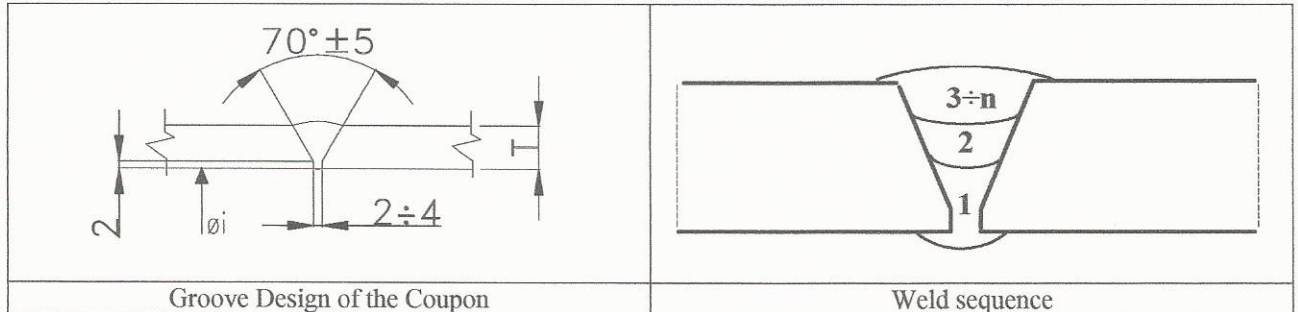


SER. IN. SERVIZI INDUSTRIALI	PROCEDURE QUALIFICATION RECORD	PQR.MA.003A p. 1/2
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Welding Process(es)	GTAW +SMAW
Types	Manual
pWPS	WPS_BW_PQRMA003A Rev. 0

JOINTS (QW-402)



BASE METALS (QW-403)

Material specification	ASME SA 333 Gr. 6
to Material specification	ASME SA 333 Gr. 6
P no./Gr. no. 1/1	to P no./Gr. no. 1/1
Thk of test coupon	T=9,09 mm
Dia. of test coupon	O.D. 33,4 mm
Other	-

POSTWELD HEAT TREATMENT (QW-407)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> None
Temperature	-
Holding time	-
Heating/cooling rate	-
Other: --	

FILLER METALS (QW-404)

Process	GTAW	SMAW	
SFA Spec.	A 5.28	A 5.5	
AWS Class.	ER 80S-Ni1	E 7018-G *	
F no.	6	4	
A no.	10	10	
Size, mm	2	2,5	
Weld thk, mm	t= 3 mm	t= 6,10 mm	

GAS (QW-408)

	Gas(es)	% Mixture	Flow rate
Shielding	Ar*	N.A.	12 L/min.
Trailing	N.A.	--	--
Backing	N.A.	--	--

*Purity: 99,96%

ELECTRICAL CHARACTERISTICS (QW-409)

See Weld data record

POSITION (QW-405)

Position of groove	6G
Progression	Uphill
Other	-

TECHNIQUE (QW-410)

Travel speed	See Weld data record
<input checked="" type="checkbox"/> String bead	<input type="checkbox"/> Weave bead
<input type="checkbox"/> Single pass	<input checked="" type="checkbox"/> Multipass

Single electr. Multiple elect. N.A.

PREHEAT (QW-406)

Preheat temperature	Room temp. (10°C)
Interpass temp. max	200°C
Other	-

Other: -

Weld data record

Layer	Process	Filler metal: class./dia. mm	Current Type/Pol.	Current A	Voltage V	Speed mm/min	Heat Input kJ/mm	Trade mark of consumables
1	GTAW	ER 80S-Ni1 / 2	DC/SP	110	14	70	1.320	CARBOROD Ni1 (OERLIKON)
2÷4	SMAW	E 7018-G / 2,5	DC/EP	120	22	140	1.131	TENAX 76S (OERLIKON)

Tensile test (QW-150)

Specimen	Width mm	Thickness mm	Area mm ²	Total load kN	Unit stress N/mm ²	Type of fracture & location
QW-462.1(a) 003A - a	8,86	5,99	53,07	26,37	497	Ductile, base metal
QW-462.1(a) 003A - b	8,86	6,02	53,46	26,62	498	Ductile, base metal

Guided-bend test (QW-160)

Type and figure / Specimen	Bending angle	Result
QW-462.2 Face bend / (003A - c)	180°	Satisfactory
QW-462.2 Face bend / (003A - d)	180°	Satisfactory
QW-462.2 Root bend / (003A - e)	180°	Satisfactory
QW-462.2 Root bend / (003A - f)	180°	Satisfactory

Toughness tests (QW-170)

Specimen mm	Notch location	Notch type	Test temperature °C	Impact values Joules	Average values Joules
003A g/h/i	Parent metal	KV 7.5	-52°C	144-144-144	144
003A l/m/n	HAZ	KV 7.5	-52°C	152-138-166	152
003A o/p/q	Weld metal	KV 7.5	-52°C	100-118-104	107

Other tests

Type of test	Results	Certificates
Visual examination	Acceptable	STEEL SERVICE S.a.s. Cert. 092SLD15a
Penetrant test examination	Acceptable	STEEL SERVICE S.a.s. Cert. 092SLD15c
Radiographic examination	Acceptable	STEEL SERVICE S.a.s. Cert. 092SLD15b
Trasverse tensile test	Acceptable	STEEL SERVICE S.a.s. Cert. 092SLD15d
Impact test	Acceptable	STEEL SERVICE S.a.s. Cert. 092SLD15f
Trasverse bend test	Acceptable	STEEL SERVICE S.a.s. Cert. 092SLD15e
Hardness test & Macro	Acceptable	STEEL SERVICE S.a.s. Cert. 092SLD15g

Hardness test

Type	Zone	Results (max values)
HB	Parent metal (Line 1) / (Line 2)	142-151-150 / 148-149-147
HB	HAZ (Line 1) / (Line 2)	243-243-232 / 160-165-167
HB	Weld metal (Line 1) / (Line 2)	170-196-177 / 160-169-162
HB	HAZ (Line 1) / (Line 2)	206-202-210 / 181-186-177
HB	Parent metal (Line 1) / (Line 2)	148-145-152 / 150-149-154

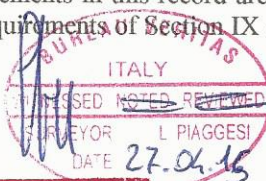
Sample: PQRMA003A

Welders' name	ESPOSITO LUIGI	Clock no. -	Stamp no. EL
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Tests conducted by: STEEL SERVICE S.a.s.	Laboratory test no. -
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We certify that the statements in this record are correct and that the test coupons were prepared, welded and tested in accordance with the requirements of Section IX of the ASME BOILER AND PRESSURE VESSEL and 97/23/EC PED DIRECTIVE.

Date 2015.04.27



Volturato 2016.08.03

BUREAU VERITAS ITALIA WELDING	17
IT FILE: 16.IT.2472996_783	
DATE: 03.08.16	
WITNESSED <input type="checkbox"/>	REVIEW <input checked="" type="checkbox"/>

Manufacturer
SER. IN. SERVIZI INDUSTRIALI
by Operation Manager (Esposito Luigi)
Volturato a società Serin S.r.l. Evolution

