WELDING & NDT

QW-482 WELDING PROCEDURE SPECIFICATION (WPS)

(See QW-200.1,Section, IX, ASME Boiler and Pressure Vessel code)

W.P.S. NO. : G-001			Supporting PQR(s)	002
Revision No.:	0	Welding Process(es):	GTAW	
Date:	14.08.19	Type(s):	MANUAL	
Equipment Name:	Static Pressure Vessel		Joint Type:	GROOVE/FILLET

JOINTS (QW-402)

.1 Ø Joint Design:	Refer Typical for details	Typical:	
.5 + Backing: (Yes/No)	NO & YES(IF REQUIRED)		
Backing Material (type):	NA & BASE/WELD		
.10 Ø Root Spacing	2~4 mm		
.11 ± Retainers :	NA		
Root face & Included Angle:	1-1.5 mm & 60°	P1 G2	P1 G1

BASE METALS (QW-403)

MATERIAL - 1		MATERIAL - 2	
.11 Ø P.NO.:	1	P.NO.:	1
.5 Ø Group No.:	1,2	Group No.:	1,2
Specification/Grade:	SA516GR70/SA105/SA234WPB	Specification/Grade:	SA516GR60/SA106GrB

.8 Thickness Range : (mm)

Base Metal	Groove :	1.5 ~ 20 mm	Fillet : NA	Tubesheet:	NA
Pipe Dia Range	Groove :	ALL	Fillet : ALL	Ligament:	Width : NA
Overlay thickness (Min):	NA		Tube thickness: NA		
.6 T Limits :	NA				

FILLER METALS (QW-404)

	ROOT PASS	FILL UP PASS(es)	COVERING PASS(es)
.4 Ø F.NO.:	6	6	6
.5 Ø A.NO.:	1	1	1
Spec No.(SFA):	5.18	5.18	5.18
.12 & .33 Ø AWS No.(Class):	*ER70S-2	*ER70S-2	*ER70S-2
.3 Ø Size of Filler Metal (mm):	2.4/2.5	2.4/2.5	2.4/2.5
.23 Ø Filler Metal Product Form:	SOLID (BARE) WIRE	SOLID (BARE) WIRE	SOLID (BARE) WIRE
.50 ± Flux :	NA	NA	NA
.14± Filler :	WITH ADDITION ONLY	WITH ADDITION ONLY	WITH ADDITION ONLY
Flux Trade Name:	NA	NA	NA
.22 ± Consumable Insert:	NA	NA	NA

.30 Ø Weld Metal Thk Range:	UPTO 20 mm (MAX)
Brand Name/ Batch No:	* APPROVED BRAND SHALL BE USED

POSITIONS (QW-405)

.1 + (a) Position(s) of Groove :	ALL
.2 & .3 Ø Welding Progression :	VERTICAL UPHILL
.1 + (b) Position(s) of Fillet :	ALL
Other:	NA

PREHEAT (QW-406)

Thickness Range (mm)	≤25
.1 Preheat Temp (MIN)° C :	25
.3 Interpass Temp (MAX)° C:	275
Preheat Maintenance :	NA
Method of measuring .1 & .3	Temperature indicating crayon / Laser gun

POSTWELD HEAT TREATMENT (QW-407)

.1 Ø Type of PWHT:	NONE	.4 (a) Ø Current (AC or DC):	SEE BELOW
.2 (a) Temperature Range :(°C)	NA	.4 (b) Ø Polarity (EN or EP):	SEE BELOW
.2 (b) Time Range:(Minute)	NA	.8 (a) Ø Amperes (Range):	SEE BELOW
Method of PWHT:	NA	.8 (b) Ø Voltage (Range):	SEE BELOW
.4 T Limits	NONE	.12 Ø Tungsten Type:*	2% Thoriated Size (mm): 2.4 mm OR EQUI
Rate Of Heating:(°C/hr)	NA	.1 > Heat Input :	NA
Rate Of Cooling:(°C/hr)	NA	.3 ± Pulsing Current :	NA
Others :	NA	Others :	NA

GAS (QW-408)

	.2 (a) Ø Gas(es)	.2(b) Ø Mixture & .2 © Ø % Composition	.3 Ø Flow rate (LPM)
.2d ± Shielding Gas:	ARGON	SINGLE (NO CHANGE IN COMPOSITION)	5~15
.5 ± Backing Gas or Ø Backing Flow:	NA	NA	NA
.1 ± Trailing Gas or Ø Comp:	NA	NA	NA
.9 - Backing Gas or Ø Comp :	NONE	NONE	NA
.10 Ø Shielding Trailing gas :	NONE	NONE	NONE

TECHNIQUE (QW-410)

.1 Ø String/Weave Bead:	STRING/WEAVE	.3 Ø Gas Cup Size: (mm)	6.3 mm Dia OR EQUI
.15 Ø Electrode Spacing :	NA	.11 Ø Closed to out Chamber :	NONE
.10 Ø Multiple/Single Electrode:	SINGLE	.9 Ø Multi/Single pass (per side):	MULTI PASS
.7 Ø Oscillation:	NA	.26 ± Peening:	NA
.5 Ø Initial or Interpass Cleaning:	WIRE BRUSH OR GRIND/MACHINED ;SURFACE TO BE GROUND OR POWER WIRE BRUSHED OR MACHINED		
.6 Ø Method of Back Gouging:	BY GRINDING IF REQUIRED		
.25 Ø Manual or Automatic	MANUAL		
.64 Ø Use of Thermal Process :	NONE		
Others :	NA		

Weld Layer(s)	Process	Filler Metal Classification	Filler Metal Dia. (mm)	Current Type & Polarity	Current Amp. (Range)	Volt (Range)	Travel Speed (mm/min)	Energy or Power (Range)	Maximum Heat Input (KJ/mm)	Minimum Bead Length (mm)
ALL	GTAW	ER70S-2	2.4/2.5	DCEN	80-200	10-18	AS PER PQR	NA	1.5	NA

*Tungsten electrode can be identified as : 1)EWTh-2 or WT 20(Red Colour)

NA : NOT APPLICABLE NONE : ESSENTIAL VARIABLE BUT NOT USED

Legend :

+ Addition	> Increase/greater than	↑ Uphill	← Forehand	ø Change
-Deletion	< Decrease/less than	↓ Downhill	→ Backhand	

PEPARED BY: WELDING ENGINEER	REVIEWED BY: WELDING MANAGER	APPROVED BY: CLIENT/CUSTOMER/TPI
NAME: ABC	NAME: SANDEEP SINGH	NAME: XYZ
DATE: 14.08.19	DATE: 14.08.19	DATE: 31.08.19

ASME DESIGNATOR

☑ REQ.

☐ NOT REQ.