

## Magnetic particle test report



**Report number** LW25-1782-01 MT Rev. 1 (This report supersedes LW25-1782-01 MT)

**Customer name** FUSION-WELD ENGINEERING PTY LTD

**Address** 1865 Frankston Flinders Road Hastings VIC Australia 3915

**Requested by** Brian Cameron

**Purchase Order** PO-0695

**Accredited laboratory** LMATS Melbourne Laboratory

**Test date** 13/11/2025

**Job address** 1865 Frankston Flinders Road Hastings VIC Australia 3915

**Job description** MT of Vessel Welds

**Identification** Refer to Table below

**Material grade** ASTM A516/516M - Grade 70

**Test specification** AS 4037 -1999 (R 2016) - Sec. 8 (AS 1210 - 2010 Class 1 PV) - NDT, AS 4037 -1999 (R 2016) - Sec. 8 (AS 1210 - 2021 Class 2A PV) - NDT

**Acceptance criteria** AS 4037 -1999 (R 2016) - Sec. 8 (AS 1210 - 2010 Class 1 PV) - NDT, AS 4037 -1999 (R 2016) - Sec. 8 (AS 1210 - 2021 Class 2A PV) - NDT

**Test method** AS 1171 - 1998 (Reconfirmed 2022)-MT - colour contrast

**Test procedure** TP-MT-01 (I1, R9)

**Test type** Wet colour contrast (visible)

**Viewing condition** Visible colour contrast (non-fluorescent)

**Magnetization** Magnetic flow method - AC yoke

**Test area** Weld zone & associated HAZ (Refer Table 1 for identification)

**Surface condition** As Welded

**Equipment** L006695 Huatec HCDX-Y2 MT Yoke, L005027 JINING DONGFANG B2 Block standard bar MT Calibration block, L005110 DIGITAL LUX Meter Light meter

**Lighting conditions** White light illuminance >1100 lx

**Consumables**

Background	Batch no.	Particle type	Batch no.
MR 72	2212023	MR 76S	2311070

**Demagnetised** No

**Approved tester** Jack Machen (ISO 9712 Level 2 MT/PT, Level 1 UT and Radiation license)

**Test results** Refer to Table 1 for test area identification and results



Accredited for compliance with  
ISO / IEC 17025 - Testing

**Signatory**  
Terence Ferlazzo  
(ISO 9712 L2: UT, RT, MT, VT)



Report issued on 18/11/2025

**Table 1: Test items identification (provided by the client) and results (All dimensions in mm unless stated otherwise)**

Identification	Drawing No.	Weld No.	Description	Test area	Discontinuities	Result
Vessel number: 420XS20160	420M(2D)25027	L2	U2 Fresh Cleaning Caustic Heater	1000mm of weld as pictured, datum at centre circ weld	NUSID	C

**Test restrictions**

Nil

**Comments**

Nil

**Test, inspection process specific notes**

- According to the guidelines in international standards, Magnetic Particle Testing is not preferred for detecting surface porosity. Clients are advised to consider alternative methods such as Penetrant Testing to detect surface porosity on an uncoated surface.

**Normative general notes**

1. Test and inspection items may be discarded after 6 weeks, unless alternative arrangements are made with LMATS.
2. Samples, identification of samples and all job specific details were supplied by the client. The test results relate only to the items tested or sampled.
3. Any stated nominal pipe sizes and nominal thickness of the material were provided by the client.
4. Where applicable, the Measurement Uncertainty (MU) applies to the test results as per LMATS procedure. MU can be obtained by contacting one of LMATS ISO 17025 accredited laboratories.
5. Acceptance criteria is applied from the test specification. If the test specification does not include acceptance criteria, then the test or inspection results should be referred to a competent authority for further action.
6. Refer to the attached revision notes if this report has been revised. This report shall not be reproduced except in full without approval of the issuing laboratory to ensure that parts of a report are not taken out of context. The client or their representatives shall not edit this report.
7. LMATS or its professional indemnity insurance provider do not indemnify the contents within this report or the conformity of a tested product unless the invoice for the reported work is paid in full within the agreed credit terms. Reports will be revoked if the invoice for the completed work is not paid in full.

**Abbreviations used in this report**

A - No discontinuities detected	BT - Burn (melt) Through	C - Comply
CP - Crater Pipe	DNC - Does Not Comply	EC - Elongated Cavity (hollow bead)
F - Failed	GP - Gas Pore	HiLo - Linear misalignment
IC - Copper Inclusion	IL - Linear Inclusion (slag line)	IN - Inclusion
IO - Oxide Inclusion (wagon tracks)	IT - Tungsten Inclusion	KC - Crater crack
KL - Longitudinal crack	KT - Transverse crack	LI - lack of Inter-run fusion
LP - Incomplete root Penetration	LR - lack of Root fusion (missed edge)	LS - lack of Side fusion
NRRD - No Recordable Reflections Detected	NUSID - No unacceptable Surface Indications Detected	P - Passed
p.d. - Processing / film Defects	PG - Localized Porosity	PL - Linear Porosity
PU - Uniform Porosity	RP - Report findings	SED - Excessive Dressing (underflushing)
SGL - Incompletely filled Groove	SGS - Shrinkage Groove	SMG - Grinding Mark
SMH - Hammer Mark	SMT - Tool Mark (chipping mark)	SRC - Root Concavity (Suck back)
SSP - Spatter	SUC(e) - Undercut External	SUC(i) - Undercut Internal
XPP - Excessive Penetration	WH - Worm Hole	



Image 1 of 1 - General view of the test area

REVOKED

**Normative revision notes for Report No. LW25-1782-01 MT Rev. 1**

Result table Row No.: 1, Col.: Km revised from "km" to "weldNumber"

Result table Row No.: 1, Col.: Weld No. revised from "weldNumber" to "testSeq"

Result table Row No.: 1, Col.: Weld No. revised from "L2" to ""

Result table Row No.: 1, Col.: Proof Load (kN) revised from "proofLoad" to "weldDateTime"

Result table Row No.: 1, Col.: Test Seq revised from "testSeq" to "description"

Result table Row No.: 1, Col.: Test Seq revised from "" to "U2 Fresh Cleaning Caustic Heater"

Result table Row No.: 1, Col.: Weld date & time revised from "weldDateTime" to "materialGrade"

Result table Row No.: 1, Col.: Description revised from "description" to "quantity"

Result table Row No.: 1, Col.: Description revised from "U2 Fresh Cleaning Caustic Heater" to ""

Result table Row No.: 1, Col.: Material Grade revised from "materialGrade" to "testArea"

Result table Row No.: 1, Col.: Material Grade revised from "" to "1000mm of weld as pictured, datum at centre circ weld"

Result table Row No.: 1, Col.: Grade revised from "grade" to "weldLength"

Result table Row No.: 1, Col.: Quantity revised from "quantity" to "heatNo"

Result table Row No.: 1, Col.: Test area revised from "testArea" to "pipeSize"

Result table Row No.: 1, Col.: Test area revised from "1000mm of weld as pictured, datum at centre circ weld" to ""

Result table Row No.: 1, Col.: Examination Surface revised from "examinationSurface" to "thickness"

Result table Row No.: 1, Col.: Weld length revised from "weldLength" to "weldThickness"

Result table Row No.: 1, Col.: Heat No. revised from "heatNo" to "wpsNumber"

Result table Row No.: 1, Col.: Pipe size revised from "pipeSize" to "welderName"

Result table Row No.: 1, Col.: Thickness revised from "thickness" to "weldType"

Result table Row No.: 1, Col.: Thickness revised from "16mm" to ""

Result table Row No.: 1, Col.: Weld thickness revised from "weldThickness" to "weldProcess"

Result table Row No.: 1, Col.: Dimensions revised from "dimensions" to "weldPosition"

Result table Row No.: 1, Col.: PQR/WPS No. revised from "wpsNumber" to "discontinuities"

Result table Row No.: 1, Col.: PQR/WPS No. revised from "" to "NUSID"

Result table Row No.: 1, Col.: Welder name (ID) revised from "welderName" to "result"

Result table Row No.: 1, Col.: Welder name (ID) revised from "" to "C"

Result table Row No.: 1, Col.: Weld type revised from "weldType" to "remarks"

Result table Row No.: 1, Col.: Weld Process revised from "weldProcess" to "photoNo"

Result table Row No.: 1, Col.: Weld Process revised from "" to "1, 2"

Result table Row No.: 1, Col.: Weld Position revised from "weldPosition" to "testDate"

Result table Row No.: 1, Col.: Weld Position revised from "" to "13/11/25"

Result table Row No.: 1, Col.: Stage of manufacture revised from "stageofmanufacture" to "ndeDateTime"

Result table Row No.: 1, Col.: Heat Treatment revised from "heatTreatment" to "approvedStaff"

Material grade revised from "Stainless Steel 316S,ASTM A516/516M - Grade 70" to "ASTM A516/516M - Grade 70"

Acceptance criteria on report revised from "false" to "true"

Acceptance criteria revised from "AS 4037 -1999 (R 2016) - Sec. 8 (AS 1210 - 2010 Class 1 PV) - NDT, AS 4037 -1999 (R 2016) - Sec. 8 (AS 1210 - 2021 Class 2A PV) - NDT" to "AS 4037 -1999 (R 2016) - Sec. 8 (AS 1210 - 2010 Class 1 PV) - NDT,AS 4037 -1999 (R 2016) - Sec. 8 (AS 1210 - 2021 Class 2A PV) - NDT"

Report No. revised from "LW25-1782-01 MT" to "LW25-1782-01 MT Rev. 1"

Result table Row No.: 1, Col.: Thickness revised from " " to "16mm"

Result table Row No.: 1, Col.: Weld No. revised from " " to "L2"

Result table Row No.: 1, Col.: Result revised from "C" to " "

Result table Row No.: 1, Col.: Discontinuities revised from "NUSID" to " "

Result table Row No.: 1, Col.: Test date revised from "13/11/25" to " "

Result table Row No.: 1, Col.: Photo No. revised from "1, 2" to " "

REVOKED