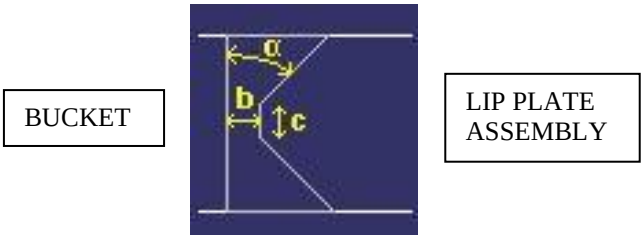
SANDVIK SHARK (G.E.T.) PRODUCT WELDING DOCUMENTATION

WELD PROCEDURE SPECIFICATION WPS: SS-004 REV: 0 DATE: 01/01/14

REFERENCE DOCUMENT: SANDVIK PPP0007 Rev 1 26.02.2009

Joint details: Lip Plate (50mm) Assembly to Bucket Butt Joints

Side 1



Side 2

Fig. 1. Double-bevel butt weld preparation
Material Thickness 50mm; Root Gap b = 3mm +0/-1mm; Root Land c = 3mm +/- 1mm; α = 45^0

Preliminary: Ensure edge preparations on Lip Plate Assembly are as shown in Fig. 1. Grind as required.
Step 1: Preheat 75mm width of Lip Plate Assembly to 150^0 C using gas heating torch .
Step 2: Stich fillet weld "strong-back" bars to Side 2 of Lip Plate Assembly with half the bar lengths protruding to aid fit-up and for stitch fillet welding to Side 2 of Bucket.
Step 3 Preheat Bucket edge (75mm width from weld joint) to 150^0 C for HARDOX 400, 170^0 C for Hardox 450 and HARDOX 500 while setting root gap at 3mm
Step 4 Stich fillet weld strong-back bars to Bucket.
Step 5: Tack weld run-on and run-off tabs (where appropriate).

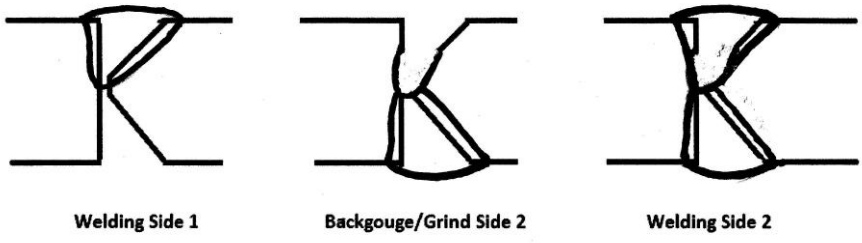


Fig.2: Welding Side 1 / Backgouge and Grind Side 2 / Welding Side 2

Step 6: Progressively weld Side 1 until filled.
Step 7: Grind welds on strong-back bars to remove them from Side 2.
Step 8: Maintaining preheat at 150^0 C, back gouge Side 2 and grind to expose clean parent and weld metal.
Step 9: Maintaining preheat at >150^0 C, progressively weld Side 2 until fully welded.
Step 10: Maintaining preheat at >150^0 C, plasma cut off run-on tab and run-off tab, and grind to clean surface.
Step 11: Dress cut surfaces to remove all notches and clean up weld surfaces.
Step 12:Visual inspection prior to slow cooling to ambient.
Step 13: After cooling to ambient temperature, Visual and MPT testing of both sides and ends of joint to ensure no cracking.

CLEANING: Wire brush or grind to achieve clean metal surface
INTERPASS TEMPERATURE: Not <125^0 C for HARDOX 400, 150^0 C for Hardox 450 and 175^0 C for HARDOX 500 , and not > 220^0 C (If joint is incomplete and after completion - SLOW COOL to ambient)
TORCH SETUP: Face of contact tip must not be recessed within gas nozzle more than 5mm.
APPROACH ANGLE: Use PUSH TECHNIQUE with Torch Lead Angle of 10-15^0 .
ELECTRICAL STICKOUT (ESO): Maintain ESO at 18mm +2/-0
ARC STARTING: TOUCH START, run at constant speed and HOLD Welding Position for 2-4 secs after releasing trigger .

Process	Wire Diam	Gas Shield	Gas Flow Rate	Electrode Classification	Process	Material Qualified	Thickness mm	
GMAW	1.2mm	Ar+18 to 20%	16 L/min	AWS A5.18	GMAW	HARDOX	50	
		CO_2				400/450/500		

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WELDING PROCESS

It is strongly recommended that a "melt & freeze" vertical-up programmed GMAW welding process be used for assembly welding of the Bucket Lip Assembly to Bucket.

WELDING DETAILS

Pass No.	Weld Pos	Side	Inter Pass temp		Amps	Volts	Polarity	Travel Speed mm/min	Heat Input kJ/mm
1-N	3G	1							
1-M	UP	2	220^0 C max		Program for 50mm		DC+	175 -200	TBA

SECTION 2.0 WELDING SUPERVISION DATA

CONSUMABLE TREATMENT: Packaged spools in dry storage . Spools on wire feeders to be dry and free of dirt/dust. Rusted wire to be discarded.

POST-WELD TREATMENT: Remove weld spatter, silicate patches and wire brush surface

TESTING

Welder MUST visually examine weld to ensure weld joiny is crack-free, absence of exposed porosity, absence of undercut, and to ensure that smooth transitions from weld face to material surfaces have been achieved.

Refer WPQR-SS001

SECTION 3.0 PROJECT SPECIFIC DATA

CLIENT NAME: SANDVIK SHARK (G.E.T.)

APPROVALS

FABRICATOR:	**NAME:**	**DATE:**
CLIENT: SANDVIK SHARK (G.E.T.)	**NAME: MARTEN KARLSSON, ENG. MANAGER**	**DATE:**
THIRD PARTY: AWS(WA) - CONTRACTOR	**NAME: IAN HENDERSON, IWE**	**DATE:**