

**SKILLS FRAMEWORK FOR PUBLIC TRANSPORT
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE DOCUMENT**

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| TSC Category | Rail Systems Maintenance | | | | | |
| TSC | Automatic Fare Collection Gate Maintenance | | | | | |
| TSC Description | Implement preventive and corrective maintenance activities of Automatic Fare Collection gates | | | | | |
| TSC Proficiency Description | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 |
| | PTP-RSM-1002-1.1 | PTP-RSM-2002-1.1 | PTP-RSM-3002-1.1 | PTP-RSM-4002-1.1 | | |
| | Carry out scheduled maintenance work on Automatic Fare Collection (AFC) gates | Conduct corrective maintenance on Automatic Fare Collection (AFC) gates | Troubleshoot faulty Automatic Fare Collection(AFC) gates to locate faults and recommend rectification methods | Diagnose root causes of Automatic Fare Collection (AFC) gate failure and review maintenance plans to prevent fault recurrence | | |
| Knowledge | <ul style="list-style-type: none"> Functional relationships between AFC gates and other AFC systems Operating principles and functions of gates Types of AFC gates, hardware modules and assemblies that includes: <ul style="list-style-type: none"> Electronic Control Unit (ECU) Passage Management System Passenger Display Units Barrier Flap System Power Supply Unit Contactless Smart Card Reader Writer (CSCRW) Procedures for servicing AFC gates in accordance to organisational procedures, Work Instruction (WI) and/or Original Equipment Manufacturer (OEM) technical manuals Types of tools and equipment for carrying out preventive | <ul style="list-style-type: none"> Functional relationships between AFC gates and other AFC systems Operating principles, schematic diagrams and functions of AFC gates Types of AFC gates, hardware modules and assemblies that includes: <ul style="list-style-type: none"> Electronic Control Unit (ECU) Passage Management System Passenger Display Units Barrier Flap System Power Supply Unit Contactless Smart Card Reader Writer (CSCRW) Common failures of AFC gates hardware modules and assemblies Procedures to dismantle, repair, replace, and re-assemble AFC gates hardware, modules and assemblies | <ul style="list-style-type: none"> Procedures for conducting system functional checks on AFC gates and its hardware modules and assemblies Electronic circuit diagram and electrical wiring schematics Common fault symptoms in AFC gates hardware Methods of locating and rectifying faults Types of troubleshooting techniques, equipment and tools Safety guidelines on use of tools and equipment in troubleshooting AFC gates | <ul style="list-style-type: none"> Factors affecting AFC gates hardware performance Failure investigation and prevention methods Methods and tools for diagnostic analysis Organisational maintenance procedures, Work Instruction (WI) and Original Equipment Manufacturer (OEM) technical recommendations Types and methods of functional tests on AFC gates Functional relationships between AFC systems and the overall rail systems | | |

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| | <p>maintenance on AFC gates</p> <ul style="list-style-type: none"> • Safety guidelines on use of tools and equipment for preventive maintenance on AFC gates • Types and usage of Personal Protective Equipment (PPE) for AFC gates maintenance • Organisational maintenance documentation and fault reporting procedures | <ul style="list-style-type: none"> • Types of tools and equipment for carrying out corrective maintenance on AFC gates and its hardware modules and assemblies • Procedures for conducting system performance checks on AFC gates and its hardware modules and assemblies • Safety guidelines on use of tools and equipment for corrective maintenance on AFC gates • Types and usage of Personal Protective Equipment (PPE) for AFC gates maintenance | | | | |
| Abilities | <ul style="list-style-type: none"> • Perform preparation work to conduct preventive maintenance on AFC gates • Follow organisational procedures, WI and/or OEM technical manuals to carry out preventive maintenance on AFC gates • Check serviceability of AFC gates • Adhere to safety guidelines and operating instructions for tools and equipment during maintenance work • Record AFC gates maintenance activities and report occurrences of potential faults identified | <ul style="list-style-type: none"> • Interpret work orders and prepare for corrective maintenance • Apply fault identification procedures to determine causes of AFC gates failures • Apply power isolation procedures • Dismantle AFC gates for corrective maintenance • Carry out repair and/or replacement of faulty • Reassemble and reinstate AFC gates systems • Perform functional tests to determine operability of AFC gate systems • Apply operating and safety measures in operating tools and equipment during maintenance work | <ul style="list-style-type: none"> • Use troubleshooting tools, equipment and methods to locate and analyse causes of AFC gates equipment faults • Recommend corrective actions for identified faults on AFC gates • Implement safety and operating procedures on tools and equipment usage during maintenance work • Analyse maintenance work documented for AFC gates to identify possible workflow improvements to prevent fault recurrence | <ul style="list-style-type: none"> • Establish failure investigation and specify functional testing requirements • Perform fault tree analyses to diagnose root cause failure of AFC gate systems • Review organisational AFC gates maintenance procedures • Propose new and/or enhanced maintenance WI to reference to OEM technical recommendations • Monitor overall maintenance progress of AFC gates to ascertain effectiveness of maintenance plan • Develop long-term solutions by analysing diagnostics data to | | |

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| | | <ul style="list-style-type: none"> Record and collate documentation of AFC gates maintenance work | | <p>prevent faults and failures recurrences</p> <ul style="list-style-type: none"> Develop troubleshooting, rectification and fault analysis methods Develop test procedures for system performance checks Coordinate AFC gates maintenance with other RTS maintenance needs | | |
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