Title	**Demonstrate knowledge of piston engine for aeronautical engineering (EASA 147 Maintenance)**		
Level	**5**	**Credits**	**15**

Purpose	This knowledge-based unit standard is one of a series intended for people certifying the release to European Aviation Safety Agency standards to service of aircraft or aeronautical components following maintenance or repair. People credited with this unit standard are able to demonstrate knowledge of piston engine for aeronautical engineering (EASA 147 Maintenance).

Classification	Aeronautical Engineering > Aeronautical Maintenance Certification

Available grade	Achieved

Guidance Information

1 This unit standard is aligned with the European Aviation Safety Agency Examination Standard for *Module 16 Piston Engine* and will be evidenced by meeting these requirements. This can be located through the EASA website at http://www.easa.europa.eu.

2 *Knowledge* – will be in the context of aeronautical maintenance as defined by European Commission Regulation (EU) No 1321/2014 as follows: ‘A detailed knowledge of the theoretical and practical aspects of the subject and a capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner’; will include making judgements regarding the scope, processes, and quality of maintenance for release to service certification; and will be in accordance with industry texts as defined by the candidate’s workplace or enterprise.

3 *Industry texts* include but are not limited to –
published aeronautical training manuals or text books;
enterprise exposition;
manufacturer publications;
government and local body legislation;
airworthiness or regulatory authority requirements.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of piston engine for aeronautical engineering (EASA 147 Maintenance).

Performance criteria

1.1 Fundamentals, performance and construction of the piston engine are described and explained.

Range fundamentals may include but are not limited to – mechanical, thermal and volumetric efficiencies; operating principles; 2 stroke, 4 stroke, Otto and Diesel; piston displacement; compression ratio; engine configuration and firing order.;
performance may include but is not limited to – power calculation and measurement; factors affecting engine power; mixtures and leaning, pre-ignition;
construction may include but is not limited to – crank case, crank shaft, cam shafts, sumps; accessory gearbox; cylinder and piston assemblies; connecting rods, inlet and exhaust manifolds; valve mechanisms; propeller reduction gearboxes.

1.2 Piston engine systems are described and their methods of operation are explained.

Range may include but is not limited to – engine fuel systems, starting and ignition systems, induction system, exhaust system, cooling system, supercharging and/or turbocharging, lubricants and fuels, lubrication systems, engine indication systems, powerplant installation.

1.3 Procedures for the maintenance of piston engines are described and explained.

Range may include but is not limited to – engine monitoring and ground operation procedures, engine storage and preservation.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 August 2012	31 December 2020
Review	2	28 September 2017	31 December 2024
Review	3	27 October 2022	N/A

Consent and Moderation Requirements (CMR) reference	0028

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

Comments on this unit standard

Please contact Ringa Hora Services Workforce Development Council qualifications@ringahora.nz if you wish to suggest changes to the content of this unit standard.