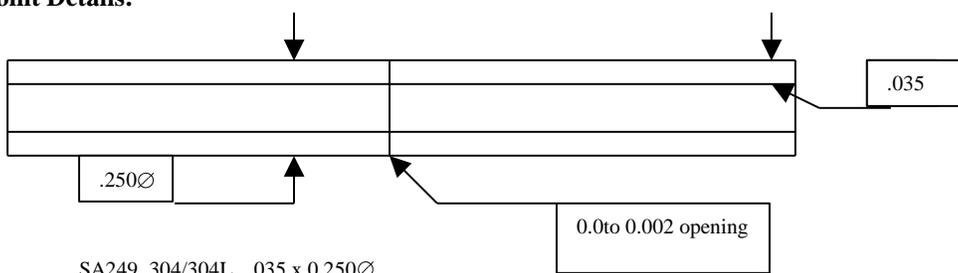


Welding Procedure Specification

Welding Procedure Specification No.: WPS Cajon/Orbital 001			Date: 12/29/2009**
Revision No.:	Revision Date:	Remarks:	Supporting PQR No.(s): PQR Cajon/Orbital 001
Welding Processes:	GTAW/Automatic	(2)	
(Manual, Automatic, Machine, Semi-automatic)			

Joints (QW-402):			
Joint Design: Groove	Backing: Gas	Backing Material (Type): Argon Gas	Remainder:
Retainer: Yes *** No	Type: Non-Metallic *** Metallic (Non-fusing)		
Joint Details:			
 <p style="text-align: center;">SA249 304/304L .035 x 0.250Ø</p>			
Cajon Orbital Welding Machine (Autogenous only)			

Base Metals (QW403):	P-No.: 8 Group 1	TO	P-No.: 8 Group 1	
Specification Type and Grade: SA 249 Type 304/304L				
TO Specification Type and Grade: SA 249 Type 304/304L				
OR Chemical Analysis and Mechanical Properties:				
TO Chemical Analysis and Mechanical properties:				
Thickness Range:	Process 1		Process 2	
Base Metal:	Groove: .035	Fillet: Unlimited	Groove:	Fillet:
Deposited Weld Metal:	Groove: .035	Fillet: Unlimited	Groove:	Fillet:
Pipe Diameter Range:	Groove: .250 Minimum	Fillet: Unlimited	Groove:	Fillet:
Other:				

Filler Metals (QW-404)	Process 1		Process 2	
Specification No. (SFA):	Autogenous – No Filler			
AWS No, (Class):				
F-No.:				
A No.:	8			
Size of Filler Metals:				
Deposited Weld Metal Thickness Range:	Groove:	Fillet: Unlimited	Groove:	Fillet:
Electrode-Flux (Class):				
Flux Trade Name:				
Consumable Insert:				
Other:				

Each Base Metal-Filler Metal Combination should be recorded individually

Welding Procedure Specification

Positions (QW-405)		Post Heat Treatment (QW-407)	
Positions of Groove:	All	Temperature Range:	None
Welding Progression	Upward & downward	Time Range	N/A
Positions of Fillet	All		

Preheat (QW-408)		Gas (QW-408)			
Preheat Temperature:	Minimum 50° F			% Composition	
Interpass Temperature:	Maximum-Not Recorded		Gases	Mixture	Flow Rate
Preheat Maintenance:	None	Shielding	Argon	99.9%	10-15 CFH
Minimum Welding Temperature	32° F	Trailing	None	***	***
		Backing	Argon	99.9%	8-12 CFH

Electrical Characteristics (QW-409)				
Current – AC or DC:	Direct Current	Polarity: Straight	Characteristics	Pulsing
Tungsten Electrode:	Size: .040Ø	EWCe-2		
Mode of Metal Transfer for GMAW:	N/A			
Electrode Wire Feed Speed Range:	N/A			

Technique (QW-410)	
String or Weave Bead:	String
Orifice or Gas Cup Size:	Cajon Orbital Head CWS H5
Initial Interpass Cleaning (Brushing, Grinding, etc.):	Initial Solvent Clean***Wire brush between passes
Method of Back Gouging:	None
Oscillation:	None
Contact Tube to Work Distance:	N/A
Multiple or Single Pass (per side):	Single
Multiple or Single Electrode(s):	Single
Travel Speed (Range):	As Required
Peening:	None
Other:	

Sequence Chart: Cajon Welding Systems for .035 x 1/4"Ø SA249 304/304L

Impulse	Maintenance	Frequency	Duty Cycle	Start	Duration
41.0	11.0	10	20	40	15

Pre-purge	Dwell	Down-slope	Post Purge	Speed
10	10	15	30	82

Special Notes		Gas Settings		
ARC Length	.035	Type	Argon	
Gage Setting	.722	Head	12CFH	
Material	304/304L	Tube	10CFH	
Wall Thickness	.035	Head Model	5H	Date:
Outside Diameter	1/4Ø	Power Supply	100D	Welder: Harbacek #8