

**QA/QC templates  
for  
General Mechanical  
Construction Standard**

**No. ME**

**Ver.1.1**

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Rev1.1

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Rev. 1

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## Table of contents

<b>M3. MISCELLANEOUS AND NON-STRUCTURAL STEELWORK .....</b>	<b>4</b>
M3.6 QA/QC template .....	4
<b>M4. STRUCTURAL STEELWORK .....</b>	<b>4</b>
M4.7 QA/QC template .....	4
<b>M5. ACCESS STRUCTURES AND PLATFORMS.....</b>	<b>5</b>
M5.6 QA/QC template .....	5
<b>M6. STEEL PIPE WELDING.....</b>	<b>5</b>
M6.8 QA/QC template .....	5
<b>M7 STAINLESS STEEL PIPE WELDING.....</b>	<b>7</b>
M7.6 QA/QC template .....	7
<b>M8. INSTALLATION OF FLANGED COMPONENTS IN PIPELINES .....</b>	<b>8</b>
M8.7 QA/QC template .....	8
<b>M9. ACTUATORS .....</b>	<b>9</b>
M9.2 QA/QC template .....	9
<b>M10. MAGNETIC FLOWMETER INSTALLATION.....</b>	<b>9</b>
M10.5 QA/QC template .....	9
<b>M11. INSTALLATION OF PUMPING UNITS AND MOTORS .....</b>	<b>10</b>
M11.4 QA/QC template .....	10
<b>M12. INSTALLATION OF GEARBOXES.....</b>	<b>11</b>
M12.3 QA/QC template .....	11
<b>M13. DRIVES AND COUPLINGS.....</b>	<b>11</b>
M13.5 QA/QC template .....	11

### M3. Miscellaneous and non-structural steelwork

#### M3.6 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	Preparation	Work surfaces and joints clean, no rust, scale or other foreign matter	N/A	Required	As specified
2	Corrosion protection	Hot dip galvanised to standard. Paint coatings to standard	Required	Required	N/A
3	Specified steel grade confirmed	Steel testing completed to the design specified steel grade in accordance with the recognised standard	Required	Required	N/A
4	Bolting	To applicable specified requirements. Tests completed to Section 10.4	Required	Required	Required
			<b>Sign-off</b>		

### M4. Structural steelwork

#### M4.7 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	Specified steel grade confirmed	Steel testing completed to the design specified steel grade in accordance with the recognised standard	Required	Required	N/A
2	Weld quality management plan	Templates in AS/NZS 1554	Required	Required	N/A
3	Qualification of welding procedure, completed	AS/NZS 1554.1 appendix C	Required	Required	N/A
4	Welding Inspector qualification	AS2214 certified	Required	Required	Required
5	Welder qualification	AS1796, or AS/NZS2980, or AS/NZS3992, or ISO 9606-1, or ASME 9	Required	Required	As specified
6	Weld test samples tested	NZS3404, alternative NDT by recognised certifying body as required	Required	Required	N/A
7	Welding inspector sign-off	AS/NZS 1554.1 Appendix C Welding record sign-off.	Required	Required	N/A

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
8	Galvanising inspected for defects (where specified).	As per section M3.4	Required	Required	As specified
9	Base plate bedding as required	Specified	N/A	Required	Required
10	Bolting inspected	Correct bolting size and grade.	N/A	Required	Required
			<b>Sign-off</b>		

## M5. Access structures and platforms

### M5.6 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	Delivery	Material inspected for defects. Certification and data sheets received and confirmed as compliant	Required	Required	Selected
2	Fabrication	Shop drawings received	Required	Required	N/A
3		Test certificates received. Compliance with NZS/AS 1657 or equivalent	Required	Required	Required
4	Corrosion protection	Hot dipped galvanised certification	Required	Required	N/A
5	Installation	Installed as per specific design drawings. – compliance statement (CS3 and CS4, or PS3 if required by building code)	Required	Required	Required
			<b>Sign-off</b>		

## M6. Steel pipe welding

### M6.8 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	General	Welding prequalification check to AS/NZS3662	Required	Required	N/A
2		Welder qualification provided	Required	Required	Required

3		Weld-maps produced including test plan	Required	Required	N/A
4		Weld conditions clean and dry (site and shop)	N/A	Required	Required
5	Pipework	Weld surfaces prepared	N/A	Required	Selected
6		Correct dimensions	N/A	Required	Selected
7		Correct location and orientation in assembly	N/A	Required	Required
8		Flange alignment correct – typical flange bolt holes straddle centre line	N/A	Required	Required
9		Lifting lugs on pipework	N/A	Required	Required
10		Lifting lugs on pipework removed where required after installation			
11		Temporary pipe supports	N/A	Required	Required
12		Welding 100% visually inspected	N/A	Required	N/A
13	Pipe access manhole	Backing plate of correct size welded in place	N/A	Required	Selected
14		Lid correct size and thickness	N/A	Required	Selected
15		Lid evenly fitted (weld down type, bolt down type see Section M8)	N/A	Required	Selected
16	Air valve stubs	Position confirmed - not spanning any weld seams.	N/A	Required	Required
17		Backing plate of correct size welded in place	N/A	Required	Selected
18		Flange alignment – bolt holes straddling pipe centre line	N/A	Required	Required
19	Weld bands	Correct size and thickness for pipe being welded	N/A	Required	Selected
20		No packers used to fill gaps	N/A	Required	Selected
21		Test hole closed on completion of nitrogen test	N/A	Required	Selected
23	Weld joint test	Non-destructive test (NDT) completed. Certification provided	Required	Required	N/A
24		Nitrogen test passed on pipework ≥ 700mm. Test records provided	Required	Required	Selected
25	Lining and external coating	Repaired to standard (Refer civil construction standard). DCVG test on steel pipe.	Required	Required	N/A
			<b>Sign-off</b>		

## M7 Stainless steel pipe welding

### M7.6 QA/QC template

Use table M6.8 in addition for pipe welding.

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	General	Welding prequalification check to AS/NZS3662	Required	Required	N/A
2		Welder qualification provided	Required	Required	Required
3		Weld-maps produced including test plan	Required	Required	N/A
4		Weld conditions clean and dry (site and shop)	N/A	Required	Required
5	Weld preparation	Fit for purpose cutting/grinding equipment used	N/A	Required	Selected
6		Weld surfaces prepared	N/A	Required	Selected
7		Material passivated	N/A	Required	Required
8	Welding	Appropriate alignment tools used	N/A	Required	Selected
9		Slag removed	N/A	Required	Selected
10		Any filler used passivated	N/A	Required	Selected
11	Post-weld	Acid pickled – method confirmed and applied	N/A	Required	Required
12	Weld joint test	Non-destructive test (NDT) completed. Certification provided	Required	Required	N/A
13		100% visual inspection	Required	Required	Selected
14		Destructive test completed	Required	Required	Selected
			<b>Sign-off</b>		

## M8. Installation of flanged components in pipelines

### M8.7 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	Flanges	Correct size, pattern and class	N/A	Required	Required
2		Gasket face undamaged	N/A	Required	Selected
3		Alignment correct	N/A	Required	Required
4	Fasteners	All bolts present	N/A	Required	Required
5		Correct size, length (within protrusion range) and grade	N/A	Required	Required
6		All washers/nuts present – corresponding grade to bolts	N/A	Required	Required
7		Isolation sleeves and washers (where required)	N/A	Required	Required
8		Bolt thread lubrication – well lubricated as per Section M2.6.2	N/A	Required	Selected
9		Correct bolt torque rating selected for flange type and gasket type	N/A	Required	Required
10		Star pattern followed for assembly – number sequence marked on back of flange	N/A	Required	Selected
11		Gaskets	Correct selection for flange size and type	N/A	Required
12	Correctly stored		N/A	Required	Selected
13	Inspected for defects		N/A	Required	Selected
14	Insulated joints	Flange holes factory drilled to accept standard bolt size with insulation kit.	N/A	Required	Required
15		Location confirmed	N/A	Required	Required
16		Insulation test value > 1 mega-ohm	Required	Required	N/A
17	Components/equipment being assembled	Correct size with corresponding flange patterns and class rating	N/A	Required	Required
18		Correct position in assembly	N/A	Required	Required
19		Correct orientation	N/A	Required	Required
20		Valve opened before bolting	N/A	Required	Selected
21	Handling and delivery	Correctly loaded and supported – no load transferred onto joints during assembly, handling and installation	N/A	Required	Required
22		Final torque values confirmed before installation	N/A	Required	Selected



Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
23	Hot bolting / Retrofit	Pre-inspection by qualified engineer.	N/A	Required	Required
24		Specific methodology developed (hot bolting) – Pressure < 60% MAWP Min 8 bolt flange	Required	Required	N/A
25		Correct bolt selection and torque range for retrofit	N/A	Required	Required
			<b>Sign-off</b>		

## M9. Actuators

### M9.2 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	General	Actuator stroked before installation	N/A	Required	Selected
2	Setup	Actuator specifications comply with specific operational requirements and working environment	N/A	Required	Required
3		Inspect mounting surfaces, fit and alignment	N/A	Required	Required
4		Valve travel limits correct	N/A	Required	Required
5		Limit switch calibrated	Required	Required	N/A
			<b>Sign-off</b>		

## M10. Magnetic flowmeter installation

### M10.5 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	Meter	Correct size	N/A	Required	Required
2		Correct location in assembly	N/A	Required	Required
3		Correct orientation for flow	N/A	Required	Required

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
4		Internal lining undamaged	N/A	Required	Required
5		Gasket face undamaged	N/A	Required	Required
6		Earthing rings	N/A	Required	Required
7		Gaskets (two per flange joint)	N/A	Required	Required
8	Sensor unit	Cable potted	N/A	Required	Required
9		Glands correctly installed	N/A	Required	Required
10		Unused cable entries blanked	N/A	Required	Required
11		Matching serial numbers	N/A	Required	Required
12	Electrical Isolation	Bonding cables (minimum 6mm copper)	N/A	Required	Required
13		Insulation kit fitted	N/A	Required	Required
14	Bolting	Compliant with Section M8.6	Required	Required	Required
15		Lining not deformed	N/A	Required	Required
			<b>Sign-off</b>		

## M11. Installation of pumping units and motors

### M11.4 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	Preparation	Base and plinth clean	N/A	Required	Required
2		Baseplate dressed	N/A	Required	Required
2	Setting out	Plinth true, sized and located per design	N/A	Required	Required
3	Alignment	Proprietary shimming material sized to loading surface	N/A	Required	Required
4		Connecting pipework self-supporting and correctly aligned	N/A	Required	Required
5		Footing true (check for angular or parallel soft foot)	N/A	Required	Required
6		Grout depth 20-40mm	N/A	Required	Required
7		Anchor size correct size and grade. Correct washer type and size	N/A	Required	Required

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
8		Alignment – tolerance to manufacturer spec; or: <ul style="list-style-type: none"> <li>• Max 0.03mm for flex coupled shafts</li> <li>• No tolerance for rigid coupling</li> </ul> Alignment record provided	Required	Required	Required
			<b>Sign-off</b>		

## M12. Installation of gearboxes

### M12.3 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	Gearbox type and model	Correct model, matching application and torque requirements	N/A	Required	Required
2	Installation position	Correct orientation. Oil level confirmed for orientation	N/A	Required	Required
3		Input and output direction confirmed	N/A	Required	Required
4	Preparation	Mounting surfaces cleaned and lubricated with acceptable product	N/A	Required	Selected
5	Installation	Alignment procedures followed as per section M11	Required	Required	N/A
6		Manufacturer bolting and torque requirements followed	Required	Required	Required
7		Safety covers installed such as to allow air circulation as specified by the manufacturer	N/A	Required	Required
			<b>Sign-off</b>		

## M13. Drives and couplings

### M13.5 QA/QC template

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
1	Coupling	Torque rating suitable	N/A	Required	Required
2		Coupling balanced – record	Required	Required	N/A

Quality / Control		Measurement	Certification		
			Document supplied	Site supervisor witness	Engineer witness
3		Mounting arrangement with hub facing shaft end	N/A	Required	Required
4		Belt/Chain selection compliant – record	Required	Required	N/A
5	Alignment	Laser alignment. Alignment record provided	Required	Required	N/A
6	Belt tension	To manufacturer specification - record	Required	Required	N/A
7	Safety covers	Fitted and inspected by qualified H&S inspector	Required	Required	Required
			<b>Sign-off</b>		