PQR / WPS
for reciprocating compressor

Rev.	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code
00	16/11/2020	Issue For Approve	KP	JR	PW	

Class: 1 **Phase:** 0

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Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS

PQR record number	RET 0245029-001-22	Revision 1	WPS record number	S2000	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Plate	API 2W (50)	U	II	-	-	4	-
Welded to:	Plate	API 2W (50)	U	II	-	-	4	-
and tested:	Without PWHT, With impacts							
Notes								

JOINTS

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	3		
Root face	(mm)	0-1		

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification		5.18
AWS classification		E70C-6MH4
Filler metal F-number		6
Weld metal A-number		-
Filler metal nominal composition		N.A.
Filler metal trade name		Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2
Deposited thickness	(mm)	4
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Supplemental filler metal		-
Supplemental filler metal vol.	(mm^3)	-

POSITION

Position	3G
Weld progression	Uphill

PREHEAT

Preheat temperature	(°C)	10
Maximum interpass temperature	(°C)	124

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15
Trailing gas:	Type		None
	Flow rate	(l/min)	-
Backing gas:	Type		None
	Flow rate	(l/min)	-

ELECTRICAL

Filler metal size	(mm)	1,2
Amperes		69 - 83
Volts		14,1 - 15,1
Travel speed	(mm/min)	75 - 83
Maximum heat input	(kJ/mm)	0,90
Current/polarity		DCEP (reverse polarity)
Wire feed speed	(m/min)	0
Arc transfer mode		Short-circuiting

TECHNIQUE

String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/single electrode		Single electrode
Multi/Single pass per side		Multiple passes
Peening		Not used
Initial/interpass cleaning		Brushing and Grinding
Back gouging method		None

Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS

PQR record number	RET 0245029-001-22	Revision 1	WPS record number	S2000	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	20.05	3.69	73,985	-	538 N/mm²	Ductile-Base Metal
2	20.05	3,58	60,15	-	561 N/mm²	Ductile-Base Metal

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments
Face bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	

Comments

TOUGHNESS TESTS

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values (J)	(% Shear)	(mm)	Drop weight break
1	Weld Metal	Charpy V	10 x 3	-40	31	-	-	-
2	Weld Metal	Charpy V	10 x 3	-40	31	-	-	-
3	Weld Metal	Charpy V	10 x 3	-40	32	-	-	-
4	HAZ + 1 mm	Charpy V	10 x 3	-40	53	-	-	-
5	HAZ + 1 mm	Charpy V	10 x 3	-40	52	-	-	-
6	HAZ + 1 mm	Charpy V	10 x 3	-40	50	-	-	-
7	HAZ + 5 mm	Charpy V	10 x 3	-40	50	-	-	-
8	HAZ + 5 mm	Charpy V	10 x 3	-40	50	-	-	-
9	HAZ + 5 mm	Charpy V	10 x 3	-40	49	-	-	-

Comments

OTHER TESTS

Type of test	Acceptance criteria	Result	Comments
RT examination	AWS D1.1/D1.1M:2010	Acceptable	RT report 1213-2012-31-003

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number
T. Lajos	ID Card 353992JA	W-104

Mechanical testing by	Schielab Breda (NLD)
Laboratory test number	SL 12.6052-1
Test file number	ARL1559-10
Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

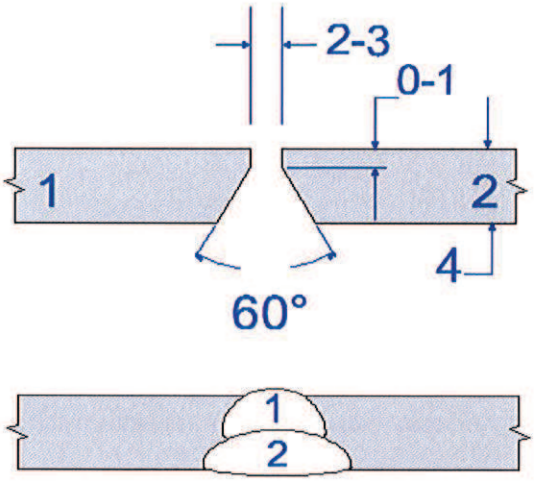
Signature 1

Name	Signature
Franky van Toledo	Airpack Nederland bv
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	Lloyd's Register Nederland B.V. Wim Komdeur Lloyd's Register
Date	
8-6-2012	

PQR record number	RET 0245029-001-22	Revision 1	WPS record number	S2000	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-10	Revision 2	Date	29-5-2012
PQR number	RET 0245029-001-22	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2000	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

			Welded to:		
Product form		Plate		Product form	Plate
Material control number		293821/3		Material control number	293821/3
Specification (type or grade)		API 2W (50)		Specification (type or grade)	API 2W (50)
Nominal composition		C-Mn		Nominal composition	C-Mn
Trade name		Voestalpine Grobblech		Trade name	Voestalpine Grobblech
P number		U		P number	U
G number				G number	
AWS group number		II		AWS group number	II
Nominal pipe/tube size		-		Nominal pipe/tube size	-
Schedule		-		Schedule	-
Length	(mm)	600		Length	(mm) 600
Width (OD)	(mm)	200		Width (OD)	(mm) 200
Thickness	(mm)	4		Thickness	(mm) 4

JOINTS

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	3		
Root face	(mm)	0-1		

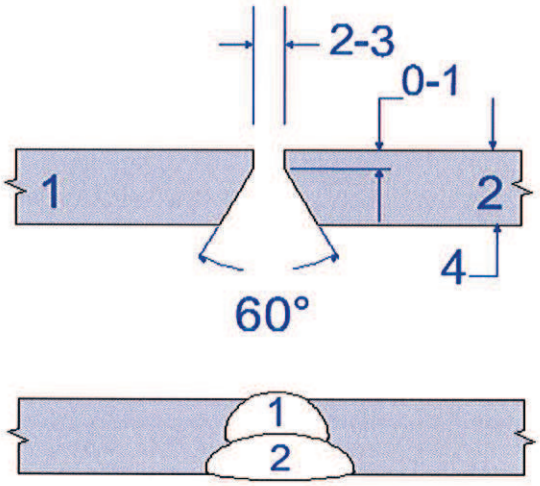
CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL1559-10	Revision 2	Date	29-5-2012

PASS INFORMATION			
Pass number		1	2
Layer number		1	2
WELDING PROCESSES			
Welding process		GMAW	GMAW
Type		Semi-automatic	Semi-automatic
FILLER METALS			
Material control number		P1FC110214	
SFA specification		5.18	5.18
AWS classification		E70C-6MH4	E70C-6MH4
Filler metal F-number		6	6
Weld metal A-number		-	-
Filler metal nominal composition		N.A.	N.A.
Filler metal trade name		Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2	1,2
Length of filler metal consumed	(mm)	-	-
Deposited thickness	(mm)	2	2
Maximum pass thickness	(mm)	3	3
Weld deposit chemistry		-	-
Supplemental filler metal		-	-
Supplemental filler metal vol.	(mm^3)	-	-
POSITION			
Position		3G	3G
Weld progression		Uphill	Uphill
PREHEAT			
Preheat temperature	(°C)	10	10
Maximum interpass temperature	(°C)	10	124
GAS			
Shielding gas: Type		AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate	(l/min)	15	15
Trailing gas: Type		None	None
Flow rate	(l/min)	-	-
Backing gas: Type		None	None
Flow rate	(l/min)	-	-
ELECTRICAL			
Filler metal size	(mm)	1,2	1,2
Amperes		69	83
Volts		14.4	15.1
Travel speed	(mm/min)	75	83
Maximum heat input	(kJ/mm)	0,7949	0,906
Current/polarity		DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed	(m/min)	-	-
Arc transfer mode		Short-circuiting	Short-circuiting
TECHNIQUE			
String or weave		Stringer and Weave	Stringer and Weave
Orifice/gas cup size		15	15
C.T.W.D	(mm)	15	15
Multi/single electrode		Single electrode	Single electrode
Multi/Single pass per side		Multiple passes	Multiple passes
Peening		Not used	Not used
Initial/interpass cleaning		Brushing and Grinding	Brushing and Grinding
Back gouging method		None	None
PASS PERFORMED/WITNESSED BY			
Welders name		T. Lajos	T. Lajos
Recorded/witnessed by		A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date		29-5-2012	29-5-2012
Data entry by		A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-10	Revision 2	Date	29-5-2012



WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with	: AWS D1.1:2010
Purchaser	: Arjan Roza Lastechniek BV
Purchase order no.	: ARL1559-10
Manufacturer	: Airpack Nederland BV.
WPS	: S2000
Description of sample(s)	: Plate with Single-V-groove
Dimension(s)	: 600x400x4 mm
Group number	: II -II
Material grade	: API 2W grade 50 - API 2W grade 50
Welding process(es)	: GMAW (metal cored)
Filler	: SFA 5.18 : E70C-6MH4, F-number 6
Brand and type	: Lincoln Electric Outershield MC715-H
Shielding gas	: AC-20 (A5.32 SG-)
Backing gas	: N.A.
Welding position	: 3G progression up
Preheat / Interpass temp.	: 10 °C / 124 °C
Joint type	: Single-V-groove
Welder	: T. Lajos
Date / place of birth	: 11-02-1985 / Hungary
Stamp. No. / ID	: W-104 / ID Card 353992JA
Testpiece marked with	: ARL1559-10

NON DESTRUCTIVE EXAMINATION

* Visual examination	: performed by examiner

CROSS WELD TENSILE TESTS

Dimensions(s) [mm]	Rm [N/mm^2]	Fracture location
20.05 x 3.69	538	Base material
20.05 x 3.58	561	Base material
Requirements;	≥ 448	

TECHNOLOGICAL TESTS

Type	Former / Bending angle	Results
Face bend	4t / 180°	2 x acceptable
root bend	4t / 180°	2 x acceptable

07 JUNI 2012

TESTING
RvA L 063

Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

IMPACT TESTS - Type: Charpy KV

Notch location	Size [mm]	Test temp. [°C]	Results [J]	Average value [J]
Midweld	10 x 3.0	-40	31-31-32	31
Fusion line +1mm	10 x 3.0	-40	53-52-50	52
Fusion line +5mm	10 x 3.0	-40	50-50-49	50
Requirements for size 10x10mm;			≥ 19	≥ 27
Requirements for size 10x3mm;			≥ 5.7	≥ 8

Conclusion: The results satisfy the requirements.

Breda, 07-06-2012

A. Karstanje

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]

Lloyd's Register Nederland B.V.
P.F. Reijntjes
Rotterdam

07 JUNI 2012

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	S2000 Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016	Company name	Airpack Netherlands BV
Supporting PQR(s) Reference docs.	RET 0245029-001-22 - Rev 1		

Scope	General instruction welding structural for skids Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. N/A	Grp-no. II
Welded to	Plate	P-no. N/A	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	3,	8,	-	-
Impact tested	3,	8,	-	-
Partial pen.	3,	8,	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	8,	-	-
Sup. filler	-	-	-	-	-	- None -			
Suppl. filler metal vol. (mm³)	-								

WELDING PROCEDURE

Welding process		GMAW
Type		Semi-automatic
Minimum preheat/interpass temperature	(°C)	10
Maximum interpass temperature	(°C)	180
Filler metal size	(mm)	1,2
Layer number		V
Position		3G
Weld progression		Uphill & Downhill
Current/polarity		DCEP (reverse polarity)
Amperes		60 – 100
Volts		13,1 – 16,1
Travel speed	(mm/min)	60 – 100
Maximum heat input	(kJ/mm)	0,90
Wire feed speed	(m/min)	0,
Arc transfer mode		Spray-transfer
Shielding: Gas type		AC-20 (A5.32 SG-)
Flow rate	(l/min)	14-16
Trailing: Gas type		None
Flow rate	(l/min)	-
Backing: Gas type		None
Flow rate	(l/min)	-
String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/Single pass per side		Multiple passes
Multi/single electrode		Single electrode
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Notes		

QUALITY INSPECTED DATE: NAME: AIRPACK NEDERLAND B.V.

WPS record number	S2000 Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016	Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	For thickness 3 to 19(mm):Preheat base metal to 10(°C)

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
F. van Toledo	
Date	
Wednesday, 17 October 2018	

QUALITY INSPECTED DATE: NAME: AIRPACK NEDERLAND B.V.

Signature 2

Name	Signature
Date	

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS

PQR record number	RET 0245029-001-23	Revision 1	WPS record number	S2100	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Plate	API 2W (50)	U	II	-	-	8	-
Welded to:	Plate	API 2W (50)	U	II	-	-	8	-
and tested:	Without PWHT, With impacts							
Notes								

JOINTS

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	60		
Root opening (mm)	3		
Root face (mm)	0-1		

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification		5.18
AWS classification		E70C-6MH4
Filler metal F-number		6
Weld metal A-number		-
Filler metal nominal composition		N.A.
Filler metal trade name		Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2
Deposited thickness	(mm)	8
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Supplemental filler metal		-
Supplemental filler metal vol.	(mm³)	-

POSITION

Position	3G
Weld progression	Uphill

PREHEAT

Preheat temperature	(°C)	10
Maximum interpass temperature	(°C)	137

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15
Trailing gas:	Type		None
	Flow rate	(l/min)	-
Backing gas:	Type		None
	Flow rate	(l/min)	-

ELECTRICAL

Filler metal size	(mm)	1,2
Amperes		86 - 98
Volts		15,8 - 16
Travel speed	(mm/min)	61 - 88
Maximum heat input	(kJ/mm)	1,52
Current/polarity		DCEP (reverse polarity)
Wire feed speed	(m/min)	0
Arc transfer mode		Short-circuiting

TECHNIQUE

String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/single electrode		Single electrode
Multi/Single pass per side		Multiple passes
Peening		Not used
Initial/interpass cleaning		Brushing and Grinding
Back gouging method		None

Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS

PQR record number	RET 0245029-001-23	Revision 1	WPS record number	S2100	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	20.02	7.59	151,952	-	543 N/mm²	Ductile-Base Metal
2	20.06	7.52	150,851	-	540 N/mm²	Ductile-Base Metal

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments
Face bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	

Comments

TOUGHNESS TESTS

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values (J)	(% Shear)	(mm)	Drop weight break
1	Weld Metal	Charpy V	10 x 5	-40	44	-	-	-
2	Weld Metal	Charpy V	10 x 5	-40	46	-	-	-
3	Weld Metal	Charpy V	10 x 5	-40	47	-	-	-
4	HAZ + 1 mm	Charpy V	10 x 5	-40	130	-	-	-
5	HAZ + 1 mm	Charpy V	10 x 5	-40	113	-	-	-
6	HAZ + 1 mm	Charpy V	10 x 5	-40	116	-	-	-
7	HAZ + 5 mm	Charpy V	10 x 5	-40	124	-	-	-
8	HAZ + 5 mm	Charpy V	10 x 5	-40	85	-	-	-
9	HAZ + 5 mm	Charpy V	10 x 5	-40	95	-	-	-

Comments

OTHER TESTS

Type of test	Acceptance criteria	Result	Comments
RT examination	AWS D1.1/D1.1M:2010	Acceptable	RT report 1213-2012-31-003

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number
T. Lajos	ID Card 353992JA	W-104

Mechanical testing by	Schielab Breda (NLD)
Laboratory test number	SLL 12.6053-1
Test file number	ARL1559-11
Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

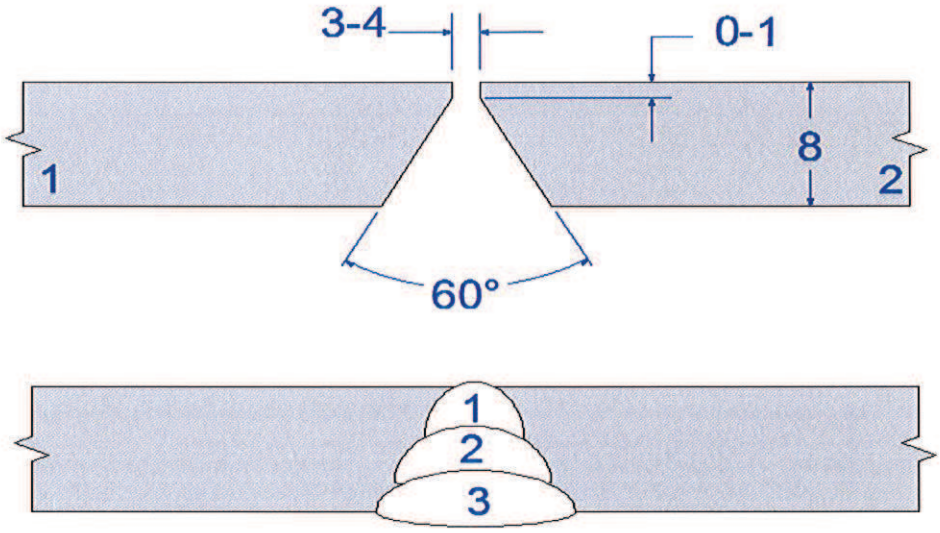
Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	
Date	
8-6-2012	

PQR record number	RET 0245029-001-23	Revision 1	WPS record number	S2100	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-11	Revision 2	Date	29-5-2012
PQR number	RET 0245029-001-23	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2100	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

			Welded to:		
Product form		Plate		Product form	Plate
Material control number		293821/3		Material control number	293821/3
Specification (type or grade)		API 2W (50)		Specification (type or grade)	API 2W (50)
Nominal composition		C-Mn		Nominal composition	C-Mn
Trade name		Voestalpine Grobblech		Trade name	Voestalpine Grobblech
P number		U		P number	U
G number				G number	
AWS group number		II		AWS group number	II
Nominal pipe/tube size		-		Nominal pipe/tube size	-
Schedule		-		Schedule	-
Length	(mm)	600		Length	(mm) 600
Width (OD)	(mm)	200		Width (OD)	(mm) 200
Thickness	(mm)	8		Thickness	(mm) 8

JOINTS

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	3		
Root face	(mm)	0-1		

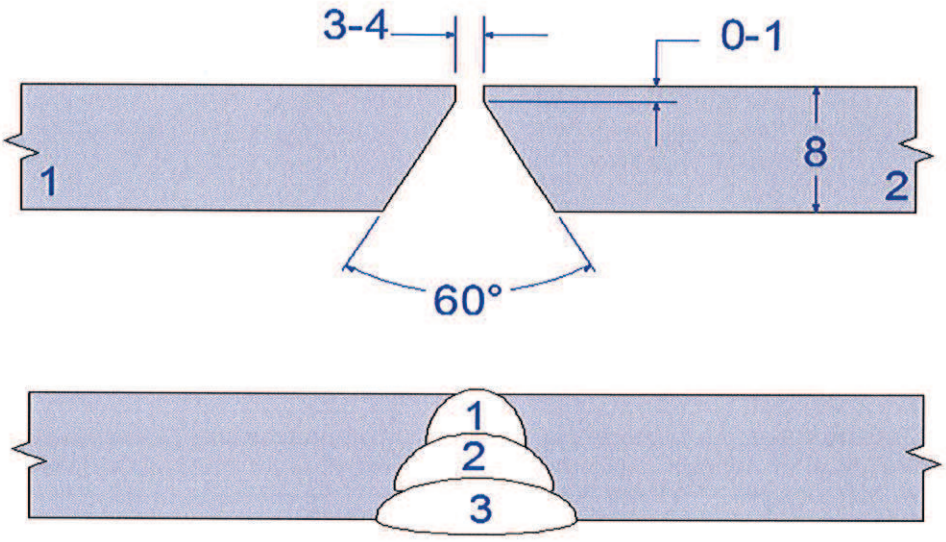
CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL1559-11	Revision 2	Date	29-5-2012

PASS INFORMATION				
Pass number		1	2	3
Layer number		1	2	3
WELDING PROCESSES				
Welding process		GMAW	GMAW	GMAW
Type		Semi-automatic	Semi-automatic	Semi-automatic
FILLER METALS				
Material control number		P1FC110214	P1FC110214	P1FC110214
SFA specification		5.18	5.18	5.18
AWS classification		E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number		6	6	6
Weld metal A-number		-	-	-
Filler metal nominal composition		N.A.	N.A.	N.A.
Filler metal trade name		Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2	1,2	1,2
Length of filler metal consumed	(mm)	-	-	-
Deposited thickness	(mm)	3	2	3
Maximum pass thickness	(mm)	4	4	4
Weld deposit chemistry		-	-	-
Supplemental filler metal		-	-	-
Supplemental filler metal vol.	(mm^3)	-	-	-
POSITION				
Position		3G	3G	3G
Weld progression		Uphill	Uphill	Uphill
PREHEAT				
Preheat temperature	(°C)	10	10	10
Maximum interpass temperature	(°C)	86	114	137
GAS				
Shielding gas: Type		AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate	(l/min)	15	15	15
Trailing gas: Type		None	None	None
Flow rate	(l/min)	-	-	-
Backing gas: Type		None	None	None
Flow rate	(l/min)	-	-	-
ELECTRICAL				
Filler metal size	(mm)	1,2	1,2	1,2
Amperes		89	86	98
Volts		16	15.8	15.8
Travel speed	(mm/min)	83	88	61
Maximum heat input	(kJ/mm)	1,0294	0,9265	1,523
Current/polarity		DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed	(m/min)	-	-	-
Arc transfer mode		Short-circuiting	Short-circuiting	Short-circuiting
TECHNIQUE				
String or weave		Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size		15	15	15
C.T.W.D	(mm)	15	15	15
Multi/single electrode		Single electrode	Single electrode	Single electrode
Multi/Single pass per side		Multiple passes	Multiple passes	Multiple passes
Peening		Not used	Not used	Not used
Initial/interpass cleaning		Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method		None	None	None
PASS PERFORMED/WITNESSED BY				
Welders name		T. Lajos	T. Lajos	T. Lajos
Recorded/witnessed by		A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date		29-5-2012	29-5-2012	29-5-2012
Data entry by		A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-11	Revision 2	Date	29-5-2012



WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with	: AWS D1.1:2010
Purchaser	: Arjan Roza Lastechniek BV
Purchase order no.	: ARL1559-11
Manufacturer	: Airpack Nederland BV.
WPS	: S2100
Description of sample(s)	: Plate with Single-V-groove
Dimension(s)	: 600x400x8 mm
Group number	: II -II
Material grade	: API 2W grade 50 - API 2W grade 50
Welding process(es)	: GMAW (metal cored)
Filler	: SFA 5.18 : E70C-6MH4, F-number 6
Brand and type	: Lincoln Electric Outershield MC715-H
Shielding gas	: AC-20 (A5.32 SG-)
Backing gas	: N.A.
Welding position	: 3G progression up
Preheat / Interpass temp.	: 10 °C / 137 °C
Joint type	: Single-V-groove
Welder	: T. Lajos
Date / place of birth	: 11-02-1985 / Hungary
Stamp. No. / ID	: A3 / ID Card 353992JA
Testpiece marked with	: ARL1559-11

NON DESTRUCTIVE EXAMINATION

* Visual examination	: performed by examiner

CROSS WELD TENSILE TESTS

Dimensions(s) [mm]	Rm [N/mm^2]	Fracture location
20.02 x 7.59	543	Base material
20.06 x 7.52	540	Base material
Requirements;	≥ 448	

TECHNOLOGICAL TESTS

Type	Former / Bending angle	Results
Face bend	4t / 180°	2 x acceptable
root bend	4t / 180°	2 x acceptable

07 JUNI 2012

TESTING
RvA L 063

Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

IMPACT TESTS - Type: Charpy KV

Notch location	Size [mm]	Test temp. [°C]	Results [J]	Average value [J]
Midweld	10 x 5.0	-40	44-46-47	46
Fusion line +1mm	10 x 5.0	-40	130-113-116	120
Fusion line +5mm	10 x 5.0	-40	124-85-95	101
Requirements for size 10x10mm;			≥ 19	≥ 27
Requirements for size 10x5mm;			≥ 9.5	≥ 13.5

Conclusion: The results satisfy the requirements.

Breda, 07-06-2012

A. Karstanje

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]

Lloyd's Register Nederland B.V.
P.F. Reijntjes
Rotterdam Office
07 JUNI 2012

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	S2100 Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016	Company name	Airpack Netherlands BV
Supporting PQR(s) Reference docs.	RET 0245029-001-23 - Rev 1		

Scope	General instruction welding structural for skids Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no.	N/A	Grp-no.	II
Welded to	Plate	P-no.	N/A	Grp-no.	II
Backing:	None	P-no.		Grp-no.	
Retainers	None				
Notes					

THICKNESS RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	-	-	-	-
Impact tested	8,	16,	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	8,	16,	-	-
Sup. filler	-	-	-	-	-	- None -			
Suppl. filler metal vol. (mm³)	-								

THICKNESS RANGE QUALIFIED (mm)

WELDING PROCEDURE

Welding process		GMAW
Type		Semi-automatic
Minimum preheat/interpass temperature	(°C)	10
Maximum interpass temperature	(°C)	193
Filler metal size	(mm)	1,2
Layer number		V
Position		3G
Weld progression		Uphill & Downhill
Current/polarity		DCEP (reverse polarity)
Amperes		78 – 107
Volts		14,7 – 17,1
Travel speed	(mm/min)	46 – 110
Maximum heat input	(kJ/mm)	1.52
Wire feed speed	(m/min)	0,
Arc transfer mode		Short only for root pass any other pass Spray
Shielding:	Gas type	AC-20 (A5.32 SG-)
	Flow rate (l/min)	12-22
Trailing:	Gas type	None
	Flow rate (l/min)	-
Backing:	Gas type	None
	Flow rate (l/min)	-
String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/Single pass per side		Multiple passes
Multi/single electrode		Single electrode
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Notes		

QUALITY INSPECTED DATE: NAME: AIRPACK NEDERLAND B.V.

WPS record number	S2100 Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	Wednesday, 17 October 2018	Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	Preheat of 10(°C) shall be applied for all primary & secondary steel work

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
F. van Toledo	
Date	
Wednesday, 17 October 2018	

QUALITY INSPECTED DATE NAME AIRPACK NEDERLAND B.V.

Signature 2

Name	Signature
Date	

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS

PQR record number	RET 0245029-001-25	Revision 1	WPS record number	S2300	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Plate	API 2W (50)	U	II	-	-	30	-
Welded to:	Plate	API 2W (50)	U	II	-	-	30	-
and tested:	Without PWHT, Fillet-weld test							
Notes								

JOINTS

Joint design	Fillet weld	See addition information	See addition information

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification		5.18
AWS classification		E70C-6MH4
Filler metal F-number		6
Weld metal A-number		-
Filler metal nominal composition		N.A.
Filler metal trade name		Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2
Deposited thickness	(mm)	8,00
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Supplemental filler metal		-
Supplemental filler metal vol.	(mm³)	-

POSITION

Position	2F
Weld progression	-

PREHEAT

Preheat temperature	(°C)	10
Maximum interpass temperature	(°C)	112

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15
Trailing gas:	Type		None
	Flow rate	(l/min)	-
Backing gas:	Type		None
	Flow rate	(l/min)	-

ELECTRICAL

Filler metal size	(mm)	1,2
Amperes		237 - 245
Volts		26,4 - 26,6
Travel speed	(mm/min)	315 - 391
Maximum heat input	(kJ/mm)	1,2421
Current/polarity		DCEP (reverse polarity)
Wire feed speed	(m/min)	0
Arc transfer mode		Spray

TECHNIQUE

String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/single electrode		Single electrode
Multi/Single pass per side		Single and Multiple passes
Peening		Not used
Initial/interpass cleaning		Brushing and Grinding
Back gouging method		None

PQR record number	RET 0245029-001-25	Revision 1	WPS record number	S2300	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments

Comments

FILLET WELD TESTS

Type of test	Acceptance criteria	Result	Fillet leg size (mm) x (mm)
3x Macroscopic examination multiple pass	AWS D1.1	Acceptable	a=8 mm
3x Macroscopic examination single pass	AWS D1.1	Acceptable	a=6 mm

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number		
T. Lajos	ID Card 353992JA	W-104	Mechanical testing by	Schielab Breda (NLD)
			Laboratory test number	SL 12.6055-1
			Test file number	ARL1559-13
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

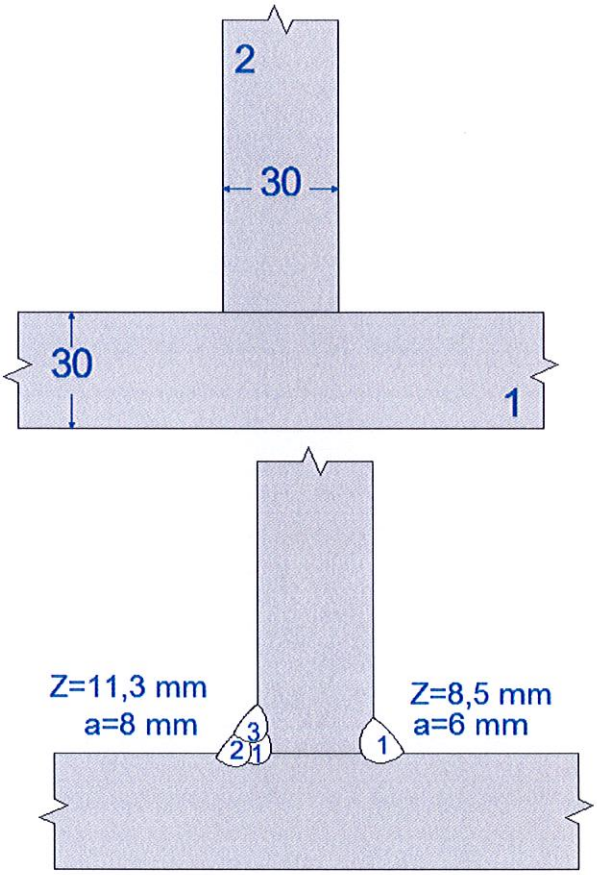
Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	
Date	
8-6-2012	

PQR record number	RET 0245029-001-25	Revision 1	WPS record number	S2300	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-13	Revision 1	Date	29-5-2012
PQR number	RET 0245029-001-25	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2300	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

			Welded to:		
Product form		Plate		Product form	Plate
Material control number		362705		Material control number	362705
Specification (type or grade)		API 2W (50)		Specification (type or grade)	API 2W (50)
Nominal composition		C-Mn		Nominal composition	C-Mn
Trade name		Dillinger Hutte		Trade name	Dillinger Hutte
P number		U		P number	U
G number				G number	
AWS group number		II		AWS group number	II
Nominal pipe/tube size		-		Nominal pipe/tube size	-
Schedule		-		Schedule	-
Length	(mm)	350		Length	(mm) 350
Width (OD)	(mm)	150		Width (OD)	(mm) 150
Thickness	(mm)	30		Thickness	(mm) 30

JOINTS

Joint design	Fillet weld	See addition information	See addition information

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding parameters - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-13	Revision 1	Date	29-5-2012

PASS INFORMATION

Pass number	1 single layer	1 Multi layer	1 Multi layer	2 Multi layer
Layer number	1	1	2	2

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number		P1FC110214	P1FC110214	P1FC110214	P1FC110214
SFA specification		5.18	5.18	5.18	5.18
AWS classification		E70C-6MH4	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number		6	6	6	6
Weld metal A-number		-	-	-	-
Filler metal nominal composition		N.A.	N.A.	N.A.	N.A.
Filler metal trade name		Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2	1,2	1,2	1,2
Length of filler metal consumed	(mm)	-	-	-	-
Deposited thickness	(mm)	4	4	4	4
Maximum pass thickness	(mm)	5	5	5	5
Weld deposit chemistry		-	-	-	-
Supplemental filler metal		-	-	-	-
Supplemental filler metal vol.	(mm^3)	-	-	-	-

POSITION

Position		2F	2F	2F	2F
Weld progression		-	-	-	-

PREHEAT

Preheat temperature	(°C)	10	10	10	10
Maximum interpass temperature	(°C)	10	10	85	112

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15	15	15	15
Trailing gas:	Type		None	None	None	None
	Flow rate	(l/min)	-	-	-	-
Backing gas:	Type		None	None	None	None
	Flow rate	(l/min)	-	-	-	-

ELECTRICAL

Filler metal size	(mm)	1,2	1,2	1,2	1,2
Amperes		245	247	237	240
Volts		26.4	26.4	26.6	26.4
Travel speed	(mm/min)	315	315	391	382
Maximum heat input	(kJ/mm)	1,232	1,2421	0,9674	0,9952
Current/polarity		DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed	(m/min)	-	-	-	-
Arc transfer mode		Spray	Spray	Spray	Spray

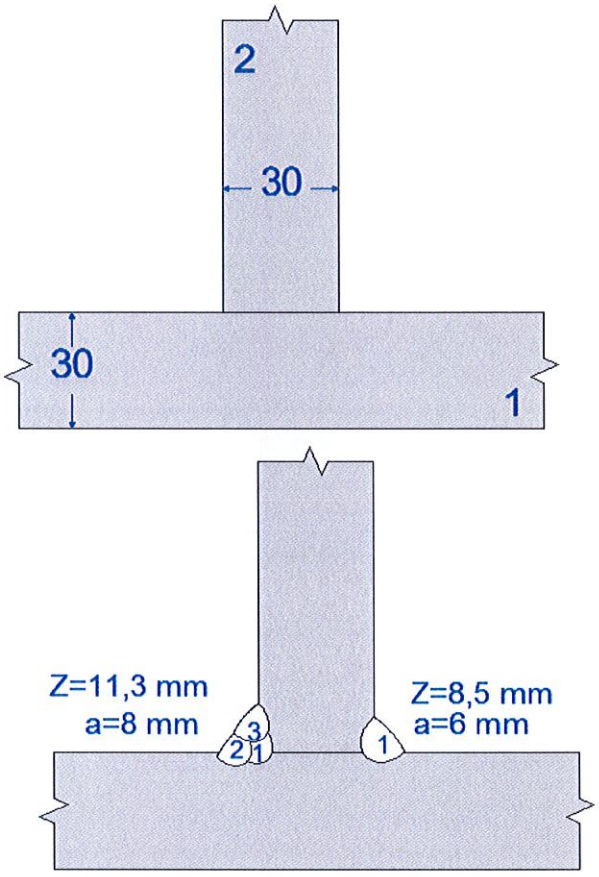
TECHNIQUE

String or weave		Stringer and Weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size		15	15	15	15
C.T.W.D	(mm)	15	15	15	15
Multi/single electrode		Single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side		Multiple passes	Single pass	Multiple passes	Multiple passes
Peening		Not used	Not used	Not used	Not used
Initial/interpass cleaning		Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method		None	None	None	None

PASS PERFORMED/WITNESSED BY

Welders name	T. Lajos	T. Lajos	T. Lajos	T. Lajos
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012	29-5-2012
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-13	Revision 1	Date	29-5-2012



WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with	: AWS D1.1:2010
Purchaser	: Arjan Roza Lastechniek BV
Purchase order no.	: ARL1559-13
Manufacturer	: Airpack Nederland BV.
WPS	: S2300
Description of sample(s)	: Plate with fillet welds single-layer and multi-layer
Dimension(s)	: 350x150x30 mm
Group number	: II -II
Material grade	: API 2W grade 50 - API 2W grade 50
Welding process(es)	: GMAW (metal cored)
Filler	: SFA 5.18 : E70C-6MH4, F-number 6
Brand and type	: Lincoln Electric Outershield MC715-H
Shielding gas	: AC-20 (A5.32 SG-)
Backing gas	: N.A.
Welding position	: 2F
Preheat / Interpass temp.	: 10 °C / 112 °C
Joint type	: Fillet welds single-layer and multi-layer
Welder	: T. Lajos
Date / place of birth	: 11-02-1985 / Hungary
Stamp. No. / ID	: W-104 / ID Card 353992JA
Testpiece marked with	: ARL1559-13

NON DESTRUCTIVE EXAMINATION

* Visual examination	: performed by examiner

MACROSCOPIC EXAMINATION

Amount	Result
3x	During the examination, no weld defects have been observed.

Conclusion: The results satisfy the requirements.

Breda, 07-06-2012

A. Karstanje

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]

Lloyd's Register Nederland B.V.
P.F. Reijntjes
Rotterdam Office
Witnessed/ Reviewed/ Examined
07 JUNI 2012

TESTING
RvA L 063

Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	S2300 Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012	Company name	Airpack Netherlands BV
Supporting PQR(s)	RET 0245029-001-25 - Rev 1		
Reference docs.			

Scope	Filletwelds single layer a <= 6 mm and multi layer filletwelds => 8 mm Fillet, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. U	Grp-no. II
Welded to	Plate	P-no. U	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	no max.	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process		GMAW
Type		Semi-automatic
Minimum preheat/interpass temperature	(°C)	10
Maximum interpass temperature	(°C)	168
Filler metal size	(mm)	1,2
Layer number		All
Position		F,H
Weld progression		-
Current/polarity		DCEP (reverse polarity)
Amperes		213 -269
Volts		24,5 - 28,4
Travel speed	(mm/min)	265 - 485
Maximum heat input	(kJ/mm)	1,2421
Wire feed speed	(m/min)	0,
Arc transfer mode		Spray
Shielding: Gas type		AC-20 (A5.32 SG-)
Flow rate	(l/min)	12 - 22
Trailing: Gas type		None
Flow rate	(l/min)	-
Backing: Gas type		None
Flow rate	(l/min)	-
String or weave		Stringer or Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/Single pass per side		Single or multiple passes
Multi/single electrode		Single electrode
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Notes		

WPS record number	S2300 Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012	Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 66(°C). Over 38.1 thru 63.5(mm): 107(°C). Over 63.5(mm): 150(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
Date	

Signature 2

Name	Signature
Date	

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS

PQR record number	RET 0245029-001-27	Revision 1	WPS record number	S2500	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Plate	API 2W (50)	U	II	-	-	30	-
Welded to:	Plate	API 2W (50)	U	II	-	-	30	-
and tested:	Without PWHT, Fillet-weld test							
Notes								

JOINTS

Joint design	Fillet weld	See addition information	See addition information

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification		5.18
AWS classification		E70C-6MH4
Filler metal F-number		6
Weld metal A-number		-
Filler metal nominal composition		N.A.
Filler metal trade name		Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2
Deposited thickness	(mm)	8,00
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Supplemental filler metal		-
Supplemental filler metal vol.	(mm³)	-

POSITION

Position	4F
Weld progression	-

PREHEAT

Preheat temperature	(°C)	10
Maximum interpass temperature	(°C)	128

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15
Trailing gas:	Type		None
	Flow rate	(l/min)	-
Backing gas:	Type		None
	Flow rate	(l/min)	-

ELECTRICAL

Filler metal size	(mm)	1,2
Amperes		227 - 233
Volts		25,9 - 26,1
Travel speed	(mm/min)	327 - 451
Maximum heat input	(kJ/mm)	1,1063
Current/polarity		DCEP (reverse polarity)
Wire feed speed	(m/min)	0
Arc transfer mode		Spray

TECHNIQUE

String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/single electrode		Single electrode
Multi/Single pass per side		Multiple passes
Peening		Not used
Initial/interpass cleaning		Brushing and Grinding
Back gouging method		None

PQR record number	RET 0245029-001-27	Revision 1	WPS record number	S2500	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments

Comments

FILLET WELD TESTS

Type of test	Acceptance criteria	Result	Fillet leg size (mm) x (mm)
3x Macroscopic examination multiple pass	AWS D1.1	Acceptable	a= 8 mm
3x Macroscopic examination single pass	AWS D1.1	Acceptable	a= 6 mm

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number		
T. Lajos	ID Card 353992JA	W-104	Mechanical testing by	Schielab Breda (NLD)
			Laboratory test number	SL 12.6057-1
			Test file number	ARL1559-15
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

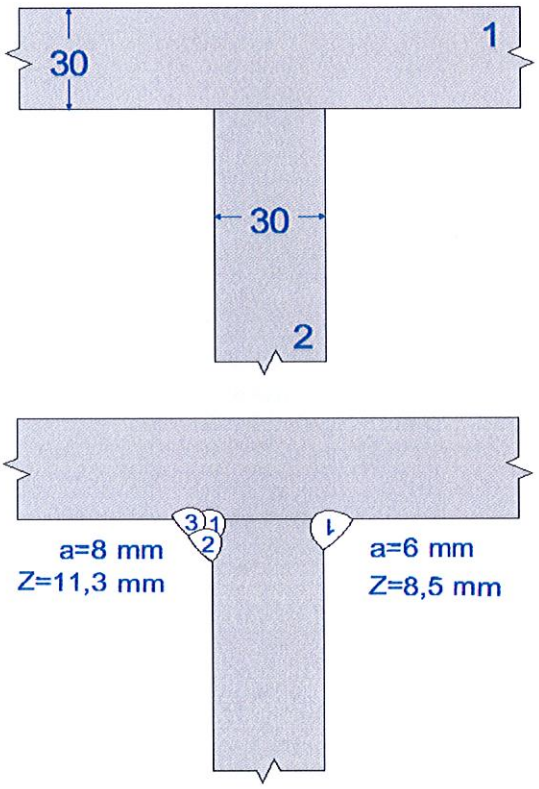
Signature 1

Name	Signature
Franky van Toledo	Airpack Nederland bv
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	Lloyd's Register Nederland B.V. A member of the Lloyd's Register group. Wim Komdeur Lloyd's Register
Date	
8-6-2012	

PQR record number	RET 0245029-001-27	Revision 1	WPS record number	S2500	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-15	Revision 1	Date	29-5-2012
PQR number	RET 0245029-001-27	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2500	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

			Welded to:			
Product form		Plate		Product form		Plate
Material control number		362705		Material control number		362705
Specification (type or grade)		API 2W (50)		Specification (type or grade)		API 2W (50)
Nominal composition		C-Mn		Nominal composition		C-Mn
Trade name		Dillinger Hutte		Trade name		Dillinger Hutte
P number		U		P number		U
G number				G number		
AWS group number		II		AWS group number		II
Nominal pipe/tube size		-		Nominal pipe/tube size		-
Schedule		-		Schedule		-
Length	(mm)	350		Length	(mm)	350
Width (OD)	(mm)	150		Width (OD)	(mm)	150
Thickness	(mm)	30		Thickness	(mm)	30

JOINTS

Joint design	Fillet weld	See addition information	See addition information

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding parameters - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-15	Revision 1	Date	29-5-2012

PASS INFORMATION

Pass number	1 single layer	1 multi layer	1 multi layer	multi layer1
Layer number	1	1	1	1

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number		900401	P1FC110214	P1FC110214	P1FC110214
SFA specification		5.18	5.18	5.18	5.18
AWS classification		E70C-6MH4	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number		6	6	6	6
Weld metal A-number		-	-	-	-
Filler metal nominal composition		N.A.	N.A.	N.A.	N.A.
Filler metal trade name		Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2	1,2	1,2	1,2
Length of filler metal consumed	(mm)	-	-	-	-
Deposited thickness	(mm)	4	4	4	4
Maximum pass thickness	(mm)	5	5	5	5
Weld deposit chemistry		-	-	-	-
Supplemental filler metal		-	-	-	-
Supplemental filler metal vol.	(mm^3)	-	-	-	-

POSITION

Position	4F	4F	4F	4F
Weld progression	-	-	-	-

PREHEAT

Preheat temperature	(°C)	10	10	10	10
Maximum interpass temperature	(°C)	10	10	81	128

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15	15	15	15
Trailing gas:	Type		None	None	None	None
	Flow rate	(l/min)	-	-	-	-
Backing gas:	Type		None	None	None	None
	Flow rate	(l/min)	-	-	-	-

ELECTRICAL

Filler metal size	(mm)	1,2	1,2	1,2	1,2
Amperes		231	227	233	229
Volts		26.1	26.1	25.9	26
Travel speed	(mm/min)	327	346	451	391
Maximum heat input	(kJ/mm)	1,1063	1,0274	0,8028	0,9137
Current/polarity		DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed	(m/min)	-	-	-	-
Arc transfer mode		Spray	Spray	Spray	Spray

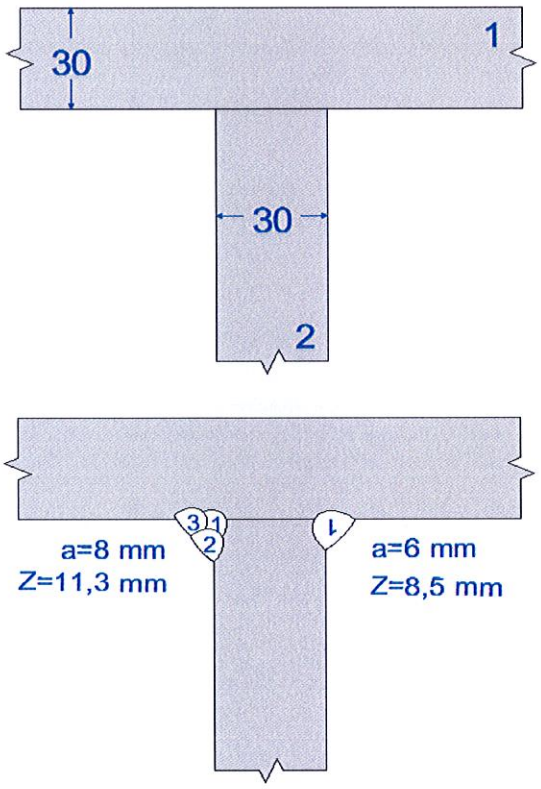
TECHNIQUE

String or weave		Stringer and Weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size		15	15	15	15
C.T.W.D	(mm)	15	15	15	15
Multi/single electrode		Single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side		Multiple passes	Multiple passes	Multiple passes	Multiple passes
Peening		Not used	Not used	Not used	Not used
Initial/interpass cleaning		Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method		None	None	None	None

PASS PERFORMED/WITNESSED BY

Welders name	T. Lajos	T. Lajos	T. Lajos	T. Lajos
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012	29-5-2012
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-15	Revision 1	Date	29-5-2012



WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with	: AWS D1.1:2010
Purchaser	: Arjan Roza Lastechniek BV
Purchase order no.	: ARL1559-15
Manufacturer	: Airpack Nederland BV.
WPS	: S2500
Description of sample(s)	: Plate with fillet welds single-layer and multi-layer
Dimension(s)	: 350x150x30 mm
Group number	: II -II
Material grade	: API 2W grade 50 - API 2W grade 50
Welding process(es)	: GMAW (metal cored)
Filler	: SFA 5.18 : E70C-6MH4, F-number 6
Brand and type	: Lincoln Electric Outershield MC715-H
Shielding gas	: AC-20 (A5.32 SG-)
Backing gas	: N.A.
Welding position	: 4F
Preheat / Interpass temp.	: 10 °C / 128 °C
Joint type	: Fillet welds single-layer and multi-layer
Welder	: T. Lajos
Date / place of birth	: 11-02-1985 / Hungary
Stamp. No. / ID	: A3 / ID Card 353992JA
Testpiece marked with	: ARL1559-15

NON DESTRUCTIVE EXAMINATION

* Visual examination	: performed by examiner

MACROSCOPIC EXAMINATION

Amount	Result
3x	During the examination, no weld defects have been observed.

Conclusion: The results satisfy the requirements.

Breda, 07-06-2012

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]

A. Karstanje

Lloyd's Register Nederland B.V.
P.F. Reijntjes
Rotterdam Office

TESTING
RvA L 063

Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

07 JUNI 2012

Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	S2500	Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012		Company name	Airpack Netherlands BV
Supporting PQR(s)	RET 0245029-001-27 - Rev 1			
Reference docs.				

Scope	Filletwelds single layer a <= 6 mm and multi layer filletwelds => 8 mm Fillet, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. U	Grp-no. II
Welded to	Plate	P-no. U	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	no max.	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process		GMAW
Type		Semi-automatic
Minimum preheat/interpass temperature	(°C)	10
Maximum interpass temperature	(°C)	184
Filler metal size	(mm)	1,2
Layer number		All
Position		O
Weld progression		-
Current/polarity		DCEP (reverse polarity)
Amperes		204 -256,
Volts		24,0 - 27,9
Travel speed	(mm/min)	245 - 490
Maximum heat input	(kJ/mm)	1,1063
Wire feed speed	(m/min)	0,
Arc transfer mode		Spray
Shielding: Gas type		AC-20 (A5.32 SG-)
Flow rate	(l/min)	12 - 22
Trailing: Gas type		None
Flow rate	(l/min)	-
Backing: Gas type		None
Flow rate	(l/min)	-
String or weave		Stringer or Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/Single pass per side		Multiple passes
Multi/single electrode		Single electrode
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Notes		

WPS record number	S2500 Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012	Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 66(°C). Over 38.1 thru 63.5(mm): 107(°C). Over 63.5(mm): 150(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
Date	

Signature 2

Name	Signature
Date	

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS

PQR record number	RET0278790/TK/001	Revision 1	WPS record number	S2600	Revision 1
Date	1-6-2016		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2015	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Plate	API 2W (50LS)	U	II	-	-	4	-
Welded to:	Plate	API 2W (50LS)	U	II	-	-	4	-
and tested:	Without PWHT, With impacts, With hardness							
Notes								

JOINTS

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	2-3		
Root face	(mm)	0-1		

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification		5.18
AWS classification		E70C-6MH4
Filler metal F-number		6
Weld metal A-number		-
Filler metal nominal composition		N.A.
Filler metal trade name		Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2
Deposited thickness	(mm)	4,00
Maximum pass thickness	(mm)	3
Weld deposit chemistry		-
Supplemental filler metal		-
Supplemental filler metal vol.	(mm³)	-

POSITION

Position	2G
Weld progression	-

PREHEAT

Preheat temperature	(°C)	10
Maximum interpass temperature	(°C)	124

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15
Trailing gas:	Type		None
	Flow rate	(l/min)	-
Backing gas:	Type		None
	Flow rate	(l/min)	-

ELECTRICAL

Filler metal size	(mm)	1,2
Waveform control		Not Used
Energy	(J)	Not Used
Power	(J/s)	Not Used
Arc time	(sec)	Not Used
Weld bead length	(mm)	Not Used
Amperes		87 - 183
Volts		14,5 - 20,1
Travel speed	(mm/min)	117 - 485
Maximum heat input	(kJ/mm)	0,45 - 0,64
Current/polarity		DCEP (reverse polarity)
Wire feed speed	(m/min)	0
Arc transfer mode		Short-circuiting, Globular

TECHNIQUE

String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/single electrode		Single electrode
Multi/Single pass per side		Multiple passes
Peening		Not used
Initial/interpass cleaning		Brushing and Grinding
Back gouging method		None

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS

PQR record number	RET0278790/TK/001	Revision 1	WPS record number	S2600	Revision 1
Date	1-6-2016		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2015	

TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	20.01	3.83	76,638	-	527	Ductile-BM
2	20.02	3.82	76,476	-	502	Ductile-BM

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments
Root bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	

Comments

TOUGHNESS TESTS

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values (J)	(% Shear)	(mm)	Drop weight break
1	Weld Metal	Charpy V	10 x 3	-40	29/34/36	-	-	No
2	HAZ	Charpy V	10 x 3	-40	34/48/38	-	-	No
3	HAZ + 1 mm	Charpy V	10 x 3	-40	55/47/48	-	-	No
4	HAZ + 2 mm	Charpy V	10 x 3	-40	52/52/53	-	-	No
5	HAZ + 5 mm	Charpy V	10 x 3	-40	48/48/51	-	-	No

Comments

HARDNESS TEST

Type (Scale)	Distance from surface	API 2W (50LS)	HAZ	Weld	HAZ	API 2W (50LS)
Vickers (HV)	Cap area 1-2 mm	170-172-170	192-208-218-218-214	203-211-211-211-208	209-207-203-208-208	169-167-167
Vickers (HV)	Cap area 1-2 mm	166-167-167	192-204-212-211-206	207-203-207-205-200	216-214-216-211-194	170-170-169

Comments

OTHER TESTS

Type of test	Acceptance criteria	Result	Comments
2x Macroscopic examination	AWS D1.1	Acceptable	
RT examination	AWS D1.1	Acceptable	
MT examination	AWS D1.1	Acceptable	

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number		
Dorreman M.	ID Card IKP0996J6	W-013	Mechanical testing by	Element Breda (NL)
			Laboratory test number	ARJ001-16-01-18390-1
			Test file number	ARL2064-1
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1 Structural Welding Code-Steel.

Signature 1

Name	Signature
F. van Toledo	
Date	
1-6-2016	

Signature 2

Name	Signature
T. Konings(Lloyds)	
Date	
1-6-2016	

Witnessed
Reviewed
Examined
Ton Konings
Lloyd's Register Energy

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL2064-1	Revision 1	Date	11-01-2016
PQR number	RET0278790/TK/001	Revision 1	Welding standard	AWS D1.1/D1.1M:2015
WPS number	S2600	Revision 1	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

			Welded to:			
Product form		Plate		Product form		Plate
Material control number		816729 293819/1		Material control number		816729 293819/1
Specification (type or grade)		API 2W (50LS)		Specification (type or grade)		API 2W (50LS)
Nominal composition		C-Mn		Nominal composition		C-Mn
Trade name		Voestalpine Grobblech		Trade name		Voestalpine Grobblech
P number		U		P number		U
G number				G number		
AWS group number		II		AWS group number		II
Nominal pipe/tube size		-		Nominal pipe/tube size		-
Schedule		-		Schedule		-
Length	(mm)	500		Length	(mm)	500
Width (OD)	(mm)	200		Width (OD)	(mm)	200
Thickness	(mm)	4		Thickness	(mm)	4

JOINTS

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	2-3		
Root face	(mm)	0-1		

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL2064-1	Revision 1	Date	11-01-2016

PASS INFORMATION

Pass number	1	2	3
Layer number	1	2	2

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number		P1FC150311	P1FC150311	P1FC150311
SFA specification		5.18	5.18	5.18
AWS classification		E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number		6	6	6
Weld metal A-number		-	-	-
Filler metal nominal composition		N.A.	N.A.	N.A.
Filler metal trade name		Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2	1,2	1,2
Length of filler metal consumed	(mm)	-	-	-
Deposited thickness	(mm)	2	2	2
Maximum pass thickness	(mm)	3	3	3
Weld deposit chemistry		-	-	-
Supplemental filler metal		-	-	-
Supplemental filler metal vol.	(mm³)	-	-	-

POSITION

Position	2G	2G	2G
Weld progression	-	-	-

PREHEAT

Preheat temperature	(°C)	10	10	10
Maximum interpass temperature	(°C)	10	69	124

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15	15	15
Trailing gas:	Type		None	None	None
	Flow rate	(l/min)	-	-	-
Backing gas:	Type		None	None	None
	Flow rate	(l/min)	-	-	-

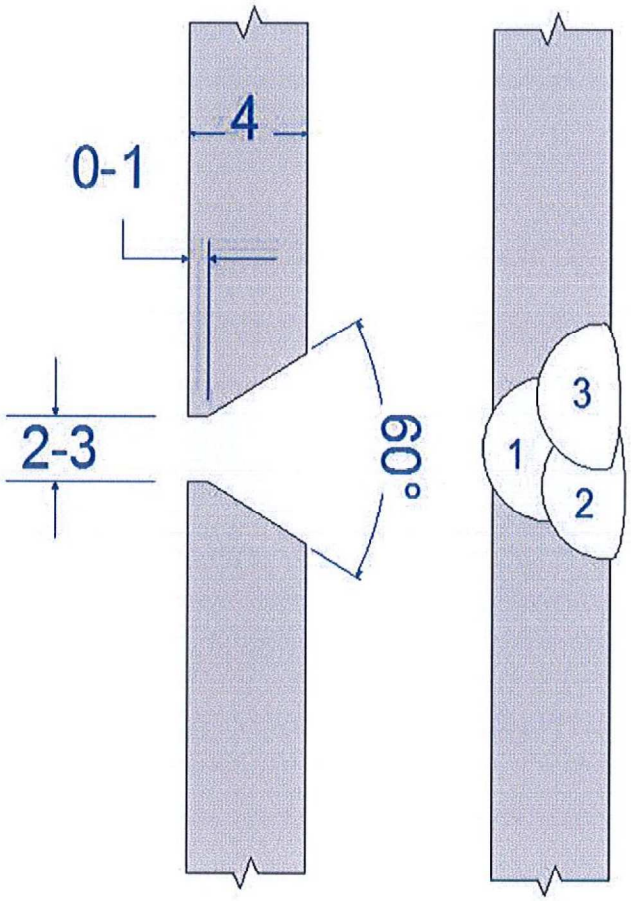
ELECTRICAL

Filler metal size	(mm)	1,2	1,2	1,2
Waveform control		Not Used	Not Used	Not Used
Energy	(J)	-	-	-
Power	(J/s)	-	-	-
Arc time	(sec)	-	-	-
Weld bead length	(mm)	-	-	-
Amperes		87	182	183
Volts		14.5	20.1	20.1
Travel speed	(mm/min)	117	485	450
Maximum heat input	(kJ/mm)	0,6469	0,4526	0,4904
Current/polarity		DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed	(m/min)	-	-	-
Arc transfer mode		Short-circuiting	Globular	Globular

TECHNIQUE

String or weave		Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size		15	15	15
C.T.W.D	(mm)	15	15	15
Multi/single electrode		Single electrode	Single electrode	Single electrode
Multi/Single pass per side		Multiple passes	Multiple passes	Multiple passes
Peening		Not used	Not used	Not used
Initial/interpass cleaning		Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method		None	None	None

PQRD number	ARL2064-1	Revision 1	Date	11-01-2016



Witnessed
Reviewed
Examined

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	S2600 Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016	Company name	Airpack Netherlands BV
Supporting PQR(s) Reference docs.	RET0278790/TK/001 - Rev 1		

Scope	Groove, fillet, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. U	Grp-no. II
Welded to	Plate	P-no. U	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	3,	8,	-	-
Impact tested	3,	8,	-	-
Partial pen.	3,	8,	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	8,	-	-
GMAW						-	-	-	-
GMAW						-	-	-	-
Sup. filler									
Suppl. filler metal vol. (mm³)	-					- Required -			

THICKNESS RANGE QUALIFIED (mm)

WELDING PROCEDURE

Welding process	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic
Minimum preheat/interpass temperature (°C)	10	10	10
Maximum interpass temperature (°C)	174	174	174
Filler metal size (mm)	1,2	1,2	1,2
Layer number	Root	Fill	Cap
Position	F,H	F,H	F,H
Weld progression	Not applicable	Not applicable	Not applicable
Current/polarity	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Waveform control	Not Used	Not Used	Not Used
Energy (J)	Not Used	Not Used	Not Used
Power (J/s)	Not Used	Not Used	Not Used
Amperes	80 - 100	175 - 185	175 - 185
Volts	14 - 17	19 - 21	10 - 21
Travel speed (mm/min)	110 - 120	460 - 500	440 - 470
Maximum heat input (kJ/mm)	0,57 - 0,70	0,40 - 0,49	0,44 - 0,53
Wire feed speed (m/min)	Not used	Not used	Not used
Arc transfer mode	Short-circuiting	Short-circuiting	Short-circuiting
Shielding: Gas type	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate (l/min)	14 - 16	14 - 16	14 - 16
Trailing: Gas type	None	None	None
Flow rate (l/min)	-	-	-
Backing: Gas type	None	None	None
Flow rate (l/min)	-	-	-
String or weave	Stringer or Weave	Stringer or Weave	Stringer or Weave
Orifice/gas cup size	15	15	15
C.T.W.D (mm)	15	15	15
Multi/Single pass per side	Single pass	Multiple passes	Multiple passes
Multi/single electrode	Single electrode	Single electrode	Single electrode
Maximum pass thickness (mm)	5	5	5
Weld deposit chemistry	-	-	-
Notes			

WPS record number	S2600	Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016		Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category B)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 10(°C). Over 38.1 thru 63.5(mm): 66(°C). Over 63.5(mm): 107(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
F. van Toledo	
Date	
1-6-2016	

Signature 2

Name	Signature
Date	

element

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Voorerf 18
4824 GN Breda

Tel.: 076-5424300
Fax: 076-5424848
Info.breda@element.com

Arjan Roza Lastechniek
G. Sterkenburgstraat 38
MEEUWEN, 4268 GS

TEST CERTIFICATE

Date: 21-Jan-16
Purchase Order Number: ARL2064
Report No.: ARJ001-16-01-18390-1

TEST REPORT FOR THE PURPOSE OF: WELDING PROCEDURE QUALIFICATION TEST RECORD

Testing in accordance with : AWS D1.1/M: 2015

Purchase order No, Test piece No. : ARL2064-1
Manufacturer : Airpack Netherlands B.V.
WPS : S2600

Plate dimension and thickness : 500x200x4 mm to 500x200x4 mm
Plate material grade : API 2W-50LS to API 2W-50LS

Welding process(es) : GMAW
Joint type : Butt weld single Vee, Multiple passes
Welding position : 2G
Filler : Lincoln Electric, Outershield MC715-H
Shielding gas, SFA A5.32/A5.32M : SG-AC20: 80% Ar - 20% CO_2
Backing gas, : N.A.

Preheat / Interpass temp. : ≥ 10 °C / ≤ 196°C
PWHT : No

Welder(s) : Dorreman M.
Date(s) / place of birth(s) : 1994-01-05 / Zierikzee
Stamp. No.(s) / ID(s) : W-013 / ID Card IKP0996J6
Remarks: : No remarks

NONDESTRUCTIVE EXAMINATION

* Visual examination: Performed on site
* Radiographic examination: Performed on site, see RTD report no.: 148401 (0)
* Magnetic Particle examination: Performed on site, see RTD report no.: 05056-2016-02-006

Note: *The above mentioned data is only for information and is no part of the examination in this test report*

CROSS WELD TENSILE TESTS [AWS]

Dimensions(s) [mm]	Rm [N/mm^2]	Fracture location
20.01 x 3.83	527	Base material
20.02 x 3.82	502	Base material
Requirements;	≥ 448	

TECHNOLOGICAL TESTS

Type of test	Former / Bending angle	Result
Face bend	4t / 180°	2 x acceptable
Root bend	4t / 180°	2 x acceptable

26 JAN. 2016 PFR

element™

Date: 21-Jan-16
P.O. No.: ARL2064
Report No.: ARJ001-16-01-18390-1

MACROSCOPIC EXAMINATION

Amount	Result
2x	No weld defects observed, segregation in plate noted (see page 3&4)

HARDNESS MEASUREMENTS

Method : Vickers HV10kg
Requirements : ≤ 325 HV10kg

Cross section 18390-1.1

Location of indentations	Traverse 1-2mm below outer surface
base material	170-172-170
heat affected zone	192-208-218-218-214
weld metal	203-211-211-211-208
heat affected zone	209-207-203-208-208
base material	169-167-167

Cross section 18390-1.2

Location of indentations	Traverse 1-2mm below outer surface
base material	166-167-167
heat affected zone	192-204-212-211-206
weld metal	207-203-207-205-200
heat affected zone	216-214-216-211-194
base material	170-170-169

IMPACT TESTS [AWS/ASME]

Notch location	Spec. size [mm]	Test temp. [°C]	Test results [J]	Average value [J]
Midweld	10x3	-40	29-34-36	33
Fusion line	10x3	-40	34-48-38	40
Fusion line +1mm	10x3	-40	55-47-48	50
Fusion line +2mm	10x3	-40	52-52-53	52
Fusion line +5mm	10x3	-40	48-48-51	49
Requirements for size 10x10mm;			≥ 34	≥ 41

The above mentioned results satisfy the requirements

For Element Breda,

element™

Albert Karstanje

Witnessed
Reviewed
Lloyd's Register Energy
P. Reijntjes
Rotterdam Office
Lloyd's Register Nederland B.V.

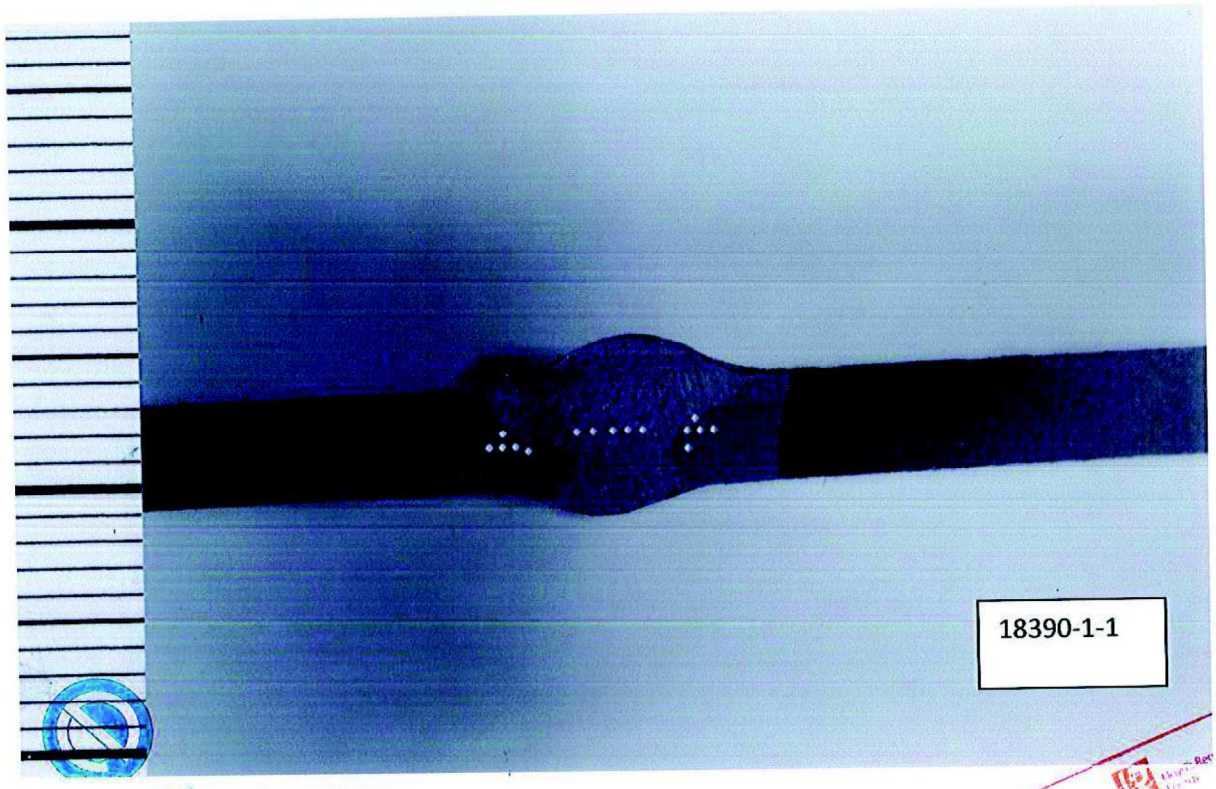
26 JAN. 2016

RVA L 063

element

Date: 21-Jan-16
P.O. No.: ARL2064
Report No.: ARJ001-16-01-18390-1

MACRO PHOTO
Cross section no. 18390-1-1



element
Albert Karstanje

Witnessed
Reviewed
P. Kruijtjes
Rotterdam Office
Lloyd's Register Nederland B.V.
26 JAN 2016

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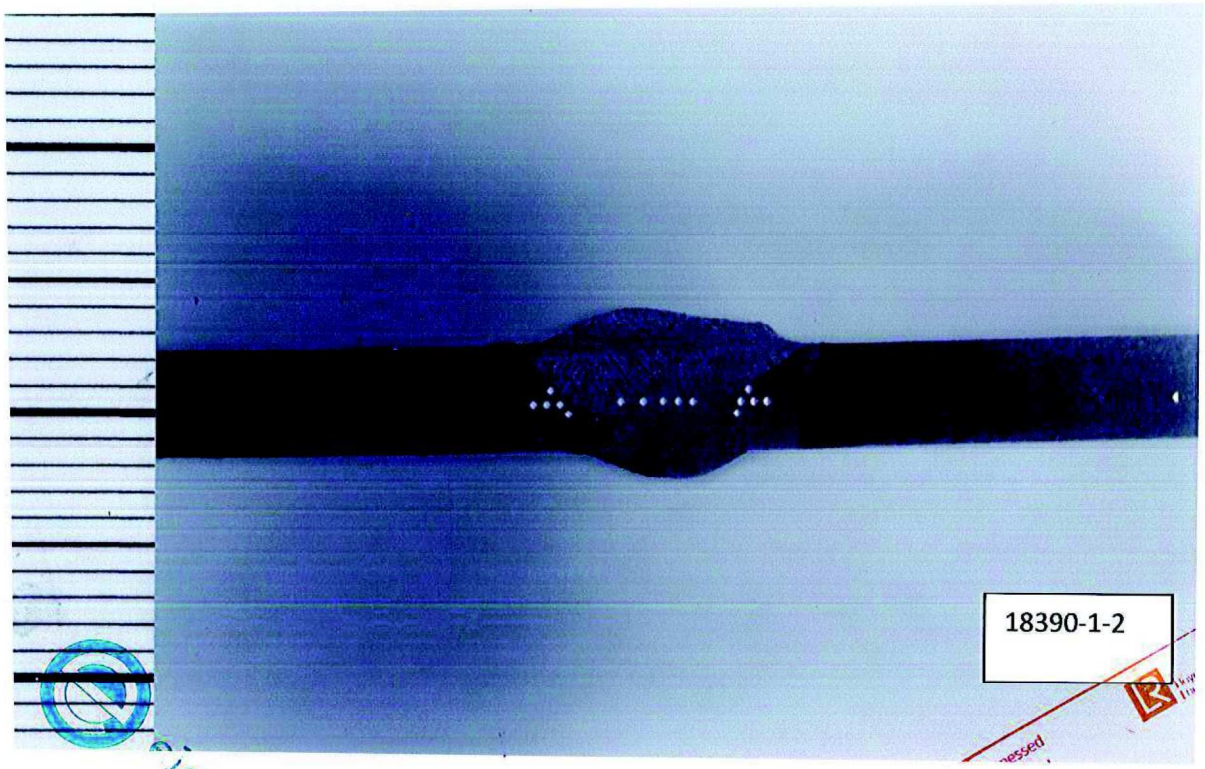
Date: 21-Jan-16
P.O. No.: ARL2064
Report No.: ARJ001-16-01-18390-1

MACRO PHOTO
Cross section no. 18390-1-2



element™
Albert Karstanje

26 JAN. 2016

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS

PQR record number	RET0278790/TK/002	Revision 1	WPS record number	S2700	Revision 1
Date	31-5-2016		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2015	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Plate	API 2W (50LS)	U	II	-	-	8	-
Welded to:	Plate	API 2W (50LS)	U	II	-	-	8	-
and tested:	Without PWHT, With impacts, With hardness							
Notes								

JOINTS

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	2-3		
Root face	(mm)	0-1		

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification		5.18
AWS classification		E70C-6MH4
Filler metal F-number		6
Weld metal A-number		-
Filler metal nominal composition		N.A.
Filler metal trade name		Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2
Deposited thickness	(mm)	6,00
Maximum pass thickness	(mm)	3
Weld deposit chemistry		-
Supplemental filler metal		-
Supplemental filler metal vol.	(mm³)	-

POSITION

Position	2G
Weld progression	-

PREHEAT

Preheat temperature	(°C)	10
Maximum interpass temperature	(°C)	178

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15
Trailing gas:	Type		None
	Flow rate	(l/min)	-
Backing gas:	Type		None
	Flow rate	(l/min)	-

ELECTRICAL

Filler metal size	(mm)	1,2
Waveform control		Not Used
Energy	(J)	Not Used
Power	(J/s)	Not Used
Arc time	(sec)	Not Used
Weld bead length	(mm)	Not Used
Amperes		130 - 197
Volts		15.9 - 22,2
Travel speed	(mm/min)	142 - 383
Maximum heat input	(kJ/mm)	0,67 - 0,87
Current/polarity		DCEP (reverse polarity)
Wire feed speed	(m/min)	0
Arc transfer mode		Short-circuiting, Globular

TECHNIQUE

String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/single electrode		Single electrode
Multi/Single pass per side		Multiple passes
Peening		Not used
Initial/interpass cleaning		Brushing and Grinding
Back gouging method		None

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS

PQR record number	RET0278790/TK/002	Revision 1	WPS record number	S2700	Revision 1
Date	31-5-2016		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2015	

TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	20.03	7.23	144,817	-	529	Ductile-BM
2	20.03	7.28	145,818	-	530	Ductile-BM

Comments

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments
Face bend	AWS D1.1	Acceptable	
Face bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	
Root bend	AWS D1.1	Acceptable	

Comments

TOUGHNESS TESTS

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values (J)	(% Shear)	(mm)	Drop weight break
1	Weld Metal	Charpy V	10 x 5	-40	56/56/60	-	-	No
2	HAZ	Charpy V	10 x 5	-40	51/69/60	-	-	No
3	HAZ + 1 mm	Charpy V	10 x 5	-40	115/104/84	-	-	No
4	HAZ + 2 mm	Charpy V	10 x 5	-40	104/99/100	-	-	No
5	HAZ + 5 mm	Charpy V	10 x 5	-40	119/115/104	-	-	No

Comments

HARDNESS TEST

Type (Scale)	Distance from surface	API 2W (50LS)	HAZ	Weld	HAZ	API 2W (50LS)
Vickers (HV)	Cap area 1-2 mm	166-164-164	184-193-204-205-204	213-214-217-199-211	205-199-198-196-186	167-170=170
Vickers (HV)	Root area 1-2 mm	171-169-165	186-198-206-206-188	173-184-186-186-187	187-186-186-188-170	165-166-164
Vickers (HV)	Cap area 1-2 mm	165-168-167	197-206-211-211-211	220-221-207-208-219	209-211-207-209-198	168-165-166
Vickers (HV)	Root area 1-2 mm	167-170-164	187-199-196-191-207	192-196-188-194-189	178-186-180-175-174	162-163-166

Comments

OTHER TESTS

Type of test	Acceptance criteria	Result	Comments
2x Macroscopic examination	AWS D1.1	Acceptable	
RT examination	AWS D1.1	Acceptable	
MT examination	AWS D1.1	Acceptable	

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number		
Dorreman M.	ID Card IKP0996J6	W-013	Mechanical testing by	Element Breda (NL)
			Laboratory test number	ARJ001-16-01-18390-2
			Test file number	ARL2064-2
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1 Structural Welding Code-Steel.

Signature 1

Name	Signature
F. van Toledo	
Date	
1-6-2016	

Signature 2

Name	Signature
T. Konings (Lloyds)	
Date	
1-6-2016	

Witnessed
Reviewed
Examined
Ton Konings
Lloyd's Register Energy

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL2064-2	Revision 1	Date	11-01-2016
PQR number	RET0278790/TK/002	Revision 1	Welding standard	AWS D1.1/D1.1M:2015
WPS number	S2700	Revision 1	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

			Welded to:			
Product form		Plate		Product form		Plate
Material control number		816729 293819/1		Material control number		816729 293819/1
Specification (type or grade)		API 2W (50LS)		Specification (type or grade)		API 2W (50LS)
Nominal composition		C-Mn		Nominal composition		C-Mn
Trade name		Voestalpine Grobblech		Trade name		Voestalpine Grobblech
P number		U		P number		U
G number				G number		
AWS group number		II		AWS group number		II
Nominal pipe/tube size		-		Nominal pipe/tube size		-
Schedule		-		Schedule		-
Length	(mm)	500		Length	(mm)	500
Width (OD)	(mm)	200		Width (OD)	(mm)	200
Thickness	(mm)	8		Thickness	(mm)	8

JOINTS

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	2-3		
Root face	(mm)	0-1		

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL2064-2	Revision 1	Date	11-01-2016

PASS INFORMATION

Pass number	1	2	3	4
Layer number	1	2	3	3

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number		P1FC150311	P1FC150311	P1FC150311	P1FC150311
SFA specification		5.18	5.18	5.18	5.18
AWS classification		E70C-6MH4	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number		6	6	6	6
Weld metal A-number		-	-	-	-
Filler metal nominal composition		N.A.	N.A.	N.A.	N.A.
Filler metal trade name		Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2	1,2	1,2	1,2
Length of filler metal consumed	(mm)	-	-	-	-
Deposited thickness	(mm)	2	2	2	2
Maximum pass thickness	(mm)	3	3	3	3
Weld deposit chemistry		-	-	-	-
Supplemental filler metal		-	-	-	-
Supplemental filler metal vol.	(mm³)	-	-	-	-

POSITION

Position	2G	2G	2G	2G
Weld progression	-	-	-	-

PREHEAT

Preheat temperature	(°C)	10	10	10	10
Maximum interpass temperature	(°C)	10	69	129	178

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15	15	15	15
Trailing gas:	Type		None	None	None	None
	Flow rate	(l/min)	-	-	-	-
Backing gas:	Type		None	None	None	None
	Flow rate	(l/min)	-	-	-	-

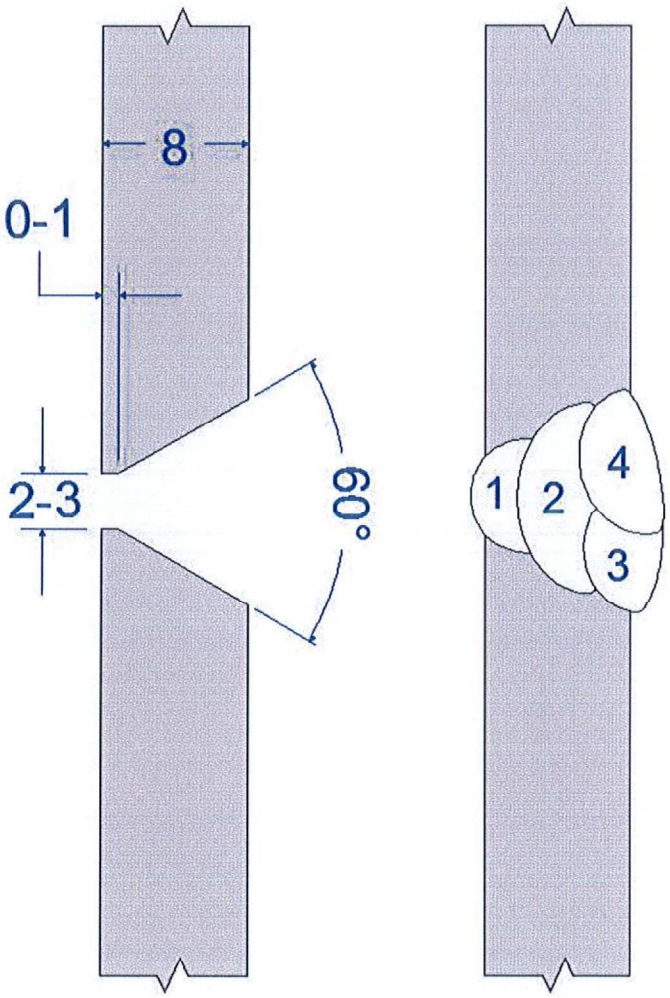
ELECTRICAL

Filler metal size	(mm)	1,2	1,2	1,2	1,2
Waveform control		Not Used	Not Used	Not Used	
Energy	(J)	-	-	-	
Power	(J/s)	-	-	-	
Arc time	(sec)	-	-	-	
Weld bead length	(mm)	-	-	-	
Amperes		130	196	197	194
Volts		15.9	21.7	22,2	22,2
Travel speed	(mm/min)	142	340	383	355
Maximum heat input	(kJ/mm)	0,8734	0,7506	0,679	0,7214
Current/polarity		DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed	(m/min)	-	-	-	-
Arc transfer mode		Short-circuiting	Globular	Globular	Globular

TECHNIQUE

String or weave		Stringer and Weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size		15	15	15	15
C.T.W.D	(mm)	15	15	15	15
Multi/single electrode		Single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side		Multiple passes	Multiple passes	Multiple passes	Multiple passes
Peening		Not used	Not used	Not used	Not used
Initial/interpass cleaning		Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method		None	None	None	None

PQRD number	ARL2064-2	Revision 1	Date	11-01-2016



Witnessed
Reviewed
Examined
Ton Konings
Lloyd's Register Energy
Lloyd's Register Nederland B.V.

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	S2700 Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016	Company name	Airpack Netherlands BV
Supporting PQR(s) Reference docs.	RET0278790/TK/002 - Rev 1		

Scope	General instruction welding structural for skids Groove, fillet, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. U	Grp-no. II
Welded to	Plate	P-no. U	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers Notes	None		

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	3,	16,	-	-
Impact tested	8,	16,	-	-
Partial pen.	3,	16,	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	16,	-	-
GMAW						-	-	-	-
GMAW						-	-	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process		GMAW	GMAW	GMAW
Type		Semi-automatic	Semi-automatic	Semi-automatic
Minimum preheat/interpass temperature	(°C)	10	10	10
Maximum interpass temperature	(°C)	225	225	225
Filler metal size	(mm)	1,2	1,2	1,2
Layer number		Root	Filler	Cap
Position		H	H	H
Weld progression		Not applicable	Not applicable	Not applicable
Current/polarity		DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Waveform control				
Energy	(J)			
Power	(J/s)			
Amperes		110 -140	190 - 210	190 - 210
Volts		15 - 17	21 - 23	22 - 24
Travel speed	(mm/min)	135 - 150	320 - 350	350 - 390
Maximum heat input	(kJ/mm)	0,8 - 1,0	0,7 - 0,8	0,6 - 0,8
Wire feed speed	(m/min)	0,	0	0
Arc transfer mode		Short-circuiting	Spray	Globular
Shielding: Gas type		AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
Flow rate	(l/min)	12- 22	12 - 22	12 - 2
Trailing: Gas type		None	None	None
Flow rate	(l/min)	-	-	-
Backing: Gas type		None	None	None
Flow rate	(l/min)	-	-	-
String or weave		Stringer and Weave	Stringer or Weave	Stringer or Weave
Orifice/gas cup size		15	15	15
C.T.W.D	(mm)	15	15	15
Multi/Single pass per side		Multiple passes	Multiple passes	Multiple passes
Multi/single electrode		Single electrode	Single electrode	Single electrode
Maximum pass thickness	(mm)	5	5	5
Weld deposit chemistry		-	-	-
Notes		-	-	-

WPS record number	S2700 Revision 1	Qualified to	AWS D1.1/D1.1M:2015
Date	1-6-2016	Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category B)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 10(°C). Over 38.1 thru 63.5(mm): 66(°C). Over 63.5(mm): 107(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
F. van Toledo	
Date	
1-6-2016	

Signature 2

Name	Signature
Date	

element

Element Materials Technology
Voorerf 18
4824 GN Breda

Tel.: 076-5424300
Fax: 076-5424848
Info.breda@element.com

Arjan Roza Lastechniek
G. Sterkenburgstraat 38
MEEUWEN, 4268 GS

TEST CERTIFICATE

Date: 21-Jan-16
Purchase Order Number: ARL2064
Report No.: ARJ001-16-01-18390-2

TEST REPORT FOR THE PURPOSE OF: WELDING PROCEDURE QUALIFICATION TEST RECORD

Testing in accordance with : AWS D1.1/M: 2015

Purchase order No, Test piece No. : ARL2064-2
Manufacturer : Airpack Netherlands B.V.
WPS : S2700

Plate dimension and thickness : 500x200x8 mm to 500x200x8 mm
Plate material grade : API 2W-50LS to API 2W-50LS

Welding process(es) : GMAW
Joint type : Butt weld single Vee, Multiple passes
Welding position : 2G
Filler : Lincoln Electric, Outershield MC715-H
Shielding gas, SFA A5.32/A5.32M : SG-AC20: 80% Ar - 20% CO_2
Backing gas, : N.A.

Preheat / Interpass temp. : ≥ 10 °C / ≤ 167°C
PWHT : No

Welder(s) : Dorreman M.
Date(s) / place of birth(s) : 1994-01-05 / Zierikzee
Stamp. No.(s) / ID(s) : W-013 / ID Card IKP0996J6
Remarks: : No remarks

NONDESTRUCTIVE EXAMINATION

* Visual examination: Performed on site
* Radiographic examination: Performed on site, see RTD report no.: 148401 (0)
* Magnetic Particle examination: Performed on site, see RTD report no.: 05056-2016-02-006

Note: *The above mentioned data is only for information and is no part of the examination in this test report*

CROSS WELD TENSILE TESTS [AWS]

Dimensions(s) [mm]	Rm [N/mm^2]	Fracture location
20.03 x 7.23	529	Base material
20.03 x 7.28	530	Base material
Requirements;	≥ 448	

TECHNOLOGICAL TESTS

Type of test	Former / Bending angle	Result
Face bend	4t / 180°	2 x acceptable
Root bend	4t / 180°	2 x acceptable

26 JAN 2016 APPR

element™

Date: 21-Jan-16
P.O. No.: ARL2064
Report No.: ARJ001-16-01-18390-2

MACROSCOPIC EXAMINATION

Amount	Result
2x	No weld defects observed, segregation in plate noted (see page 3&4)

HARDNESS MEASUREMENTS

Method : Vickers HV10kg
Requirements : ≤ 325 HV10kg

Cross section 18390-2.1

Location of indentations	Traverse 1-2mm below outer surface	Traverse 1-2mm above inner surface
base material	166-164-164	171-169-165
heat affected zone	184-193-204-205-204	186-198-206-206-188
weld metal	213-214-217-199-211	173-184-186-186-187
heat affected zone	205-199-198-196-186	187-186-186-188-179
base material	167-170-170	165-166-164

Cross section 18390-2.2

Location of indentations	Traverse 1-2mm below outer surface	Traverse 1-2mm above inner surface
base material	165-168-167	167-170-164
heat affected zone	197-206-211-211-211	187-199-196-191-207
weld metal	220-221-207-208-219	192-196-188-194-189
heat affected zone	209-211-207-209-198	178-186-180-175-174
base material	168-165-166	162-163-166

IMPACT TESTS [KV8]

Notch location	Spec. size [mm]	Test temp. [°C]	Test results [J]	Average value [J]
Midweld	10x5	-40	56-56-60	57
Fusion line	10x	-40	51-69-60	60
Fusion line +1mm	10x5	-40	115-104-84	101
Fusion line +2mm	10x5	-40	104-99-100	101
Fusion line +5mm	10x5	-40	119-115-104	113
Requirements;			≥ 34	≥ 41

The above mentioned results satisfy the requirements

RVA L 063

For Element Breda,

element™

Albert Karstanje

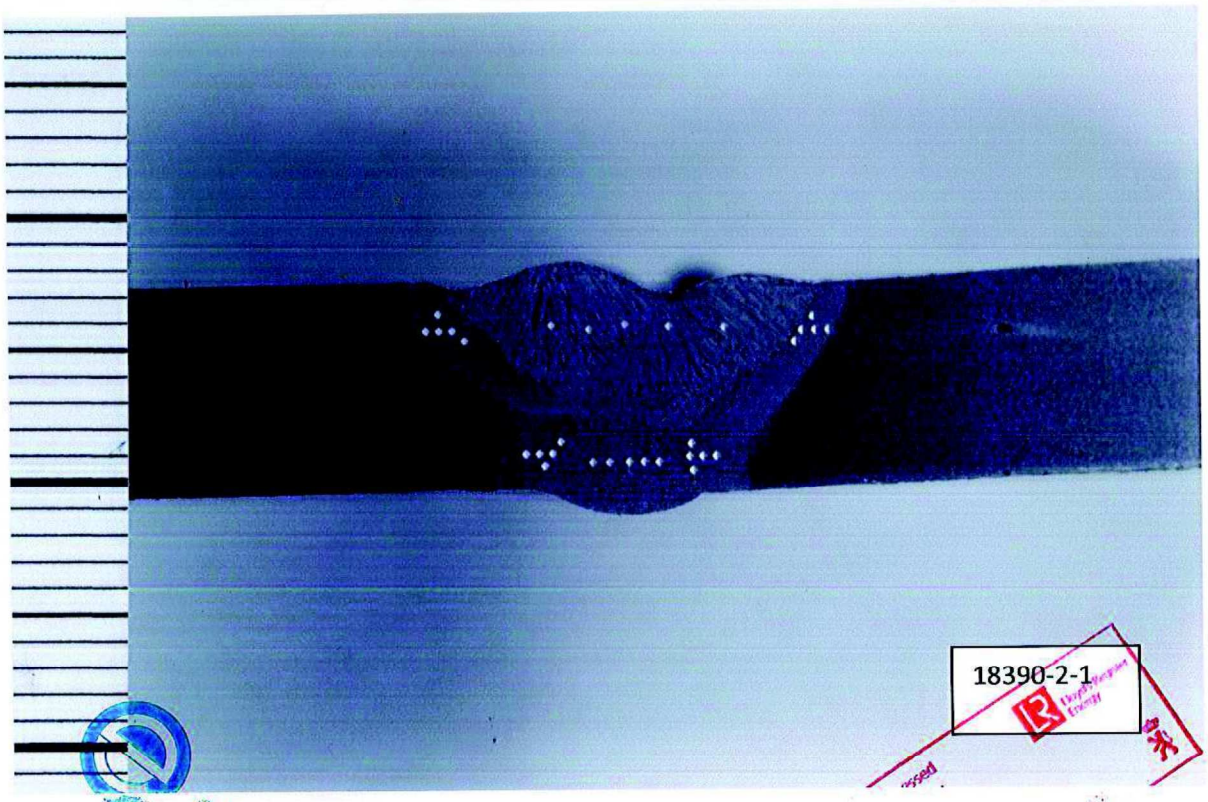
Witnessed
Reviewed
P. Reijntjes
Rotterdam Office
Lloyd's Register Nederland B.V.

26 JAN 2016

element™

Date: 21-Jan-16
P.O. No.: ARL2064
Report No.: ARJ001-16-01-18390-2

MACRO PHOTO
Cross section no. 18390-2-1



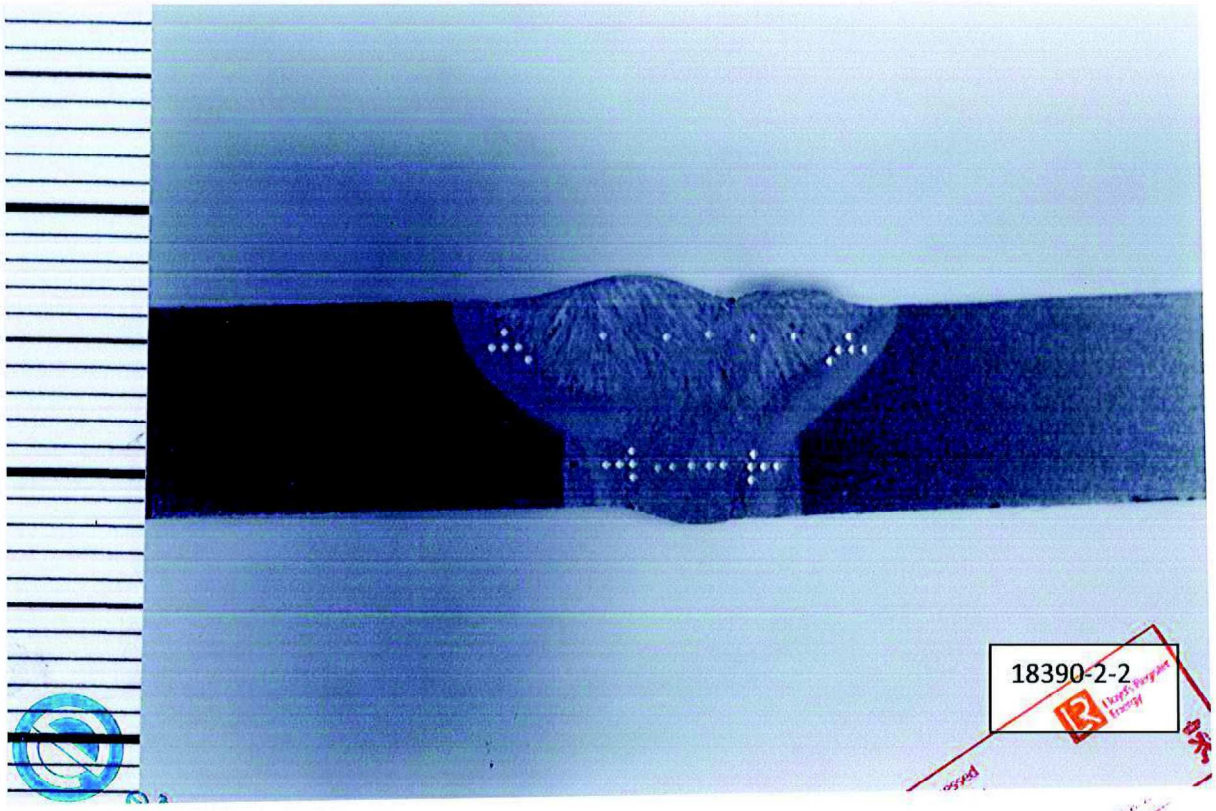
element™
Albert Karstanje

26 JAN. 2016

element™

Date: 21-Jan-16
P.O. No.: ARL2064
Report No.: ARJ001-16-01-18390-2

MACRO PHOTO
Cross section no. 18390-2-2



element bv
Albert Kastanje

26 JAN 2016

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR)

WeldOffice WPS

PQR record number	RET 0245029-001-26	Revision 1	WPS record number	S2400	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

BASE METALS

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Plate	API 2W (50)	U	II	-	-	30	-
Welded to:	Plate	API 2W (50)	U	II	-	-	30	-
and tested:	Without PWHT, Fillet-weld test							
Notes								

JOINTS

Joint design	Fillet weld	See addition information	See addition information

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

FILLER METALS

SFA specification		5.18
AWS classification		E70C-6MH4
Filler metal F-number		6
Weld metal A-number		-
Filler metal nominal composition		N.A.
Filler metal trade name		Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2
Deposited thickness	(mm)	8,00
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Supplemental filler metal		-
Supplemental filler metal vol.	(mm³)	-

POSITION

Position	3F
Weld progression	Uphill

PREHEAT

Preheat temperature	(°C)	10
Maximum interpass temperature	(°C)	132

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15
Trailing gas:	Type		None
	Flow rate	(l/min)	-
Backing gas:	Type		None
	Flow rate	(l/min)	-

ELECTRICAL

Filler metal size	(mm)	1,2
Amperes		142 - 143
Volts		15,9 - 16
Travel speed	(mm/min)	72 - 90
Maximum heat input	(kJ/mm)	1,88
Current/polarity		DCEP (reverse polarity)
Wire feed speed	(m/min)	0
Arc transfer mode		Short-circuiting

TECHNIQUE

String or weave		Stringer and Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/single electrode		Single electrode
Multi/Single pass per side		Multiple passes
Peening		Not used
Initial/interpass cleaning		Brushing and Grinding
Back gouging method		None

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS

PQR record number	RET 0245029-001-26	Revision 1	WPS record number	S2400	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	

TENSILE TESTS

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location

Comments	

GUIDED BEND TESTS

Type of test	Acceptance criteria	Result	Comments

Comments	

FILLET WELD TESTS

Type of test	Acceptance criteria	Result	Fillet leg size (mm) x (mm)
3x Macroscopic examination multiple pass	AWS D1.1	Acceptable	a=8 mm
3x Macroscopic examination single pass	AWS D1.1	Acceptable	a=6 mm

Comments	

CERTIFICATION

Welder's name	ID Number	Stamp number		
T. Lajos	ID Card 353992JA	W-104	Mechanical testing by	Schielab Breda (NLD)
			Laboratory test number	SL 12.6056-1
			Test file number	ARL1559-14
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of section 4 of ANSI/AWS D1.1-2010 Structural Welding Code-Steel.

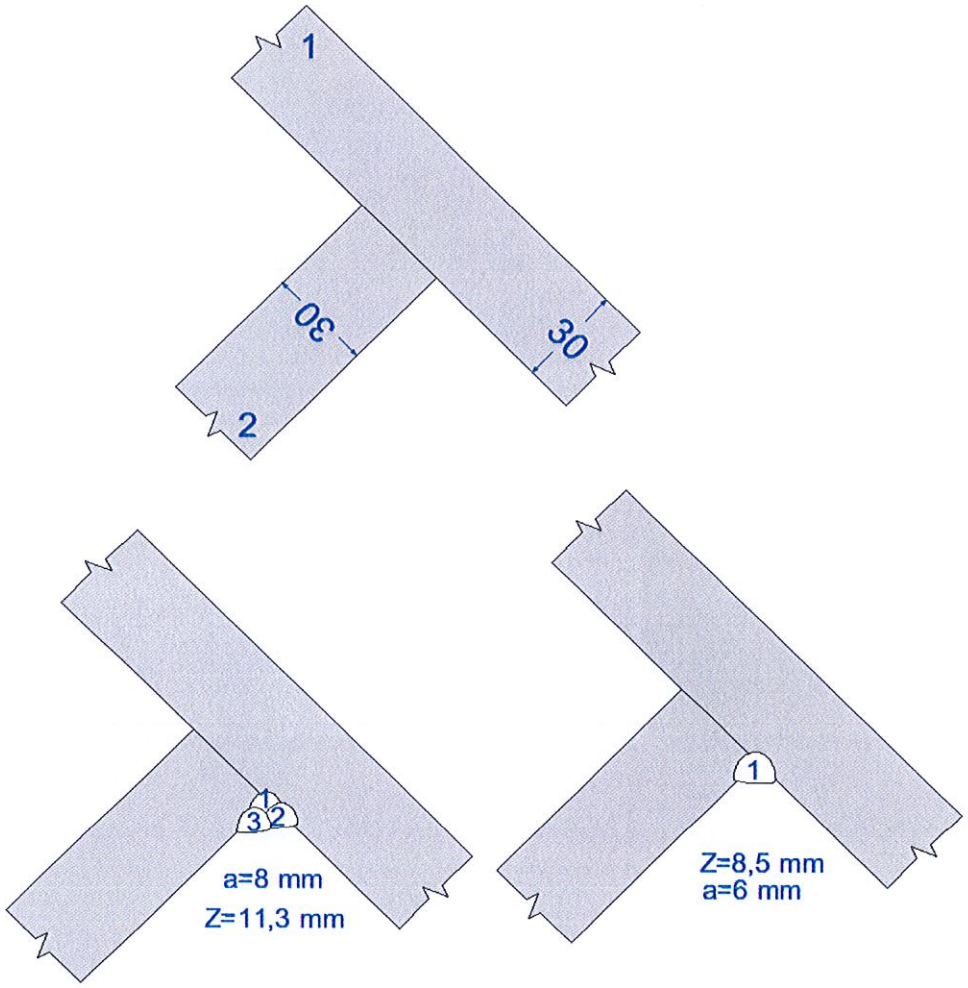
Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	
Date	
8-6-2012	

PQR record number	RET 0245029-001-26	Revision 1	WPS record number	S2400	Revision 0
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	AWS D1.1/D1.1M:2010	



Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-14	Revision 1	Date	29-5-2012
PQR number	RET 0245029-001-26	Revision 1	Welding standard	AWS D1.1/D1.1M:2010
WPS number	S2400	Revision 0	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GMAW
Type	Semi-automatic

BASE METALS

			Welded to:			
Product form		Plate		Product form		Plate
Material control number		362705		Material control number		362705
Specification (type or grade)		API 2W (50)		Specification (type or grade)		API 2W (50)
Nominal composition		C-Mn		Nominal composition		C-Mn
Trade name		Dillinger Hutte		Trade name		Dillinger Hutte
P number		U		P number		U
G number				G number		
AWS group number		II		AWS group number		II
Nominal pipe/tube size		-		Nominal pipe/tube size		-
Schedule		-		Schedule		-
Length	(mm)	350		Length	(mm)	350
Width (OD)	(mm)	150		Width (OD)	(mm)	150
Thickness	(mm)	30		Thickness	(mm)	30

JOINTS

Joint design	Fillet weld	See addition information	See addition information

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding parameters - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-14	Revision 1	Date	29-5-2012

PASS INFORMATION

Pass number	1 single layer	1 multi layer	1 multi layer	2 multi layer
Layer number	1	1	2	2

WELDING PROCESSES

Welding process	GMAW	GMAW	GMAW	GMAW
Type	Semi-automatic	Semi-automatic	Semi-automatic	Semi-automatic

FILLER METALS

Material control number		P1FC110214	P1FC110214	P1FC110214	P1FC110214
SFA specification		5.18	5.18	5.18	5.18
AWS classification		E70C-6MH4	E70C-6MH4	E70C-6MH4	E70C-6MH4
Filler metal F-number		6	6	6	6
Weld metal A-number		-	-	-	-
Filler metal nominal composition		N.A.	N.A.	N.A.	N.A.
Filler metal trade name		Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H	Lincoln, Outershield MC715-H
Filler metal size	(mm)	1,2	1,2	1,2	1,2
Length of filler metal consumed	(mm)	-	-	-	-
Deposited thickness	(mm)	4	4	4	4
Maximum pass thickness	(mm)	5	5	5	5
Weld deposit chemistry		-	-	-	-
Supplemental filler metal		-	-	-	-
Supplemental filler metal vol.	(mm^3)	-	-	-	-

POSITION

Position	3F	3F	3F	3F
Weld progression	Uphill	Uphill	Uphill	Uphill

PREHEAT

Preheat temperature	(°C)	10	10	10	10
Maximum interpass temperature	(°C)	10	10	87	132

GAS

Shielding gas:	Type		AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)	AC-20 (A5.32 SG-)
	Flow rate	(l/min)	15	15	15	15
Trailing gas:	Type		None	None	None	None
	Flow rate	(l/min)	-	-	-	-
Backing gas:	Type		None	None	None	None
	Flow rate	(l/min)	-	-	-	-

ELECTRICAL

Filler metal size	(mm)	1,2	1,2	1,2	1,2
Amperes		142	143	143	142
Volts		15.9	16	16	16
Travel speed	(mm/min)	72	73	90	75
Maximum heat input	(kJ/mm)	1,8815	1,8805	1,5253	1,8176
Current/polarity		DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)	DCEP (reverse polarity)
Wire feed speed	(m/min)	-	-	-	-
Arc transfer mode		Short-circuiting	Short-circuiting	Short-circuiting	Short-circuiting

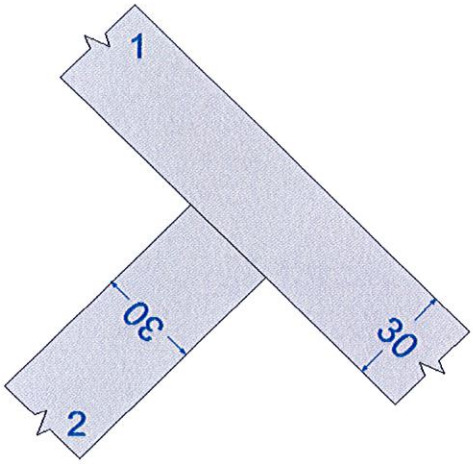
TECHNIQUE

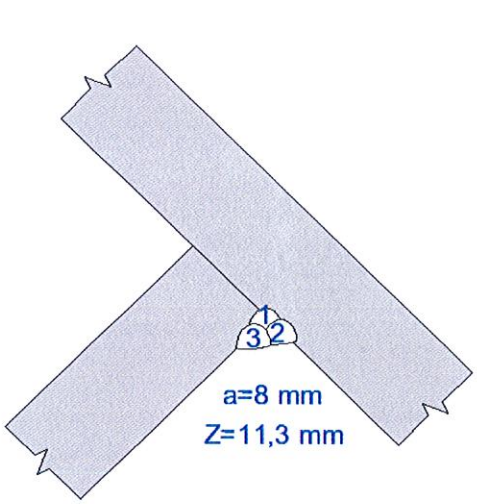
String or weave		Stringer and Weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size		15	15	15	15
C.T.W.D	(mm)	15	15	15	15
Multi/single electrode		Single electrode	Single electrode	Single electrode	Single electrode
Multi/Single pass per side		Multiple passes	Multiple passes	Multiple passes	Multiple passes
Peening		Not used	Not used	Not used	Not used
Initial/interpass cleaning		Brushing and Grinding	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method		None	None	None	None

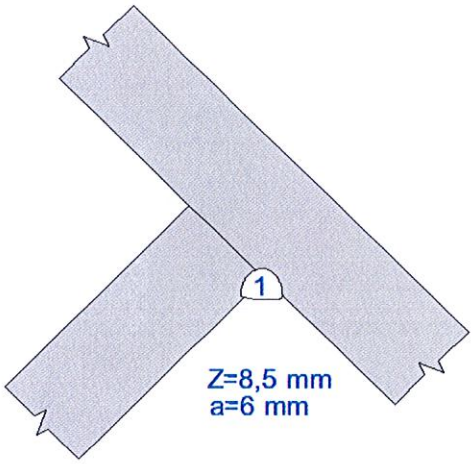
PASS PERFORMED/WITNESSED BY

Welders name	T. Lajos	T. Lajos	T. Lajos	T. Lajos
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012	29-5-2012
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-14	Revision 1	Date	29-5-2012







WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with	: AWS D1.1:2010
Purchaser	: Arjan Roza Lastechniek BV
Purchase order no.	: ARL1559-14
Manufacturer	: Airpack Nederland BV.
WPS	: S2400
Description of sample(s)	: Plate with fillet welds single-layer and multi-layer
Dimension(s)	: 350x150x30 mm
Group number	: II -II
Material grade	: API 2W grade 50 - API 2W grade 50
Welding process(es)	: GMAW (metal cored)
Filler	: SFA 5.18 : E70C-6MH4, F-number 6
Brand and type	: Lincoln Electric Outershield MC715-H
Shielding gas	: AC-20 (A5.32 SG-)
Backing gas	: N.A.
Welding position	: 3F progression up
Preheat / Interpass temp.	: 10 °C / 132 °C
Joint type	: Fillet welds single-layer and multi-layer
Welder	: T. Lajos
Date / place of birth	: 11-02-1985 / Hungary
Stamp. No. / ID	: W-104 / ID Card 353992JA
Testpiece marked with	: ARL1559-14

NON DESTRUCTIVE EXAMINATION

* Visual examination	: performed by examiner

MACROSCOPIC EXAMINATION

Amount	Result
3x	During the examination, no weld defects have been observed.

Conclusion: The results satisfy the requirements.

Breda, 07-06-2012

A. Karstanje

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]

Lloyd's Register Nederland B.V.
P.F. Reijnties
Rotterdam Office
07 JUNI 2012

TESTING
RvA L 063

Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	S2400 Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012	Company name	Airpack Netherlands BV
Supporting PQR(s)	RET 0245029-001-26 - Rev 1		
Reference docs.			

Scope	Filletwelds single layer a <= 6 mm and multi layer filletwelds => 8 mm Fillet, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS

Type	Plate	P-no. U	Grp-no. II
Welded to	Plate	P-no. U	Grp-no. II
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	no min.	no max.	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	610,	no max.	-	-

FILLER METALS

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GMAW	5.18	E70C-6MH4	6	-	Lincoln, Outershield MC715-H	3,	no max.	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process		GMAW
Type		Semi-automatic
Minimum preheat/interpass temperature	(°C)	10
Maximum interpass temperature	(°C)	188
Filler metal size	(mm)	1,2
Layer number		All
Position		V
Weld progression		Uphill
Current/polarity		DCEP (reverse polarity)
Amperes		127 - 157
Volts		14,7- 17,1
Travel speed	(mm/min)	54 - 112
Maximum heat input	(kJ/mm)	1,88
Wire feed speed	(m/min)	0,
Arc transfer mode		Short-circuiting
Shielding: Gas type		AC-20 (A5.32 SG-)
Flow rate	(l/min)	12 - 22
Trailing: Gas type		None
Flow rate	(l/min)	-
Backing: Gas type		None
Flow rate	(l/min)	-
String or weave		Stringer or Weave
Orifice/gas cup size		15
C.T.W.D	(mm)	15
Multi/Single pass per side		Multiple passes
Multi/single electrode		Single electrode
Maximum pass thickness	(mm)	5
Weld deposit chemistry		-
Notes		

WPS record number	S2400 Revision 0	Qualified to	AWS D1.1/D1.1M:2010
Date	14-6-2012	Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
AWS D1.1 (Category A)	For thickness 3 to 19(mm): 0(°C). Preheat to 20(°C) if the base metal temperature is below 0(°C). Over 19 thru 38.1(mm): 66(°C). Over 38.1 thru 63.5(mm): 107(°C). Over 63.5(mm): 150(°C).

TECHNIQUE

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
Date	

Signature 2

Name	Signature
Date	

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

ASME - Procedure Qualification Record (PQR) - QW-483

WeldOffice WPS

PQR record number	RET 0245029-001-17	Revision 0	WPS record number	P2000	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	

BASE METALS (QW-403)

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Pipe/Tube	SA-333 (6)	1	1	63,50	Standard	5,16	73,03
Welded to:	Pipe/Tube	SA-333 (6)	1	1	63,50	Standard	5,16	73,03
and tested:	Without PWHT, With impacts							
Notes								

JOINTS (QW-402)

Joint design		Single-V-groove
Backing:		None
Retainers		None
Groove angle	(deg.)	60
Root opening	(mm)	4
Root face	(mm)	0-1

See addition information

WELDING PROCESSES

Welding process	GTAW
Type	Manual

FILLER METALS (QW-404)

SFA specification		5.18
AWS classification		ER70S-3
Filler metal F-number		6
Weld metal A-number		1
Filler metal nominal composition		N.A.
Filler metal trade name		Lincoln Electric, LNT 25
Filler metal size	(mm)	2,4
Deposited thickness	(mm)	5,16
Maximum pass thickness	(mm)	4
Weld deposit chemistry		-

POSITION (QW-405)

Position	6G
Weld progression	Uphill

PREHEAT (QW-406)

Preheat temperature	(°C)	10
Maximum interpass temperature	(°C)	166

GAS (QW-408)

Shielding gas:	Type		Argon (A5.32 SG-A)
	Flow rate	(l/min)	14
Trailing gas:	Type		None
	Flow rate	(l/min)	-
Backing gas:	Type		None
	Flow rate	(l/min)	-

ELECTRICAL (QW-409)

Filler metal size	(mm)	2,4
Amperes		97 - 101
Volts		9,6 - 10,3
Travel speed	(mm/min)	33 - 69
Maximum heat input	(kJ/mm)	1,8165
Tungsten size	(mm)	2,4
Tungsten type		SFA 5.12 EWCe-2
Current/polarity		DCEN (straight polarity)
DC pulsing current		None

TECHNIQUE (QW-410)

String or weave	Stringer and Weave
Orifice/gas cup size	9,5
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

ASME - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS

PQR record number	RET 0245029-001-17	Revision 0	WPS record number	P2000	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	

TENSILE TESTS (QW-150)

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	19.01	4.53	86,115	-	538 N/mm²	Ductile-Base Metal
2	19.02	4.73	89,965		527 N/mm²	Ductile-Base Metal

Comments

GUIDED BEND TESTS (QW-160)

Type of test	Acceptance criteria	Result	Comments
Face bend	QW 163	Acceptable	
Face bend	QW 163	Acceptable	
Root bend	QW 163	Acceptable	
Root bend	QW 163	Acceptable	

Comments

TOUGHNESS TESTS (QW-170)

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values (J)	(% Shear)	(mm)	Drop weight break
1	Weld Metal	Charpy V	10 x 4	-55	52	-	-	-
2	Weld Metal	Charpy V	10 x 4	-55	19	-	-	-
3	Weld Metal	Charpy V	10 x 4	-55	55	-	-	-
4	HAZ	Charpy V	10 x 4	-55	74	-	-	-
5	HAZ	Charpy V	10 x 4	-55	61	-	-	-
6	HAZ	Charpy V	10 x 4	-55	58	-	-	-

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number		
A. Sumantri	ID Card IXH4P6551	A1	Mechanical testing by	Schielab BV Breda (NLD)
			Laboratory test number	SL 12.6043-1A
			Test file number	ARL1559-1
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

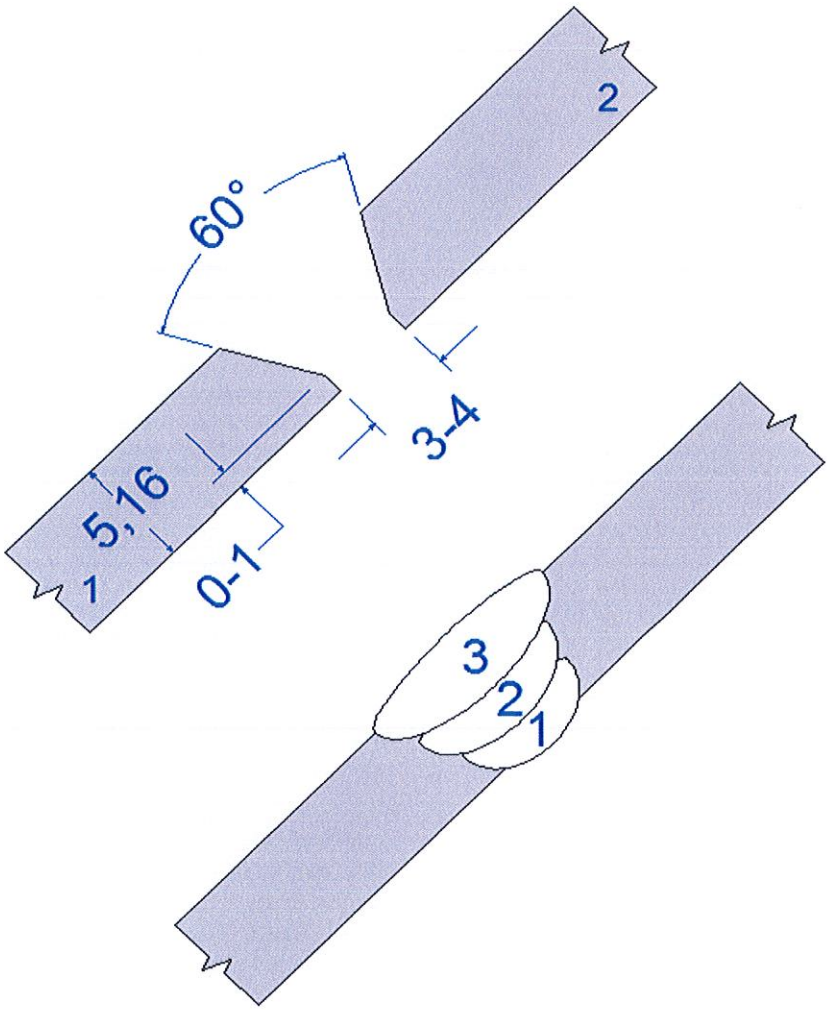
Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur Llyds	
Date	
8-6-2012	

PQR record number	RET 0245029-001-17	Revision 0	WPS record number	P2000	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	



Pipe diameter 2½" x STD (73,0,3x5,16 mm)

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

ASME - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-1	Revision 1	Date	29-5-2012
PQR number	RET 0245029-001-17	Revision 0	Welding standard	ASME Section IX:2010 including addenda 2011
WPS number	P2000	Revision 2	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GTAW
Type	Manual

BASE METALS (QW-403)

			Welded to:			
Product form		Pipe/Tube		Product form		Pipe/Tube
Material control number		353566		Material control number		353566
Specification (type or grade)		SA-333 (6)		Specification (type or grade)		SA-333 (6)
Nominal composition		C-Mn-Si		Nominal composition		C-Mn-Si
Trade name		Vallourec & Mannesmann		Trade name		Vallourec & Mannesmann
P number		1		P number		1
G number		1		G number		1
AWS group number		U		AWS group number		U
Nominal pipe/tube size		63,50		Nominal pipe/tube size		63,50
Schedule		Standard		Schedule		Standard
Length	(mm)	150		Length	(mm)	150
Width (OD)	(mm)	73,03		Width (OD)	(mm)	73,03
Thickness	(mm)	5,16		Thickness	(mm)	5,16

JOINTS (QW-402)

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	4		
Root face	(mm)	0-1		

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Lloyd's Register Nederland B.V.
A member of the Lloyd's Register group
Wim Kortekaas
Lloyd's Register

Airpack Netherlands BV
Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

ASME - Welding parameters - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-1	Revision 1	Date	29-5-2012

PASS INFORMATION

Pass number	1	2	3
Layer number	1	2	3

WELDING PROCESSES

Welding process	GTAW	GTAW	GTAW
Type	Manual	Manual	Manual

FILLER METALS (QW-404)

Material control number		334136	334136	334136
SFA specification		5.18	5.18	5.18
AWS classification		ER70S-3	ER70S-3	ER70S-3
Filler metal F-number		6	6	6
Weld metal A-number		1	1	1
Filler metal nominal composition		N.A.	N.A.	N.A.
Filler metal trade name		Lincoln Electric, LNT 25	Lincoln Electric, LNT 25	Lincoln Electric, LNT 25
Filler metal size	(mm)	2,4	2,4	2,4
Length of filler metal consumed	(mm)	-	-	-
Deposited thickness	(mm)	2,1	1,5	1,5
Maximum pass thickness	(mm)	4	4	4
Weld deposit chemistry		-	-	-
Flux nominal composition		N.A.	N.A.	N.A.
Flux trade name		N.A.	N.A.	N.A.

POSITION (QW-405)

Position	6G	6G	6G
Weld progression	Uphill	Uphill	Uphill

PREHEAT (QW-406)

Preheat temperature	(°C)	10	10	10
Maximum interpass temperature	(°C)	10	112	166

GAS (QW-408)

Shielding gas:	Type		Argon (A5.32 SG-A)	Argon (A5.32 SG-A)	Argon (A5.32 SG-A)
	Flow rate	(l/min)	14	14	14
Trailing gas:	Type		None	None	None
	Flow rate	(l/min)	-	-	-
Backing gas:	Type		None	None	None
	Flow rate	(l/min)	-	-	-

ELECTRICAL (QW-409)

Filler metal size	(mm)	2,4	2,4	2,4
Amperes		97	101	97
Volts		10.1	9.6	10.3
Travel speed	(mm/min)	64	69	33
Maximum heat input	(kJ/mm)	0,9185	0,8431	1,8165
Tungsten size	(mm)	2,4	2,4	2,4
Tungsten type		SFA 5.12 EWCe-2	SFA 5.12 EWCe-2	SFA 5.12 EWCe-2
Current/polarity		DCEN (straight polarity)	DCEN (straight polarity)	DCEN (straight polarity)
DC pulsing current		None	None	None

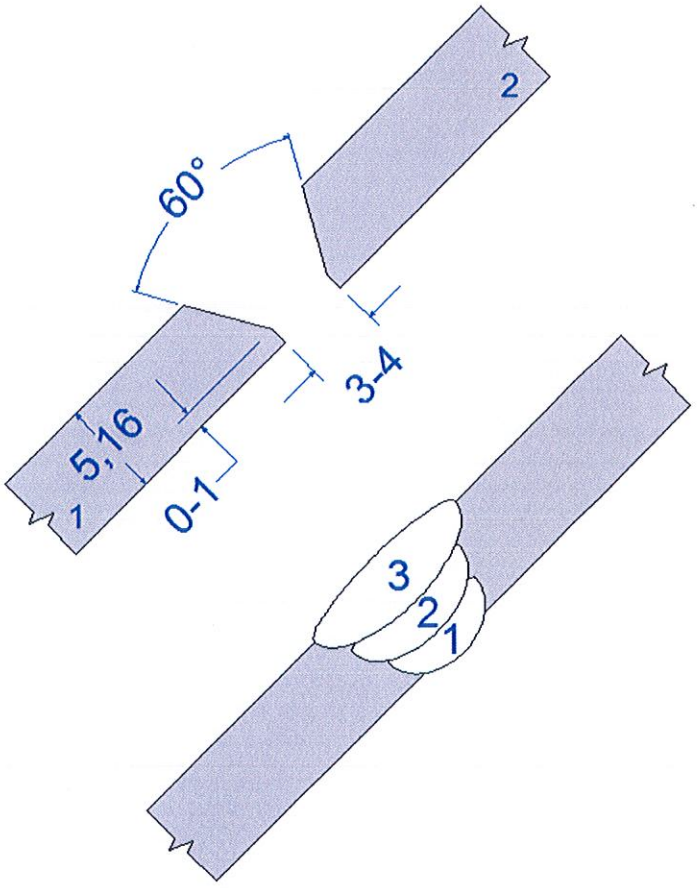
TECHNIQUE (QW-410)

String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size	9,5	9,5	9,5
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes
Peening	Not used	Not used	Not used
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method	None	None	None

PASS PERFORMED/WITNESSED BY

Welders name	A. Sumantri	A. Sumantri	A. Sumantri
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-1	Revision 1	Date	29-5-2012



Pipe diameter 2½" x STD (73,0,3x5,16 mm)

WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with	: ASME IX:2010
Purchaser	: Arjan Roza Lastechniek BV
Purchase order no.	: ARL1559-1
Manufacturer	: Airpack Nederland BV.
WPS	: P2000
Description of sample(s)	: Pipe with Single-V-groove
Dimension(s)	: 2,5" Sch 40S (Ø 73,03 x 5,15 mm)
Material grade	: P1 Gr.1 – P1 Gr. 1
Material	: ASTM SA-333 Gr.6 - ASTM SA-333 Gr.6
Welding process(es)	: GTAW
Filler	: F-no.6 A-no. 1
Brand and type	: Lincoln Electric LNT 25, ER70S-3
Shielding gas	: Argon (A5.32 SG-A)
Backing gas	: Not used
Welding position	: 6G progression up
Preheat / Interpass temp.	: 10 °C / 166 °C
Joint type	: Single-V-groove
Welder	: A. Sumantri
Date / place of birth	: 23-02-1962 / Oost- en West-Souburg
Stamp. No. / ID	: W-102 / ID Card IXH4P6551
Testpiece marked with	: ARL1559-1

NON DESTRUCTIVE EXAMINATION

* Visual examination	: performed by examiner

CROSS WELD TENSILE TESTS

Dimensions(s) [mm]	Rm [N/mm^2]	Fracture location
19.01 x 4.53	538	Base material
19.02 x 4.73	527	Base material
Requirements;	≥ 415	

TECHNOLOGICAL TESTS

Type	Former / Bending angle	Results
Face bend	4t / 180°	2 x acceptable
root bend	4t / 180°	2 x acceptable

07 JUNI 2012

TESTING
RvA L 063

Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

IMPACT TESTS - Type: Charpy KV

Notch location	Size [mm]	Test temp. [°C]	Results [J]	Average value [J]
Midweld	10 x 4	-55	52-19-55	42
Fusion line	10 x 4	-55	74-61-58	64
Requirements for size 10x10mm;			≥ 19	≥ 27
Requirements for size 10x4mm;			≥ 7.5	≥ 11

Conclusion: The results satisfy the requirements.

Breda, 07-06-2012

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]

A. Karstanje

Lloyd's Register Nederland B.V.
P.F. Reijntjes
Rotterdam Office
Witnessed / Reviewed / Approved

07 JUNI 2012

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

ASME - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	P2000 Revision 3	Qualified to	ASME Section IX:2013
Date	14-6-2012	Company name	Airpack Netherlands BV
Supporting PQR(s) Reference docs.	RET 0245029-001-17 - Rev 0		

Scope	Welding instruction piping Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS (QW-403)

Type	Carbon steel (P1)	P-no. 1	Grp-no. 1
Welded to	Carbon steel (P1)	P-no. 1	Grp-no. 1
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	1,50	10,32	-	-
Impact tested	2,58	10,32	-	-
Partial pen.	1,50	10,32	-	-
Fillet welds	-	-	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Nominal pipe size	no min.	no max.	-	-

FILLER METALS (QW-404)

THICKNESS RANGE QUALIFIED (mm)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GTAW	5.18	ER70S-3	6	1	Lincoln Electric, LNT 25	no min.	10,32	-	-
Cons. insert	-	-	-	-	-	- None -			
Flux	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process		GTAW
Type		Manual
Minimum preheat/interpass temperature	(°C)	10
Maximum interpass temperature	(°C)	221
Tungsten size	(mm)	2,4
Tungsten type		SFA 5.12 EWCe-2
Filler metal size	(mm)	2,4
Layer number		All
Position		All
Weld progression		Uphill
Current/polarity		DCEN (straight polarity)
Amperes		90 - 120
Volts		9,0 - 11
Travel speed	(mm/min)	30 - 70
Maximum heat input	(kJ/mm)	1,8165
DC pulsing current		None
Shielding:	Gas type	Argon (A5.32 SG-A)
	Flow rate (l/min)	12 - 16
Trailing:	Gas type	None
	Flow rate (l/min)	-
Backing:	Gas type	None
	Flow rate (l/min)	-
String or weave		Stringer and Weave
Orifice/gas cup size		9,5
Multi/Single pass per side		Multiple passes
Weld deposit chemistry		-
Notes		

WPS record number	P2000 Revision 3	Qualified to	ASME Section IX:2013
Date	14-6-2012	Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
ASME B31.1	80 (°C) for thickness over 25 (mm) and specified maximum carbon content over 0.30%. 10 (°C) for all other materials.
ASME B31.3	10 (°C) for thickness less than 25 (mm) and specified minimum tensile strength not over 490 (MPa). 79 (°C) for 25 (mm) and greater thickness, or if specified minimum tensile strength is over 490 (MPa).

TECHNIQUE (QW-410)

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
Wim Komdeur	
Date	
8-6-2012	

PQR record number	RET 0245029-001-19	Revision 1	WPS record number	P2500	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	

BASE METALS (QW-403)

	Product form	Specification (type or grade)	P no.	Grp-no.	Size	Sch.	Thick. (mm)	Dia. (mm)
	Pipe/Tube	SA-350 (LF2)	1	2	63,50	Standard	5,16	73,03
Welded to:	Pipe/Tube	SA-350 (LF2)	1	2	63,50	Standard	5,16	73,03
and tested:	Without PWHT, With impacts							
Notes								

JOINTS (QW-402)

Joint design	Single-V-groove	See addition information	See addition information
Backing:	None		
Retainers	None		
Groove angle (deg.)	30		
Root opening (mm)	4		
Root face (mm)	0-1		

WELDING PROCESSES

Welding process	GTAW
Type	Manual

FILLER METALS (QW-404)

SFA specification	5.18
AWS classification	ER70S-3
Filler metal F-number	6
Weld metal A-number	1
Filler metal nominal composition	N.A.
Filler metal trade name	Lincoln Electric, LNT 25
Filler metal size (mm)	2,4
Deposited thickness (mm)	5,16
Maximum pass thickness (mm)	4
Weld deposit chemistry	-

POSITION (QW-405)

Position	6G
Weld progression	Uphill

PREHEAT (QW-406)

Preheat temperature (°C)	10
Maximum interpass temperature (°C)	167

GAS (QW-408)

Shielding gas:	Type	Argon (A5.32 SG-A)
	Flow rate (l/min)	14
Trailing gas:	Type	None
	Flow rate (l/min)	-
Backing gas:	Type	None
	Flow rate (l/min)	-

ELECTRICAL (QW-409)

Filler metal size (mm)	2,4
Amperes	93 - 98
Volts	9,6 - 10,6
Travel speed (mm/min)	37 - 58
Maximum heat input (kJ/mm)	1,65
Tungsten size (mm)	2,4
Tungsten type	SFA 5.12 EWCe-2
Current/polarity	DCEN (straight polarity)
DC pulsing current	None

TECHNIQUE (QW-410)

String or weave	Stringer and Weave
Orifice/gas cup size	9,5
Multi/Single pass per side	Multiple passes
Peening	Not used
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

Lloyd's Register Nederland B.V. Lloyd's Register

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

ASME - Procedure Qualification Record (PQR) - Test results (as welded)

WeldOffice WPS

PQR record number	RET 0245029-001-19	Revision 1	WPS record number	P2500	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	

TENSILE TESTS (QW-150)

Reduced section

Specimen number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate total load (N)	Ultimate unit stress (MPa)	Type of failure and location
1	19.04	4.62	87,965	-	536 N/mm²	Ductile-Base Metal
2	19.05	4.64	88,392	-	537 N/mm²	Ductile-Weld

Comments

GUIDED BEND TESTS (QW-160)

Type of test	Acceptance criteria	Result	Comments
Root bend	QW 163	Acceptable	
Root bend	QW 163	Acceptable	
Face bend	QW 163	Acceptable	
Face bend	QW 163	Acceptable	

Comments

TOUGHNESS TESTS (QW-170)

Specimen number	Notch location	Notch type	Specimen size (mm) x (mm)	Test temperature (°C)	Impact values (J)	(% Shear)	(mm)	Drop weight break
1	Weld Metal	Charpy V	10 x 4	-55	20	-	-	-
2	Weld Metal	Charpy V	10 x 4	-55	43	-	-	-
3	Weld Metal	Charpy V	10 x 4	-55	34	-	-	-
4	HAZ	Charpy V	10 x 4	-55	43	-	-	-
5	HAZ	Charpy V	10 x 4	-55	10	-	-	-
6	HAZ	Charpy V	10 x 4	-55	34	-	-	-

Comments

CERTIFICATION

Welder's name	ID Number	Stamp number		
A. Sumantri	ID Card IXH4P6551	A1	Mechanical testing by	Schielab BV Breda (NLD)
			Laboratory test number	SL 12.6045-1A
			Test file number	ARL1559-3
			Tests conducted by	A. Karstanje

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

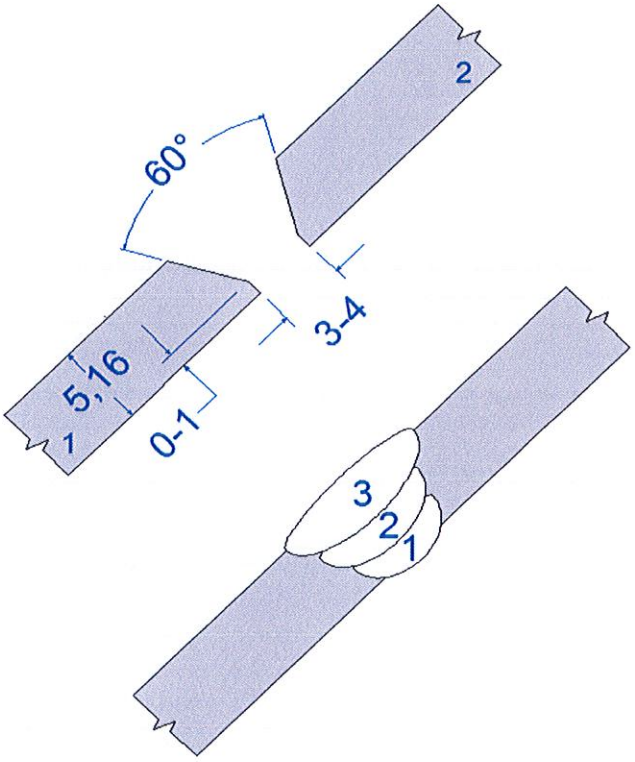
Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	
Date	
8-6-2012	

PQR record number	RET 0245029-001-19	Revision 1	WPS record number	P2500	Revision 2
Date	13-6-2012		Company name	Airpack Netherlands BV	
			Welding standard	ASME Section IX:2010 including addenda 2011	



Pipe diameter 2½" x STD (73,0,3x5,16 mm)

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

ASME - Welding conditions - (PQRD Welding Data Record)

WeldOffice WPS

PQRD number	ARL1559-3	Revision 2	Date	29-5-2012
PQR number	RET 0245029-001-19	Revision 1	Welding standard	ASME Section IX:2010 including addenda 2011
WPS number	P2500	Revision 2	Company name	Airpack Netherlands BV
			To be tested	Without PWHT

WELDING PROCESSES

Welding process	GTAW
Type	Manual

BASE METALS (QW-403)

			Welded to:			
Product form		Pipe/Tube		Product form		Pipe/Tube
Material control number		29685		Material control number		29685
Specification (type or grade)		SA-350 (LF2)		Specification (type or grade)		SA-350 (LF2)
Nominal composition		C-Mn-Si		Nominal composition		C-Mn-Si
Trade name		Sochorvá válcovna S.A.		Trade name		Sochorvá válcovna S.A.
P number		1		P number		1
G number		2		G number		2
AWS group number		U		AWS group number		U
Nominal pipe/tube size		63,50		Nominal pipe/tube size		63,50
Schedule		Standard		Schedule		Standard
Length	(mm)	150		Length	(mm)	150
Width (OD)	(mm)	73,03		Width (OD)	(mm)	73,03
Thickness	(mm)	5,16		Thickness	(mm)	5,16

JOINTS (QW-402)

Joint design		Single-V-groove	See addition information	See addition information
Backing:		None		
Retainers		None		
Groove angle	(deg.)	60		
Root opening	(mm)	4		
Root face	(mm)	0-1		

CLEANING/ROOT TREATMENT

Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

PQRD number	ARL1559-3	Revision 2	Date	29-5-2012

PASS INFORMATION

Pass number	1	2	3
Layer number	1	2	3

WELDING PROCESSES

Welding process	GTAW	GTAW	GTAW
Type	Manual	Manual	Manual

FILLER METALS (QW-404)

Material control number		334136	334136	334136
SFA specification		5.18	5.18	5.18
AWS classification		ER70S-3	ER70S-3	ER70S-3
Filler metal F-number		6	6	6
Weld metal A-number		1	1	1
Filler metal nominal composition		N.A.	N.A.	N.A.
Filler metal trade name		Lincoln Electric, LNT 25	Lincoln Electric, LNT 25	Lincoln Electric, LNT 25
Filler metal size	(mm)	2,4	2,4	2,4
Length of filler metal consumed	(mm)	-	-	-
Deposited thickness	(mm)	2,1	1,5	1,5
Maximum pass thickness	(mm)	4	4	4
Weld deposit chemistry		-	-	-
Flux nominal composition		N.A.	N.A.	N.A.
Flux trade name		N.A.	N.A.	N.A.

POSITION (QW-405)

Position	6G	6G	6G
Weld progression	-	-	-

PREHEAT (QW-406)

Preheat temperature	(°C)	10	10	10
Maximum interpass temperature	(°C)	10	154	167

GAS (QW-408)

Shielding gas:	Type		Argon (A5.32 SG-A)	Argon (A5.32 SG-A)	Argon (A5.32 SG-A)
	Flow rate	(l/min)	14	14	14
Trailing gas:	Type		None	None	None
	Flow rate	(l/min)	-	-	-
Backing gas:	Type		None	None	None
	Flow rate	(l/min)	-	-	-

ELECTRICAL (QW-409)

Filler metal size	(mm)	2,4	2,4	2,4
Amperes		93	98	96
Volts		9.6	9.9	10.6
Travel speed	(mm/min)	58	54	37
Maximum heat input	(kJ/mm)	0,9236	1,078	1,6502
Tungsten size	(mm)	2,4	2,4	2,4
Tungsten type		SFA 5.12 EWCe-2	SFA 5.12 EWCe-2	SFA 5.12 EWCe-2
Current/polarity		DCEN (straight polarity)	DCEN (straight polarity)	DCEN (straight polarity)
DC pulsing current		None	None	None

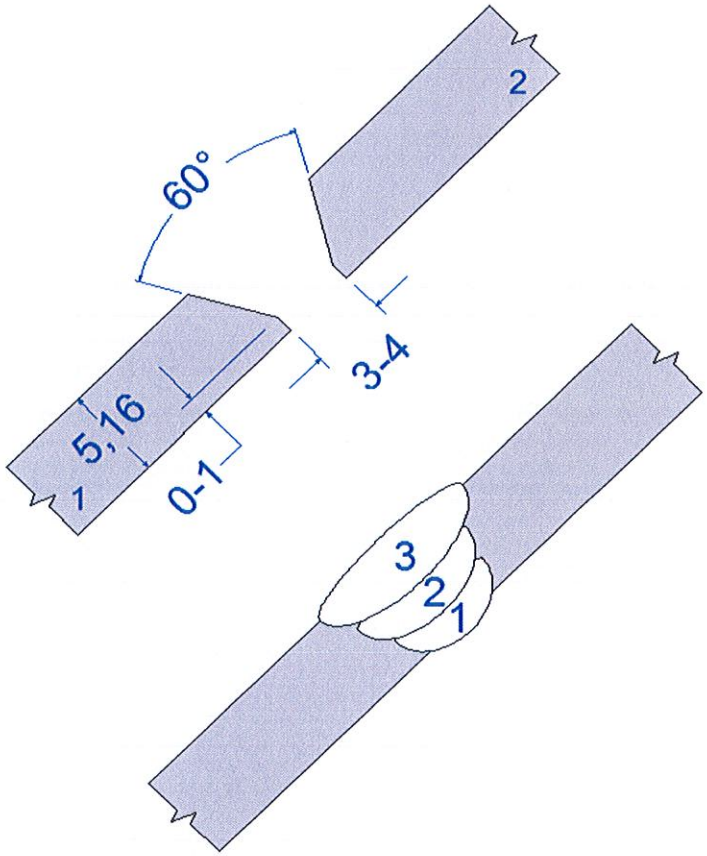
TECHNIQUE (QW-410)

String or weave	Stringer and Weave	Stringer and Weave	Stringer and Weave
Orifice/gas cup size	9,5	9,5	9,5
Multi/Single pass per side	Multiple passes	Multiple passes	Multiple passes
Peening	Not used	Not used	Not used
Initial/interpass cleaning	Brushing and Grinding	Brushing and Grinding	Brushing and Grinding
Back gouging method	None	None	None

PASS PERFORMED/WITNESSED BY

Welders name	A. Sumantri	A. Sumantri	A. Sumantri
Recorded/witnessed by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)
Date	29-5-2012	29-5-2012	29-5-2012
Data entry by	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)	A.J.H. Roza (IWT/IWI)

PQRD number	ARL1559-3	Revision 2	Date	29-5-2012



Pipe diameter 2½" x STD (73,0x3x5,16 mm)

WELDING PROCEDURE QUALIFICATION RECORD AND WELDERS PERFORMANCE QUALIFICATION TEST RECORD

Testing in accordance with	: ASME IX:2010
Purchaser	: Arjan Roza Lastechniek BV
Purchase order no.	: ARL1559-3
Manufacturer	: Airpack Nederland BV.
WPS	: P2500
Description of sample(s)	: Pipe with Single-V-groove
Dimension(s)	: 2,5" Sch 40S (Ø 73,03 x 5,15 mm)
Material grade	: P1 Gr.2 – P1 Gr. 2
Material	: ASTM SA-350 LF2 - ASTM SA-350 LF2
Welding process(es)	: GTAW
Filler	: F-no.6 A-no. 1
Brand and type	: Lincoln Electric LNT 25, ER70S-3
Shielding gas	: Argon (A5.32 SG-A)
Backing gas	: Not used
Welding position	: 6G progression up
Preheat / Interpass temp.	: 10 °C / 167 °C
Joint type	: Single-V-groove
Welder	: A. Sumantri
Date / place of birth	: 23-02-1962 / Oost- en West-Souburg
Stamp. No. / ID	: W-102 / ID Card IXH4P6551
Testpiece marked with	: ARL1559-3

NON DESTRUCTIVE EXAMINATION

* Visual examination	: performed by examiner

CROSS WELD TENSILE TESTS

Dimensions(s) [mm]	Rm [N/mm^2]	Fracture location
19.04 x 4.62	536	Base material
19.05 x 4.64	537	Weld metal
Requirements;	≥ 485	

TECHNOLOGICAL TESTS

Type	Former / Bending angle	Results
Face bend	4t / 180°	2 x acceptable
root bend	4t / 180°	2 x acceptable

07 JUNI 2012

TESTING
RvA L 063

Ingeschreven in het RvA register voor laboratoria onder nr. L 063 voor gebieden zoals nader omschreven in de erkenning.
Entered in the RvA register for laboratories under number L 063 for the areas outlined in the approval.

IMPACT TESTS - Type: Charpy KV

Notch location	Size [mm]	Test temp. [°C]	Results [J]	Average value [J]
Midweld	10 x 4	-55	20-43-34	32
Fusion line	10 x 4	-55	43-10-34	29
Requirements for size 10x10mm;			≥ 19	≥ 27
Requirements for size 10x4mm;			≥ 7.5	≥ 11

Conclusion: The results satisfy the requirements.

Breda, 07-06-2012

A. Karstanje

Witnessed and approved by; Mr.
Representing: Lloyd's Register Nederland B.V.
[RET 0245029]

Lloyd's Register Nederland B.V.
P.F. Reijntjes
Rotterdam Office
Witnessed / Reviewed / Approved
07 JUNI 2012

Airpack Netherlands BV

Groeneweegje 19 - 25, 4301 RN Zierikzee, The Netherlands

ASME - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	P2500 Revision 3	Qualified to	ASME Section IX:2013
Date	14-6-2012	Company name	Airpack Netherlands BV
Supporting PQR(s)	RET 0245029-001-19 - Rev 1		
Reference docs.			

Scope	Welding instruction piping Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: Production drawings

BASE METALS (QW-403)

Type	Carbon steel (P1)	P-no. 1	Grp-no. 2
Welded to	Carbon steel (P1)	P-no. 1	Grp-no. 2
Backing:	None	P-no.	Grp-no.
Retainers	None		
Notes			

THICKNESS RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	1,50	10,32	-	-
Impact tested	2,58	10,32	-	-
Partial pen.	1,50	10,32	-	-
Fillet welds	-	-	-	-

DIAMETER RANGE QUALIFIED (mm)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Nominal pipe size	no min.	no max.	-	-

FILLER METALS (QW-404)

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GTAW	5.18	ER70S-3	6	1	Lincoln Electric, LNT 25	no min.	10,32	-	-
Cons. insert	-	-	-	-	-	- None -			
Flux	-	-	-	-	-	- None -			

THICKNESS RANGE QUALIFIED (mm)

WELDING PROCEDURE

Welding process	GTAW
Type	Manual
Minimum preheat/interpass temperature (°C)	10
Maximum interpass temperature (°C)	223
Tungsten size (mm)	2,4
Tungsten type	SFA 5.12 EWCe-2
Filler metal size (mm)	2,4
Layer number	All
Position	All
Weld progression	Uphill
Current/polarity	DCEN (straight polarity)
Amperes	90- 115
Volts	9 - 12
Travel speed (mm/min)	35 - 70
Maximum heat input (kJ/mm)	1,65
DC pulsing current	None
Shielding: Gas type	Argon (A5.32 SG-A)
Flow rate (l/min)	14
Trailing: Gas type	None
Flow rate (l/min)	-
Backing: Gas type	None
Flow rate (l/min)	-
String or weave	Stringer or Weave
Orifice/gas cup size	9,5
Multi/Single pass per side	Multiple passes
Weld deposit chemistry	-
Notes	

WPS record number	P2500 Revision 3	Qualified to	ASME Section IX:2013
Date	14-6-2012	Company name	Airpack Netherlands BV

PREHEAT TABLE

Applicable standard	
ASME B31.1	80 (°C) for thickness over 25 (mm) and specified maximum carbon content over 0.30%. 10 (°C) for all other materials.
ASME B31.3	10 (°C) for thickness less than 25 (mm) and specified minimum tensile strength not over 490 (MPa). 79 (°C) for 25 (mm) and greater thickness, or if specified minimum tensile strength is over 490 (MPa).

TECHNIQUE (QW-410)

Peening	Not used
Surface preparation	Grinding
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

Signature 1

Name	Signature
Franky van Toledo	
Date	
8-6-2012	

Signature 2

Name	Signature
W. Komdeur (Lloyds)	
Date	
8-6-2012	