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| <b>Title</b> | <b>Diagnose faults in specialist hydraulic power equipment</b> |                |           |
| <b>Level</b> | <b>5</b>                                                       | <b>Credits</b> | <b>10</b> |

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| <b>Purpose</b> | People credited with this unit standard are able to: prepare to diagnose faults; carry out fault diagnoses; and evaluate fault diagnoses on specialist hydraulic power equipment. |
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| <b>Classification</b> | Mechanical Engineering > Fluid Power - Hydraulics |
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| <b>Available grade</b> | Achieved |
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| <b>Entry information</b>                        |                                                                                                                                                                                                                        |
| <b>Critical health and safety prerequisites</b> | Unit 2733, <i>Diagnose hydraulic power system faults</i> , and Unit 20609, <i>Design an open circuit, proportional hydraulic power system with open loop control</i> , or demonstrate equivalent knowledge and skills. |

### Explanatory notes

- 1 Reference  
Health and Safety in Employment Act 1992.
- 2 Definitions  
*Industry practice* – safe and sound practices accepted by the mechanical engineering industry.  
*Fault* – a defect in the system or components of the system that results in deviation from original specifications, and which requires repair to bring the system back to normal performance. Noise and heat, in the context of this unit standard, are not considered faults in themselves, but as symptoms of faults associated with the principal areas of flow or pressure.  
*PPE* – personal protective equipment and may include but is not limited to – protective clothing, gloves, safety glasses, headwear, footwear, hearing protection, and safety devices.  
*Specialist hydraulic equipment* – advanced items of system componentry which may include but is not limited to – proportional valves (directional, flow, and pressure control), servo valves, closed circuit variable displacement pumps, and associated electronics including amplifier cards, linear or position transducers, and feedback potentiometers.  
*Worksite procedures* – operational procedures put in place by the candidate's employer. These include site safety procedures, equipment operating procedures, job procedures, quality assurance processes and procedures, and other procedures for the handling and disposal of materials and waste.

- 3 The following apply to this unit standard:
- a All activities must demonstrate safe working practices.
  - b All activities must be completed independently and reported within agreed timeframes.
  - c All activities must comply with: any policies, procedures, and requirements of the organisations involved; the ethical codes and standards of relevant professional bodies; the cultural requirements of the organisations and individuals involved; and any relevant legislative and/or regulatory requirements, which can include but are not limited to those listed in the references.
  - d Fault diagnoses on electrical components are restricted to systems operating at or below 50 volts AC, or 120 volts DC. Work on systems operating on voltages greater than that specified above requires the candidate to be:
    - suitably registered under the terms of the Electricity Act 1992, Section 108, and its subsequent Regulations, or;
    - working towards their own registration, and be under the supervision of a suitably registered person.
- 4 Range  
Evidence of diagnosis of a minimum of five different faults over a range of specialist hydraulic equipment using specialist diagnostics equipment is required. This may require a reasonable period of time to enable the occurrence of faults relevant to this unit standard.

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## Outcomes and evidence requirements

### Outcome 1

Prepare to diagnose faults in specialist hydraulic power equipment.

#### Evidence requirements

- 1.1 Documentation is obtained relevant to the system in accordance with worksite procedures.
- Range may include but is not limited to – operating manual, circuit drawings, malfunction report, historical records, feedback from operator.
- 1.2 Initial safety precautions are taken in accordance with worksite procedures.
- Range may include but is not limited to – advice to personnel, tags, lockout, PPE.
- 1.3 System performance is measured against specifications and historical data, and non-performance is confirmed.
- 1.4 Preliminary assessment is made to establish the nature of the fault in accordance with industry practice.
- Range relative to the principal fault categories of flow or pressure.

- 1.5 Tools and equipment are prepared in accordance with the system type and fault category in accordance with industry practice and worksite procedures.

## Outcome 2

Carry out fault diagnoses on specialist hydraulic power equipment.

### Evidence requirements

- 2.1 Full system safety is established prior to further diagnostics activity in accordance with industry practice and worksite procedures.
- Range may include but is not limited to – isolation, depressurisation.
- 2.2 Tools and equipment are selected as per the diagnostic task and fault category in accordance with industry practice and worksite procedures.
- Range may include but is not limited to – flow meter, pressure gauge.
- 2.3 Fault diagnosis is carried out in a logical and systematic manner in accordance with industry practice and worksite procedures.
- Range machine type, fault category.
- 2.4 Isolated faults are correctly diagnosed and recorded in accordance with worksite procedures.

## Outcome 3

Evaluate specialist hydraulic power equipment fault diagnoses.

### Evidence requirements

- 3.1 The significance of system variance from original specification is determined in accordance with industry practice and worksite procedures.
- Range may include but is not limited to – costs, machine and personal safety, trends, time out of service, correct machine operation, factors contributing to failure.
- 3.2 Faulty parts are referred for repair or replacement in accordance with worksite procedures.
- Range may include but is not limited to – maintenance personnel, specialist services.
- 3.3 Provisional maintenance forecasts are prepared from results of diagnoses and historical data in accordance with industry practice and worksite procedures.
- Range predictive, preventive.

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| <b>Replacement information</b> | This unit standard replaced unit standard 2738. |
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| <b>Planned review date</b> | 31 December 2016 |
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#### Status information and last date for assessment for superseded versions

| Process      | Version | Date             | Last Date for Assessment |
|--------------|---------|------------------|--------------------------|
| Registration | 1       | 25 May 2004      | 31 December 2014         |
| Review       | 2       | 17 November 2011 | N/A                      |

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| <b>Consent and Moderation Requirements (CMR) reference</b> | 0013 |
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

#### Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

#### Comments on this unit standard

Please contact Competenz on [qualifications@competenz.org.nz](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.