

FORM QW-482 FORMAT FOR WELDING PROCEDURE SPECIFICATION (WPS)
(See QW-200,1, Section ix, ASME Boiler and Pressure Vessel Code)

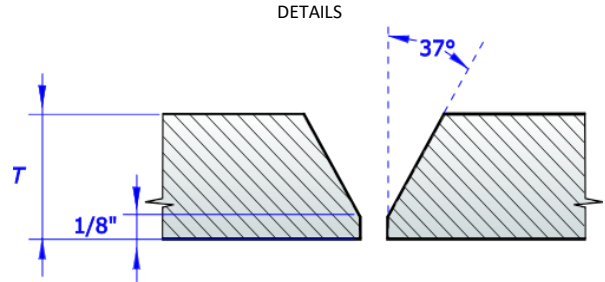
Organization Name WELDING COMPANY, INC By JOHN SMITH
 Welding Procedure Specification No. SMAW - 001 Date 12/31/16 Supporting PQR No(s) PQR - 001
 Revision No. 0

Welding Process(es): SMAW Type: MANUAL

JOINTS(QW-402)

Joint design Singe V, double V, J and U, All fillets
 Backing: Yes No
 Backing Material (Type) Weld Metal
 Refer to both backing and retainers

Metal Nonfusing Metal
 Nonmetallic Other



BASE METALS (QW-403)

P-No. 1 Group No. 1 to P-No. 1 Group No. 1
 OR

Specification and type/grade or UNS number A36
 to Specification and type/grade or UNS number A36
 OR

Chem. Analysis and Mech. Prop. _____
 to Chem. Analysis and Mech. Prop. _____

Thickness Range:
 Base Metal: Groove 1/16 to 3/4 Fillet All
 Maximum Pass Thickness <= 1/2 in. (13mm) Yes No

Other _____

FILLER METALS (QW-404)

	1	2
Spec. No (SFA)	5.1	5.1
AWS No. (Class)	E6010	E7018
F-No	3	4
A-No	1	1
Size of filler metals	3/32" - 1/8"	3/32" , 1/8" , 5/32"
Filler Metal product form	Mild Steel, Cellulosic	Mild Steel, Low hydrogen
Supplemental Filler Metal	--	--
Weld Metal		
Deposited thickness:		
Groove	1/4"	5/8"
Fillet	All	All
Electrode-Flux (Class)	--	--
Flux Type	--	--
Flux Trade Name	--	--
Consumable Insert	--	--
Other	--	--

FORM QW-482 (back)

POSITIONS (QW-405) Position(s) of groove _____ All _____ Welding progression: Up _____ X _____ Down _____ X _____ Position(s) of fillet: _____ All positions _____ Other _____	POST WELD HEAT TREATMENT (QW-407) Temperature range _____ None _____ Time Range _____ -- _____ Other _____ -- _____
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PREHEAT (QW-406) Preheat temperature, Minimum _____ 50 °F _____ Interpass temperature, Maximum _____ -- _____ Preheat Maintenance _____ Yes, preheat during 5minutes _____ Other _____ (Continuous or special heating, where applicable, should be recorded)	GAS (QW-408) <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">Percent composition</th> </tr> <tr> <th>Gas(es)</th> <th>Mixture</th> <th>Flow rate</th> </tr> </thead> <tbody> <tr> <td>Shielding</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Trailing</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Backing</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Other</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>		Percent composition			Gas(es)	Mixture	Flow rate	Shielding	N/A	N/A	N/A	Trailing	N/A	N/A	N/A	Backing	N/A	N/A	N/A	Other	N/A	N/A	N/A
	Percent composition																							
	Gas(es)	Mixture	Flow rate																					
Shielding	N/A	N/A	N/A																					
Trailing	N/A	N/A	N/A																					
Backing	N/A	N/A	N/A																					
Other	N/A	N/A	N/A																					

ELECTRICAL CHARACTERISTICS (QW-409)

Weld Passes	Process	Filler metal		Current Type and Polarity	Amps (Range)	Wire Feed Speed (Range)	Energy or Power (Range)	Volts (Range)	Travel Speed (Range)	Other (e.g., Remarks, Comments, Hot Wire Addition, Technique, Torch Angle, etc.)
		Classification	Diameter							
1	SMAW	E6010	3/32" - 1/8"	DCEP	40-70, 80-120	N/A	N/A	26-29	2 - 51 ipm	--
2-n	SMAW	E7018	3/32", 1/8", 5/32"	DCEP	70-110, 90-160, 130-210	N/A	N/A	19-27	2 - 81 ipm	--

Amps and volts, or power or energy range, should be recorded for each electrode size, position, and thickness, etc.

Pulsing current _____ N/A _____	Heat Input Max _____ N/A _____
Tungsten electrode Size and type _____	_____ (Pure tungsten, 2% thoriated, etc.)
Mode of Metal Transfer for GMAW _____	_____ (Spray Arc, Short Circuiting Arc, etc.)
Other _____	_____ --

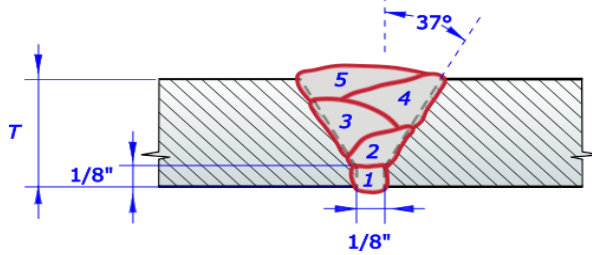
TECHNIQUE (QW-410)

String or Weave Bead _____	String or weave _____
Orifice, nozzle, or gas Cup Size _____	N/A _____
Initial and Interpass Cleaning (Brushing, grinding, etc.) _____	_____ Hand or power tools may be used
Method of Back Gouging _____	_____ Angle grinder
Oscillation _____	_____ --
Contact Tube to Work Distance _____	_____ --
Multiple or Single Pass (per side) _____	_____ E-6010 SINGLE E-7018 MULTIPLE
Multiple or Single Electrodes _____	_____ --
Electrode Spacing _____	_____ --
Peening _____	_____ NO PEENING
Other _____	_____ _____ _____

FORM QW-483 SUGGESTED FORMAT FOR PROCEDURE QUALIFICATION RECORDS (PQR)
(See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code)
Record Actual Variables Used to Weld Test Coupon

Organization Name WELDING COMPANY, INC
 Procedure Qualification Record No. PQR - 001 Date 12/31/16
 WPS No. SMAW - 001
 Welding Process(es) SMAW
 Types (Manual, Automatic, Semi-Automatic) Manual

JOINTS (QW-402)



Groove Design of Test Coupon

(For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal and process used.)

BASE METALS (QW-403)
 Material Spec. A283
 Type/Grade, or UNS Number C
 P-No. 1 Group No. 1 to P-No. 1 Gr. 1
 Thickness of Test Coupon 1/2"
 Diameter of Test Coupon N/A
 Maximum Pass Thickness _____
 Other _____

POSTWELD HEAT TREATMENT (QW-407)
 Temperature No PWHT
 Time _____
 Other _____

GAS (QW-408)

	Percent Composition		
	Gases	Mixture	Flow rate
Shielding	--	--	--
Trailing	--	--	--
Backing	--	--	--
Other	--	--	--

FILLER METALS (QW-404)

	A5.1	A5.1
SFA Specification	<u>A5.1</u>	<u>A5.1</u>
AWS Classification	<u>E6010</u>	<u>E7018</u>
Filler Metal F-No	<u>3</u>	<u>4</u>
Weld Metal Analysis A-No	<u>1</u>	<u>1</u>
Size of Filler Metal	<u>1/8"</u>	<u>1/8"</u>
Filler Metal Product Form	<u>Cellulosic</u>	<u>Low Hydrogen</u>
Supplemental Filler Metal	--	--
Electrode Flux Classification	--	--
Flux Type	--	--
Flux Trade Name	--	--
Weld Metal Thickness	<u>0.125"</u>	<u>0.375"</u>
Other	_____	_____

ELECTRICAL CHARACTERISTICS (QW-409)
 Current DCEP
 Polarity DCEP
 Amps. 100 and 125amps Volts 27 and 25volts
 Tungsten Electrode Size _____
 Mode of Metal Transfer for GMAW (FCAW) _____
 Heat Input _____
 Other _____

POSITION (QW-405)
 Position of Groove 1F
 Weld Progression (Uphill, Downhill) _____
 Other _____

TECHNIQUE (QW-410)
 Travel Speed 6ipm and 7ipm
 String or Weave Bead Weave
 Oscillation 3d
 Multipass or Single Pass (Per Side) _____
 Single or Multiple Electrodes Single
 Other _____

PREHEAT (QW-406)
 Preheat Temperature 50°F
 Interpass Temperature _____
 Other _____

FORM QW-483 (Back)

PQR No WPS-001

Tensile Test (QW-150)

Specimen No.	Width	Thickness	Area	Ultimate Total Load	Ultimate Unit Stress (psi)	Type of failure and location
1	1.5"	1/2"	3/4"	97,600	76,200	BASE
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

Guided-Bend Tests (QW-160)

Type and Figure No.	Result
Side Bend	Good
Side Bend	Good
Side Bend	Good
Root Bend	Good

Toughness Tests (QW-170)

Specimen No.	Notch Location	Specimen size	Test temperature	Impact Values			Drop Weight Break (Y/n)
				ft-lb or J	% Shear	Mils (in) or mm	
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--

Comments _____

Fillet Weld Test (QW-180)

Result - Satisfactory: Yes -- No -- Penetration into parent metal: Yes -- No --
 Macro-Results _____

Other Tests

Type of Test Radiographic Test - Good
 Deposit Analysis _____
 Other _____

Welder's Name JOHN SMITH Clock No WC-035 Stamp No. JS23
 Test Conducted by NDT COMPANY Laboratory Test No LAB-252-TT-01

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 Boiler and Pressure Vessel Code.

Organization WELDING COMPANY, INC

Date 12/31/16 Certified By *Barbara Helina*

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code.)