



Weld Procedure Specification

WPS No: MDK 002

MDK Fabrication Ltd.
Station Road
Oldmeldrum
Aberdeenshire
AB51 0EZ

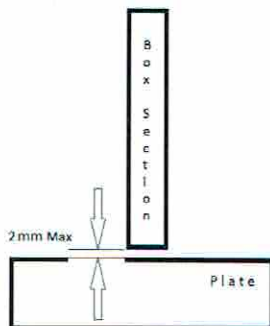
Supporting PQR(s)	MDK 002		
ELEMENT Reference No.	EPQ 77102		
Welding Specifications	BS EN ISO 15614-1		
Joint Type(s) Qualified	Single Run Fillet Welds		
Material(s) Tested	EN 10210 S355J2H (SHS)	To	EN 10025 Gr S355J2+N (Plate)
Material(s) Group No.	Group 1 Sub-group 1.2	To	Group 1 Sub-group 1.2
Dimensions Tested	5mm	To	12.5mm
Thickness Range Qualified	3mm – 10mm	To	6.25mm – 25mm
Diameter Qualified	≥ 25mm		
Throat Thickness Qualified	3.75mm to 7.5mm (Based on 5mm Throat Qualification).		
Position Qualified	All		
Progression Qualified	All, excluding vertical down		
Welding Process	135. Metal Active Gas		
Preheat Method / Control	Propane Gas Torch (if required) / Digital Pyrometer / heat sensitive crayons		
Preheat Temperature	Ambient and moisture free		
Interpass Temperature	250°C Maximum		
Heat Treatment: (H-T)	N/A (As Welded)		
Shielding Gas. (Torch)	Argosshield Heavy (78% Argon / 20% CO ₂ / 2% O ₂) @ 14 – 18 L/min		
Stick Out	15-20mm		
Stringer Bead / Weave	Stringer beads		

Run No	Welding Process	Filler Make & Trade Name	Dia (mm)	Spec (ISO)	Grade	DC	Amps (A)	Volts (V)	Travel Speed (mm/sec)	Heat Input (KJ/mm)	EN Heat Input (KJ/mm)
All	135	Lincoln Supramig	1.0	14341-A	G 46 4 M21 3Si1 / G42 3 C1 3Si1	+ve	130-180	18.7-21.0	1.8-3.6	1.1-1.4	0.9-1.1

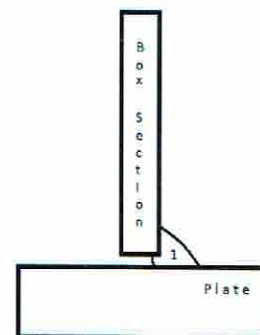
Notes:

- A K factor of 0.8-FCAW to be applied to heat inputs when conforming to EN 1011-1.
- Materials and consumables shall be stored as per manufacturers instructions.
- Bullets / joint restraints to made from base material or equivalent.

Joint Details



Run Sequence



Certifying Authority		Client Representative	
Date	3/10/14	Date	



Welder Qualification Certificate

in accordance with BS EN ISO 9606-1:2013

Client:	MDK Fabrications Ltd		
Name & Stamp No:	Mark Kelman	Welding Date	01/10/2014
Weld Procedure No:	MDK 002	Element Reference:	EPQ 77102

Testing Coupon & Qualification Details										
	Testing conditions	Qualification Range								
Joint Type:	Fillet weld	Fillet welds								
Weld Details:	ss,mb	ss,mb bs								
Single/Multi Run:	sr	sr								
Product Type(s):	Plate & Hollow section	Plate & Hollow section								
Material Specification(s): Type(s)/Grade(s): Group:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Plate</td> <td style="width: 50%;">Hollow section</td> </tr> <tr> <td>EN10025</td> <td>EN10210</td> </tr> <tr> <td>S355J2+N</td> <td>S355J2H</td> </tr> <tr> <td colspan="2">Group1, Sub -group 1.2</td> </tr> </table>	Plate	Hollow section	EN10025	EN10210	S355J2+N	S355J2H	Group1, Sub -group 1.2		All
Plate	Hollow section									
EN10025	EN10210									
S355J2+N	S355J2H									
Group1, Sub -group 1.2										
Thickness:	12.5mm Plate, 5mm Square Hollow Section	≥3mm								
Diameter:	N/A - 50mm Hollow section	≥25mm								
Filler Material Group:	FM1	FM1 & FM2								
Type of Filler Material:	S	S & M								
Mode of Metal Transfer:	Dip Transfer	All other Transfer Modes								
Shielding Gas:	78% Ar / 20% CO ₂ / 2% O ₂	Any active gas								
Welding Position(s):	PH	All.								
Welding Progression(s):	Vertical up	All. Excluding vertical down.								
Validation:	The welder shall be retested every 3 years. As per section 9.3 a. Of ISO 9606-1:2013.									

Welding Parameters							
Run	Process	Consumable	Trade-name	Spec (ISO)	Grade	Dia. (mm)	Polarity
All	135	Lincoln	Supramig	14341-A	G 46 4 M21 3Si1 / G42 3 C1 3Si1	1.0	DC +ve

Testing Details	
Visual Inspection	Macroscopic examination
Acceptable	Acceptable

Initial Qualification:					
Certifying Authority				Client Representative	
Date				Date	

Certificate Confirmation:				
April 2015	October 2015	April 2016	October 2016	April 2017



Weld Procedure Qualification Record

(Page 1 of 2)

Company: MDK Fabrication Ltd. Element Ref: EPQ 77102
Welding Date: 25/09/2014
Weld Procedure (PQR No): MDK 002
Specification: BS EN ISO 15614-1
Joint Type: Fillet Weld, Single run
Welder: Mark Kelman

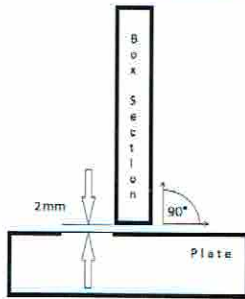
BASE METALS

Specification: EN 10210 to EN 10025
Grade: S355J2H to S355J2+N
Dimensions: 50x50x5mm to 12.5mm
Group no.: Group 1, subgroup 1.2

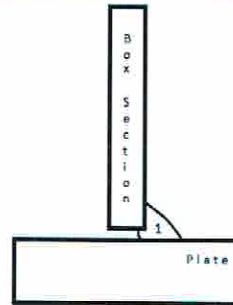
WELDING PROCESS

Process: 135. Metal Active Gas

Joint Details



Run Sequence



WELDING DETAILS / TECHNIQUE

Position: PH
Progression: Vertical up
String / Weave: Stringer Beads Only
Joint preparation: Machined & Ground
Stick out: 15-20mm

Gas Shielding

Type & composition: Argoshield Heavy
Flow rate: 14-18 L/min

Purge Shielding

Type & composition: N/A
Flow rate:
Maximum content:

PRE-HEAT

Method: N/A
Minimum Temp: Ambient
Interpass Temp: 250°C Maximum
Control Method: Digital Pyrometer
& Heat Sensitive Crayons

POST WELD HEAT TREATMENT (PWHT)

PWHT Method: N/A
Control Method:
Rate of rise:
Soak Temp:
Soak Time:
Rate of fall:

ELEMENT ABERDEEN

CERTIFYING AUTHORITY

Signed:

Signed:

Country Office
Lloyd's Register EMEA

Date:

03/10/2014

Date:

3/10/14



Weld Procedure Qualification Record

(Page 2 of 2)

Company: MDK Fabrication Ltd.	Element Ref: EPQ 77102
	Welding Date: 25/09/2014
Weld Procedure (PQR No): MDK 002	
Specification: BS EN ISO 15614-1	
Joint Type: Fillet Weld, Single run	
Welder: Mark Kelman	


Run No.	Process	Filler Dia (mm)	Trade Name	Polarity	Amps (A)	Volts (V)	ROL (mm)	Time (sec)	Speed (mm/sec)	Heat Input (KJ/mm)	Temp (°C)
1	135	1.0	Supramig	DC+ve	135	18.8	50	28	1.8	1.4	25
1	135	1.0	Supramig	DC+ve	130	18.7	50	28	1.8	1.4	95
1	135	1.0	Supramig	DC+ve	180	21.0	50	14	3.6	1.1	177
1	135	1.0	Supramig	DC+ve	180	20.1	50	16	3.1	1.2	250

ADDITIONAL INFORMATION:

Material 1: EN 10210 S355J2H	Material 2: EN 10025 S355J2+N
Dimensions: 50x50x5mm	Dimensions: 12.5mm
Cast No: 109485	Cast No: 1148414
Consumable: Lincoln Supramig	
Size: 1.0mm	
Spec / Grade: ISO 14341-A / G 46 4 M21 3Si1 / G42 3 C1 3Si1	
Lot No: 43144	

NOTES:

1. Materials & consumables were stored as per manufacturers instructions.
2. Bullets used were taken from base metal .
3. Aroghield Heavy composition: 78% Ar / 20% / CO₂ / 2% O₂

ELEMENT ABERDEEN	CERTIFYING AUTHORITY
Signed: <u> <i>Mark Kelman</i> </u>	Signed: <u>  </u>
Date: <u> 03/10/2014 </u>	Date: <u> 01/10/14 </u>