

**SKILLS FRAMEWORK FOR AEROSPACE
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

TSC Category	Aerospace and Engineering Fundamentals					
TSC	Piston Engine Principles Application					
TSC Description	Apply and use principles of piston engines for maintenance, repair, overhaul or manufacturing in accordance with the original equipment manufacturer (OEM) manuals and organisational procedures					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			AER-ACO-3021-1.1	AER-ACO-4021-1.1		
			Apply principles of piston engines and characteristics towards maintenance, repair, overhaul or manufacturing of aircraft engines and support systems	Apply principles of piston engine construction and engine support systems towards maintenance, repair, overhaul or manufacturing of aircraft engines and related systems		
Knowledge			<ul style="list-style-type: none"> • Fundamentals of piston engine operation • Characteristics of piston engine and fuel systems • Concepts of starting and ignition systems • Types and characteristics of induction, exhaust and cooling systems • Functions of supercharging and turbocharging • Common types of lubricants and fuels • Engine monitoring and ground operation procedures • Powerplant installation techniques 	<ul style="list-style-type: none"> • Advanced piston engine operating principles • Advanced concepts of piston engine performance, construction and fuel systems • Functions and layout of starting and ignition system • Constructional characteristics of induction, exhaust and cooling systems • Applications of supercharging and turbocharging • Properties and application of lubricants, fuels and lubrication systems • Engine indication systems, monitoring and ground operation • Powerplant installation management 		
Abilities			<ul style="list-style-type: none"> • Explain principles of piston engine operation • Correlate the maintenance procedures and parameters affecting the performance of piston engines 	<ul style="list-style-type: none"> • Recommend layout and construction of the main and supporting sections of a piston engine • Analyse parameters affecting performance of piston engines 		

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			<ul style="list-style-type: none"> • Specify layout and parameters of engine fuel systems including carburettors, electronic engine control and fuel injection systems • Define operating principles of different magneto types in starting systems • Explain the operating principles of induction, exhaust and cooling systems including alternate air systems • Correlate impact of supercharging on engine parameters • Select suitable fuels and lubricants • Interpret engine indicators such as speed, oil pressure, cylinder head, coolant and exhaust gas temperature, fuel flow and manifold pressure • Configure firewalls, engine mounts, anti-vibration mounts, connectors and other powerplant installations • Prescribe detailed engine maintenance procedures 	<ul style="list-style-type: none"> • Suggest measures to optimise performance of engine fuel systems including carburettors, electronic engine control and fuel injection systems • Review the functioning of different magneto types in starting systems • Validate construction of induction, exhaust and cooling systems including alternate air systems • Assess the impact and supercharging on engine parameters • Evaluate the properties of fuels and lubricants and prescribe usage and safety precautions • Analyse engine indicators such as speed, oil pressure, cylinder head, coolant and exhaust gas temperature, fuel flow and manifold pressure, to determine engine health • Recommend configuration settings for firewalls, engine mounts, anti-vibration mounts, connectors and other powerplant installations. • Recommend engine test procedures and state the requirements of engine preservation and storage 		
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