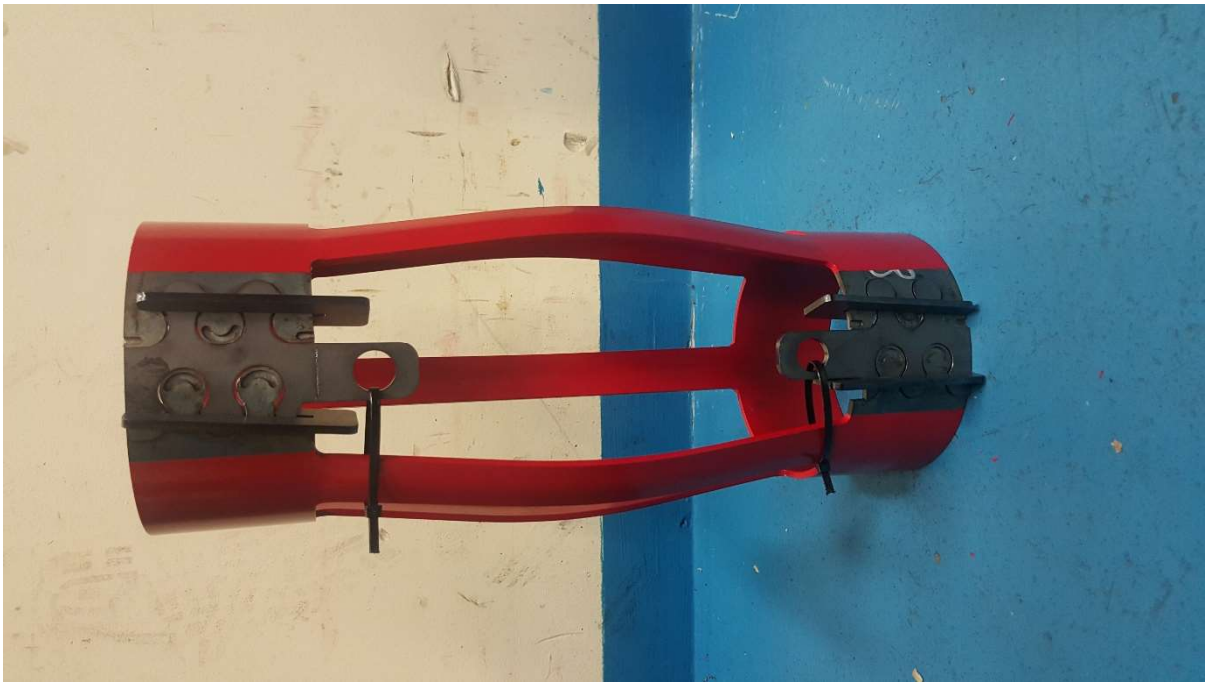
Installation Procedure – SUB with Interlock Spacer

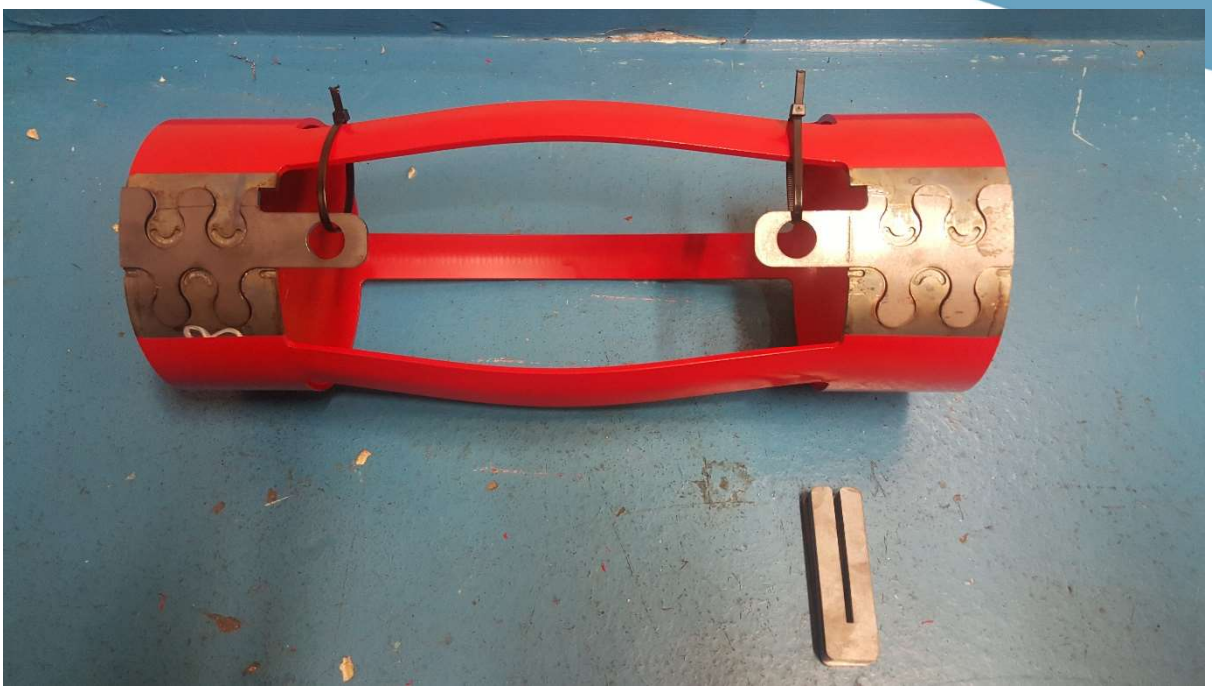
Private and Confidential

1. The SUB product will be supplied with each interlock spilt and held apart by a secondary interlock spacer which will be clipped in place and cable tied to ensure it does not dislodge during transit.



2. Each interlock join will be coated in a protective oil to stop the bare steel from becoming contaminated. This need to be thoroughly cleaned off before installation to ensure a sound weld can be produced later in the process.

3. In order to slide the product over the SUB casing the four transit clips should be removed, as shown.



4. After removal, slide the product over the SUB casing.

5. Once in place, use a mallet to hit directly downwards on the centraliser at the side of the interlock, this will allow the interlock spacers to spring clear of the centraliser, but will be retained from causing injury by the cable ties.

*****At no point should your hand be near the interlock of the product, due to the nature of the transit method the interlock spacer when removed will spring away from the interlock and therefore could cause injury if care is not take. Always wear gloves, ear defenders and safety glasses as a minimum precaution*****

6. The interlock spacer can now be removed and disposed of by cutting the cable tie.

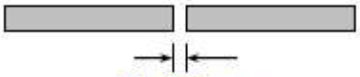
7. To interlock the centraliser fully hit downwards again on one side of the interlock and this will persuade the segments together.

8. At this point the weld procedure can be followed in order to weld the centraliser interlocks together.

9. If the interlock gap exceeds 1mm when fitted to the pipe (pre-weld), then use a clamp on the bows to gently pull the interlock gap together.

MANUFACTURERS WELDING PROCEDURE SPECIFICATION (WPS)

Manufacturers WPS Ref No:	CL-TIG-BS-BW-003A	Issue Number:	1
Manufacturers WPQR No:	None	Parent Material:	Boron Steel
Location:	Workshop		
Welding Process:	Autogenous TIG Welding (142)	Yield/0.2% PS upto (N/mm^2):	Not Applicable
Mode of Transfer (MIG/MAG):	Not Applicable	Material Thickness (mm):	4mm
Joint Type & Weld:	Square Butt Welds		
		Outside Diameter (mm):	Not Applicable
Method of Prep and Cleaning:	Ground	Welding Position:	Flat (PA)

Joint Design	Welding Sequences
 Max Gap 1mm	 Autogenous for main weld. Partial Penetration only

Welding Details

Run	Process	Size of Filler (mm)	Current A	Voltage V	Type of Current/Polarity	Wire Feed Speed	Travel Speed (mm/sec)	Heat Input (kJ/mm)
1	142	Not Applicable	75	Not Required	DC Elec Neg	Not Applicable	As Required	As Required

Filler Metal Designation:	Not Applicable		
Filler Metal Make:	Not Applicable		
Any Special Baking or Drying:	None	Back Gouging:	None
Shielding Gas Type & Group:	Pure Argon (I1)	Preheat Temperature (min):	Ambient
Shielding Gas Composition:	99.99% Argon	Interpass Temperature (max):	Not Applicable
Flow Rate (LPM):	6/7 LPM	Heat Treatment and/or Ageing:	None
Purging Gas Type:	Not Applicable	Time, Temperature, Method:	Not Applicable
Flow Rate (LPM):	Not Applicable	Heating and Cooling Rates:	Not Required
Tungsten Type:	2% Thoriated	Other Information:	None
Tungsten Size:	2.4mm		
Torch to Work (mm):	10mm Bore		

MANUFACTURERS REPRESENTATIVE

Signature:

Name:

Date: 18th February 2015

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