POLAR POCKET WPDS

Pocket-POLAR-08	0	April 17, 2025
WPDS No.	Rev.	Date

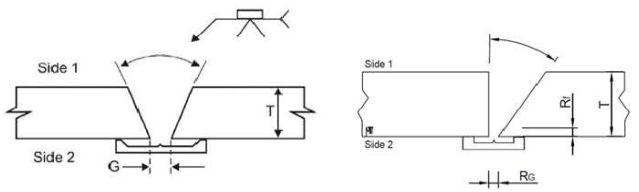
Seaspan Vancouver Shipyards Co. Ltd.

Applicable Standard(s): Lloyds Register - Rules for the Manufacture, Testing and Certification of Materials 2022

	Process/Mode	Wire/Flux Classification	Brand Name(s)	Manufacturer(s)
1	FCAW/Semi-Auto(Hand)	**AWS A5.20 E71T-1C/1M/9C-J/9M-J LR Grade: 4Y40S**	**Dual Shield Prime 71 LT H4/C1**	**ESAB**
2	SAW	**AWS A5.23 : F7A4-EA1-A2**	**LincolnWeld L-70 / 888**	**Lincoln Electric**

Material Designation	Base material 1	Base material 2	Min. Preheat / Interpass Temp.	**50°C for root and hot pass**, fill/cap to be as per VSY Preheat and Interpass Temperature Requirements for Welding
	EH 36 and all lower grades excluding A,B, D and E (Note 6)	EH 36 and all lower grades excluding A,B, D and E (Note 6)		
Delivery Condition(s)	All except QT	All except QT		
Nominal Pipe Size	**500mm and above**	**500mm and above**	PWHT	**N/A**
Thickness or Dia	**10 to 100 mm**	**10 to 100 mm**	Max. Interpass Temp.	**180°C**
Welding Position	**1G**		Joint Design	**Butt Single Vee**

Groove angle = 40-70° Root face for ceramic= 0-1mm
Root gap for ceramic= Target 4-7mm (max 1.5xT or 11mm, whichever smaller, is acceptable)



TYPICAL JOINT PREPARATION

COMPLETE JOINT PENETRATION	Welding Layer	JOINT TYPE	Back Purge	N/A	Contact Tip to Work Distance	(FCAW) 9.5-20mm (SAW) 20-55 mm
☐ Back-gouged to sound metal	multi-layer	■ BUTT	Backing type	Ceramic/Steel		
■ **Welded onto backing**	One/Two side	■ CORNER	Welding Technique	Stringer/Slight Weave	Interpass Cleaning	Grinding and Wire Wheel
☐ Welded from one side without backing	Gun travel angle	■ LAP	Max. Bead Width	18mm	Shielding Gas	100% CO2
☐ Welded both sides w/o back-gouging	Pull/Vertical	■ TEE	Tungsten Electrode	N/A Ø:	Gas Flow	16-25 LPM
Method of steel preparation: Oxy fuel/Plasma cut | Grinding | Milling		■ EDGE	No. of electrodes	1		34-53 CFH

BM Thickness Range mm	Layers / Passes	Position	Electrode Size range (mm)	Welding Process	Current type /Polarity	Consumable	Current (A)	Voltage (V)	WFS (IPM)	Travel Speed (mm/min)	Heat Input[1] kJ/mm
10 ≤ T ≤ 100	Root (Ceramic)	1G	1.2, 1.4	FCAW	CV/DC+	E71T	130 - 250	19 - 25	170 - 300	55 - 140	**See Note 8**
10 ≤ T ≤ 100	Hot Pass	1G	0.9 - 1.6	FCAW	CV/DC+	E71T	110 - 430	16 - 38	170 - 500	100 - 650	**See Note 8**
10 ≤ T ≤ 100	Fill / Cap	1G	3.2, 4.0	SAW	CC/DC+	F7A4-EA1-A2	338 - 825	23 - 40	13 - 55	15 - 36	**See Note 9**

Note 1: Heat Input (kJ/mm) = [V x A x 60] / [Travel Speed (mm/min) x 1000]

Note 2: Joint must be free from any source of contamination

Note 3: Grind joint and adjacent surfaces to bright metal prior to welding to remove all traces of paint, primer, scale, rust, moisture and any other contaminants. Wire brush, grinding to be used for interpass cleaning.

Note 4: FCAW travel angle = 5-10° Pull

Note 5: Rectangular groove ceramic tile is recommended (Gullco, KATBAK # 1G93-R) for butt joints. If round ceramic used, weld shall be followed by GTSM

Note 6: Welding of the normal strength hull structure steel to normal strength hull structure steel (Grade A,B,D and E) using Dual Shield Prime 71 LT is subject to special agreement with Lloyds Register.

Note 7: For the root pass on the ceramic backing, it is recommended to use 1.2mm (0.045") wire size with max. 180 amps.

Note 8:

BM THK (mm)	**10 ≤ T ≤ 24**	**24 ≤ T ≤ 100**
Root Heat Input (kJ/mm) (Hand)	1.5 - 3.2	1.5 - 3.8
Hot/Fill/Cap (kJ/mm) (Hand)	0.5 - 2	0.6 - 2.7

Note 9:

Base Metal THK (mm)	**10 ≤ T < 25**	**25 ≤ T ≤ 40**	**40 < T ≤ 100**
Fill/Cap Heat Input (kJ/mm)	1.0 - 2.1	1.0 - 3.6	1.3 - 3.6

Engineer Stamp

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2025-04-17

Reference WPS No.: FC-CS-G-01 (Rev. 2), SA-CS-G-02 (Rev. 1)