Title	Diagnose pneumatic power system faults		
Level	4	Credits	20

Purpose	People credited with this unit standard are able to prepare to diagnose faults; carry out fault diagnoses; and follow up fault diagnoses, in a pneumatic power system.

Classification	Mechanical Engineering > Fluid Power - Pneumatics

Available grade	Achieved

Guidance Information

1   References
Health and Safety at Work Act 2015.

2   Definitions
Accepted industry practice – approved codes of practice and standardised procedures accepted by the wider mechanical engineering industry sectors as examples of best practice.
Components – filters, breathers, lubricators, tubing and piping, pumps, solenoid valves, reed switches, actuators, controllers, and motors or other associated system parts.
Fault – defect in the system or components of the system that results in deviation from specification or normal performance, which requires repair to bring the system back to normal performance. Examples of pneumatic system faults are blocked filters, sticking valves, worn actuators, misaligned sensors, solenoid valve coil burnout, burnt contacts on reed switches, faulty wiring.
PPE – refers to personal protective equipment and may include but is not limited to protective clothing, gloves, safety glasses, headwear, footwear, hearing protection, and safety devices.
Workplace procedures – procedures used by the organisation carrying out the work and applicable to the tasks being carried out. Examples are – standard operating procedures, safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements.

3   Recommended for entry
Unit 20614, *Maintain a pneumatic power system*.

4   Assessment information
       –   Assessment may need to be spread over a period of time to enable the
           occurrence of faults relevant to this unit standard.
       –   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 these specified 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.

Outcomes and performance criteria

Outcome 1

Prepare to diagnose pneumatic power system faults.

Range   six different faults over a range of air production and air consumption system
           components.

Performance criteria

1.1   Documentation is obtained relevant to the system.

           Range   examples are – operating manual, step displacement diagram,
                       block diagram, circuit drawings, malfunction report, historical
                       records, maintenance records.

1.2   Initial safety precautions are taken in accordance with workplace procedures.

           Range   examples are – advice to personnel, tags, lockout, PPE.

1.3   System performance is measured against specifications and historical data.

1.4   Preliminary assessment is made to establish the nature of the fault 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.

Outcome 2

Carry out pneumatic power system fault diagnoses.

Range   faults from outcome 1.

Performance criteria

2.1 Full system safety is established in accordance with accepted industry practice prior to further diagnostics activity.

Range examples are – isolation, depressurisation.

2.2 Tools and equipment are selected as per the diagnostic task and fault category.

Range examples are – flow meter, pressure gauge, multimeter.

2.3 Fault diagnosis is carried out in a logical and systematic manner in accordance with accepted industry practice.

Range machine type, fault category, consultation with users, step displacement diagram.

2.4 Isolated faults are correctly diagnosed and recorded in accordance with accepted industry practice.

Outcome 3

Follow up pneumatic power system fault diagnoses.

Range faults from outcome 1.

Performance criteria

3.1 Faulty parts are referred for repair or replacement in accordance with workplace procedures.

Range examples are – maintenance personnel, specialist services.

3.2 Provisional maintenance forecasts are prepared from results of diagnoses and historical data.

Range predictive, preventive.

Replacement information	This unit standard and unit standard 20605 replaced unit standard 2734.

Planned review date	31 December 2022

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	18 March 2011	31 December 2022
Review	3	17 August 2017	N/A

Consent and Moderation Requirements (CMR) reference	0013

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

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.