

TEMPERATURE CONTROLS PTY LTD

ACN: 650 190 183 ABN: 966 501 901 83

7 YAMMA STREET

SEFTON, NSW 2162 AUSTRALIA

PH: (02) 9721 8644 FAX: (02) 9738 9339 EMAIL: sales@temperature.com.au

www.temperature.com.au



THERMOCOUPLES * RTD SENSORS * THERMOWELLS * EXTENSION CABLES * LEVEL SWITCHES

18/01/07

Ref: #7 INTERNAL PRESSURE TEST FLANGED (1381)

FULL PENETRATION
WELDING QUALIFICATION CERTIFICATE
WELDING PROCEDURE SPECIFICATION & PRESSURE TEST

Customer:

Tag No:

Order No:

This certificate is to confirm the Barstock Thermowell supplied against the above order number were subject to the following tests.

(i) HYDRAULIC PRESSURE TEST PROCEDURE - BARSTOCK THERMOWELLS

Thermowells were subjected to an internal hydraulic pressure test of 38,000 KPa for a duration of six minutes.

Each Thermowell was individually tested on our Hydraulic Pressure Comparator. The test pressure gauge is traceable N.A.T.A. test pressure Gauge No. 07/03/013.

(ii) FOUR PART DYE PENETRANT TEST - FLANGED THERMOWELLS

In Accordance to AS.2062-1997 "Methods for non-destructive penetrant testing of testing of products and components and BPV Code, Section V, Article 6 referenced by ASME B31.3 standard for Liquid Penetrant Testing.

All Thermowell flanges were subjected to a four part dye Penetrant test using flaw check dye Penetrant spray.

(iii) WELDING PROCEDURE SPECIFICATION - FLANGED THERMOWELLS

In Accordance to AS1210 - SAA Unfired Pressure Vessel Code

(Temperature Controls welding procedure specification No. WPQ SD 12)

Welding

Full penetration welding, Primary weld is "J" groove type, secondary weld is "J" groove type. Welding is performed by certified welders using inert gas shielded arc.

Individual welding procedure specifications detailing materials used, method of welding, joint type and material specification are available on request.

RAISED FACE: Sealing Finish. Standard RA 16 option 12.5, 8, 6.3, 3.2, 1.6, 0.8 & 0.4.

All Thermowells passed the test without failure.

Michael Donnelly
Testing Officer

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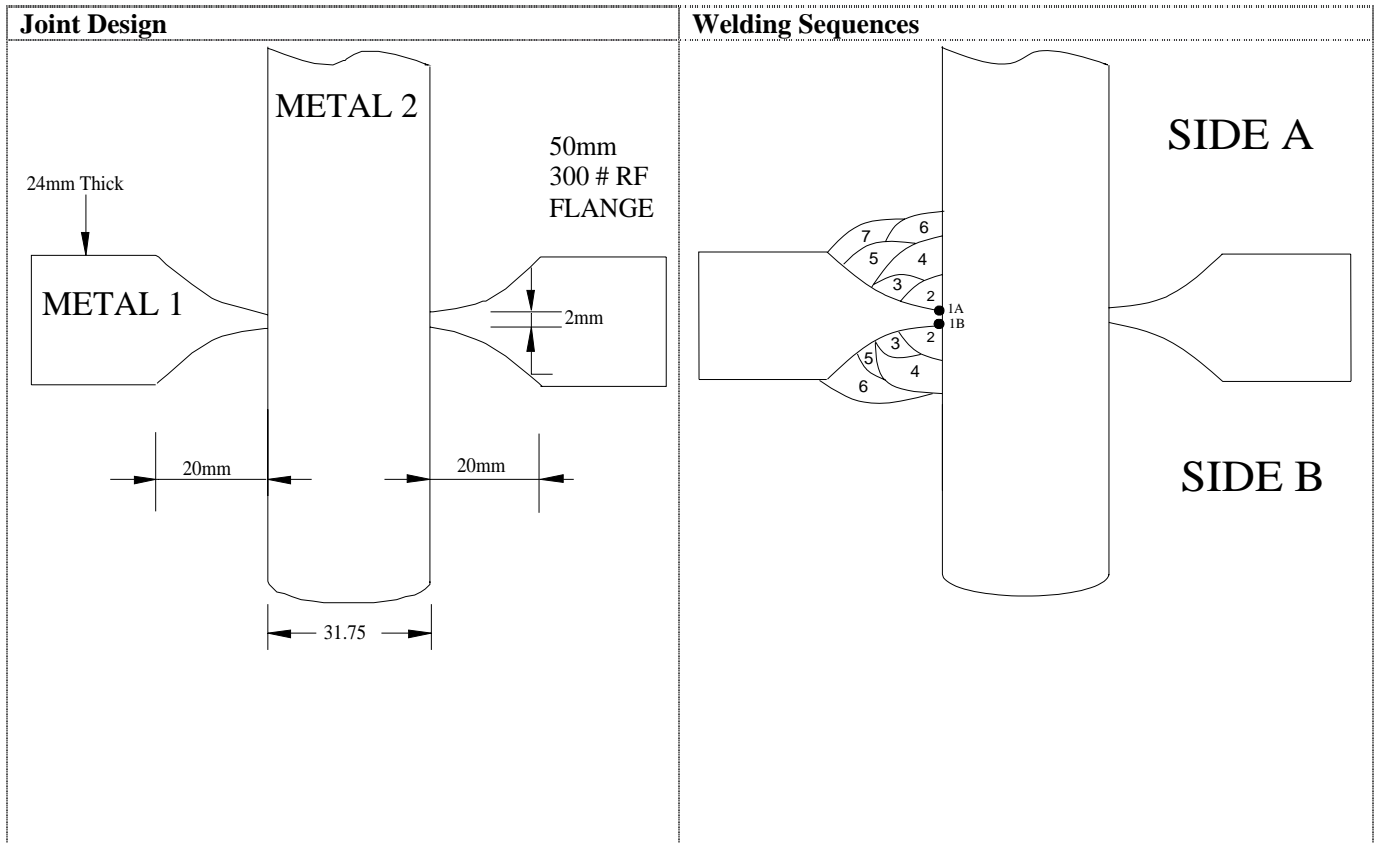


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Welding Procedure Specification FULL PENETRATION

Weld Procedure Number & Date	WPS 08/06
Welding Procedure Specification	WPO SD 12

Manufacturer:	Temperature Controls 7 Yamma Street Sefton NSW 2162 Australia	Method Of Preparation and Cleaning:	Machine and Degrease
Location:	Workshop	Base metal # 1 Specification:	316L 1.4435
Welding Process:	GTAW	Base Metal # 1 Thickness	24mm
Joint Type:	Double J Groove	Base metal # 2 Specification:	316L 1.4435
		Base Metal # 2 Thickness	31.75mm
		Welding Position:	Down hand
		Welding Progression:	Bead



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Run Sequence	Process	Size Of Filler Metal	Current A	Voltage V	Type Of Current/Polarity	Wire Feed Speed	Travel Speed	Heat Input
1A	GTAW	N/A ROOT	175	AUTO	DC	N/A	N/A	N/A
1B	GTAW	N/A ROOT	175	AUTO	DC	N/A	N/A	N/A
2A	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
2B	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
3A	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
3B	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
4A	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
4B	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
5A	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
5B	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
6A	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
6B	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
7A	GTAW	2.4mm	175	AUTO	DC	N/A	N/A	N/A
Welding Consumables:-			2.4 X 1000 mm Rod		Production Sequence			
Type, Designation Trade Name:			AWS/ASME SFA – 5.9 ER 316L Si HT 155057 SANDVIK		1. Clean weld and 25mm borders to bright metal using approved degreasing solvent.			
Any Special Baking or Drying:			N/A		2. Position items to be welded ensuring good fit up.			
Gas Gas Flow Rate - Shield: - Backing:			ARGON 4.2 12 LTR MIN N/A		3. Tack weld parts together using TIG, tacks to at least 5mm min length, align using lathe if required			
Tungsten Electrode Type/ Size: Details of Back Gouging/Backing:			2% Thoriated 2.4mm Dia Gas Backing		4. Deposit root run no filler			
Preheat Temperature:			50 Deg C		5. Inspect root run internally			
Method of preheat			CONVECTION OVEN		6. Complete weld using 2.4mm dia wire using stringer beads as required.			
Interpass temperature:			/ 50 DEG C		7. Cleaning of welds with stainless steel brush as required between passes			
Method of checking Interpass temperature			Hand Held Digital Thermocouple		8. 100 % Visual inspection of completed weld			
Post Weld Heat Treatment			Not Required					
Time, temperature, method: Heating and Cooling Rates*:								
Edge Preparation method			Lathe Machined					
Method of fit up			Interference fit					

Revision History

Date	Issue	Changes	Authorization