capping of joints, for wear protection, with a compatible hardfacing electrode.

Fillet welds – Grind the edge of the plate to remove any slag and scale left from cutting. Care should be taken to ensure that the weld is applied to the substrate only and does not overlap the hardfacing or its penetration zone, as this can lead to carbon contamination and embrittlement of the weld and the adjacent area. This is best achieved by stopping the fillet approximately 3mm (1/8") below the overlay/base plate interface which should be clearly visible on a ground edge.

Butt Welds – Partial penetration butt welds involve cutting a bevel into the carbon steel base by gouging or flame cutting (See Figure 6). A 2mm to 3mm (1/16-1/8") "land" should be left to prevent burn-through to the hardfaced layer when welding (See Figure 7). Fit and tack the sections, then weld using the same technique as conventional joining.

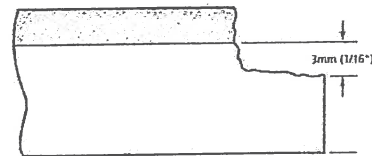


Figure 6

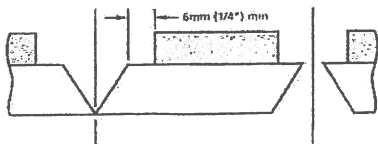


Figure 8

Full penetration butt welds require the hardfacing (including alloy penetration zone, See Figure 8) to be completely removed from the joint area by grinding/gouging back to at least 6 mm (1/4") past the weld joint area.

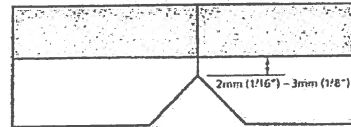


Figure 7

Fit and tack the beveled sections, then weld using the same technique as conventional joining.

Welding Technique and Consumable Selection

The root pass must not melt through the "land" into the hardfacing as this will lead to carbon contamination and embrittlement of the weld.

Welding consumables commonly used for structural welding of C-Mn steels should be employed and conventional welding procedures/techniques should be used.

For example:

AWS 5.1	-	E7018 (SMAW)
AWS A5.18	-	E70S-6 (GMAW) with 75% Argon 25% CO ₂
AWS A5.20	-	E70T-1 (FCAW)

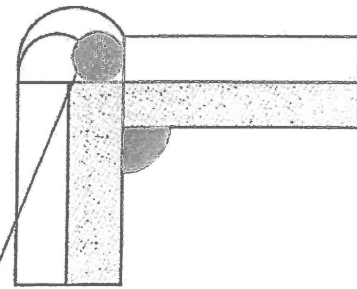
Note: Where the fabrication proves difficult to align with sufficient accuracy to ensure that no contamination by the hardfacing is likely during welding, it is recommended that a 309 type stainless steel welding rod (electrode) be used.

SUMMARY OF PROCEDURES

- ① Always use a radiused top tool when forming with a press brake.
- ② Ensure that no hardfacing can contaminate the welds. If in doubt, use a AWS A5.4 – E309 stainless steel consumable during fabrication.
- ③ Use conventional welding consumables and procedures for fabrication to match the substrate requirements.
- ④ Cap joints on the facing side with a matching hardfacing electrode.

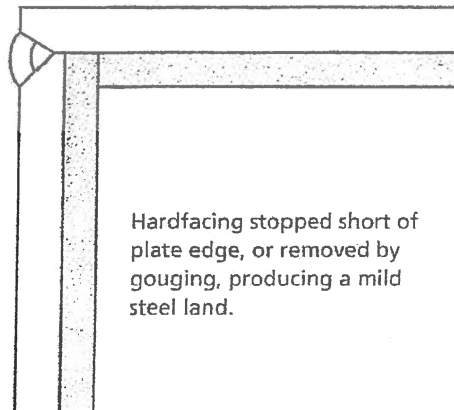
Examples of Practical Applications

Fillet Welds

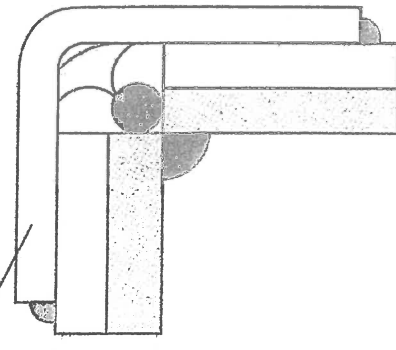


A bar or strip can be used to prevent contamination by the hardfacing during fillet welding

Fillet Welds



Hardfacing stopped short of plate edge, or removed by gouging, producing a mild steel land.



Fillet welds can be further strengthened by welding a carbon steel angle over the joint or eliminated by only using the angle support