Title	**Maintain hydraulic or electro-hydraulic equipment**		
Level	**3**	**Credits**	**3**

Purpose	This unit standard covers installation and maintenance of hydraulic equipment used in industrial process control applications. This knowledge may for example, be used in the commissioning of hydraulic equipment connected to a programmable logic controller. People credited with this unit standard are able to: – install hydraulic or electro-hydraulic equipment; – test and calibrate hydraulic or electro-hydraulic equipment; and – service hydraulic or electro-hydraulic equipment.

Classification	Industrial Measurement and Control > Industrial Measurement and Control - Maintenance

Available grade	Achieved

Guidance Information

1 This unit standard has been developed for learning and assessment in a workplace environment.

2 References
Electricity Act 1992;
Electricity (Safety) Regulations 2010;
Health and Safety at Work Act 2015 and associated regulations;
ISSN 0114-0663, *New Zealand Electrical Codes of Practice*, available from Worksafe, https://worksafe.govt.nz;
and all subsequent amendments and replacements.

3 Definitions
Industry requirements – includes all asset owner requirements, manufacturers' specifications; and enterprise requirements which cover the documented workplace policies, procedures, specifications, business requirements; and quality management requirements relevant to the workplace in which the assessment is carried out.
Maintain – planned activity during normal operation, to conserve or keep an item or piece of equipment in a state of repair and to ensure that this is done in a sustainable way.
PPE – Personal Protection Equipment – that is appropriate to any job being undertaken and can include overalls, safety glasses, gloves, face masks, safety boots, ear muffs etc.

Repair – unplanned and often urgent work that needs to be carried out to restore plant or equipment to normal operation.
Service – planned activity during normal operation, that involves, inspection, cleaning, testing, adjusting or making minor repairs to a piece of equipment to ensure that it works properly.

4 Range
Hydraulic or electro-hydraulic equipment – cylinders, control valves, pressure relief valves, accumulators, filters, servo valves;
evidence of at least one of these is required.

5 Recommended skills and knowledge: Unit 28083, *Demonstrate knowledge of hydraulic and pneumatic control equipment used in industrial process control applications*.

Outcomes and performance criteria

Outcome 1

Install hydraulic or electro-hydraulic equipment.

Performance criteria

1.1 Select hydraulic and electro-hydraulic equipment to meet process conditions and accuracy requirements of the installation.

Range may include but is not limited to – pressure, temperature, flow, materials.

1.2 Install devices using materials and methods specified.

Range may include but is not limited to – tubing, piping, threading, mounting, sealants, isolation.

1.3 Commission devices in accordance with industry requirements.

Range may include but is not limited to – bleeding system, leak testing.

Outcome 2

Test and calibrate hydraulic or electro-hydraulic equipment.

Performance criteria

2.1 Explain and follow safe work procedures.

Range may include but is not limited to – isolation, filled system, chemical (oxygen/oil), pressure, PPE.

2.2 Select test equipment according to accuracy and range of devices.

Range may include but is not limited to – gauges, test set, electrical servo valve supply.

2.3 Explain types and causes of typical errors.

Range may include but is not limited to – oil leaks, accumulator charge.

2.4 Calibrate hydraulic and electro-hydraulic equipment according to manufacturer's instructions.

Range may include but is not limited to – zero, span, linearity, head correction.

2.5 Produce calibration reports in accordance with industry requirements.

Outcome 3

Service hydraulic or electro-hydraulic equipment.

Performance criteria

3.1 Locate, interpret, and apply technical information for servicing equipment.

3.2 Explain and follow safe work procedures.

Range may include but is not limited to – isolation, filled systems, chemical (oxygen/oil), pressure, PPE.

3.3 Perform service of hydraulic or electro-hydraulic equipment and verify performance to ensure continued operation.

Range may include but is not limited to – tools, materials, parts, techniques, specifications.

3.4 Produce service reports in accordance with industry requirements.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	31 October 1995	31 December 2013
Revision	2	30 October 1997	31 December 2013
Revision	3	3 April 2001	31 December 2013
Review	4	22 June 2001	31 December 2013
Review	5	19 May 2008	31 December 2019
Review	6	21 November 2013	31 December 2027
Rollover and Revision	7	28 June 2018	31 December 2027
Review	8	30 January 2025	31 December 2027

Consent and Moderation Requirements (CMR) reference	0003

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.