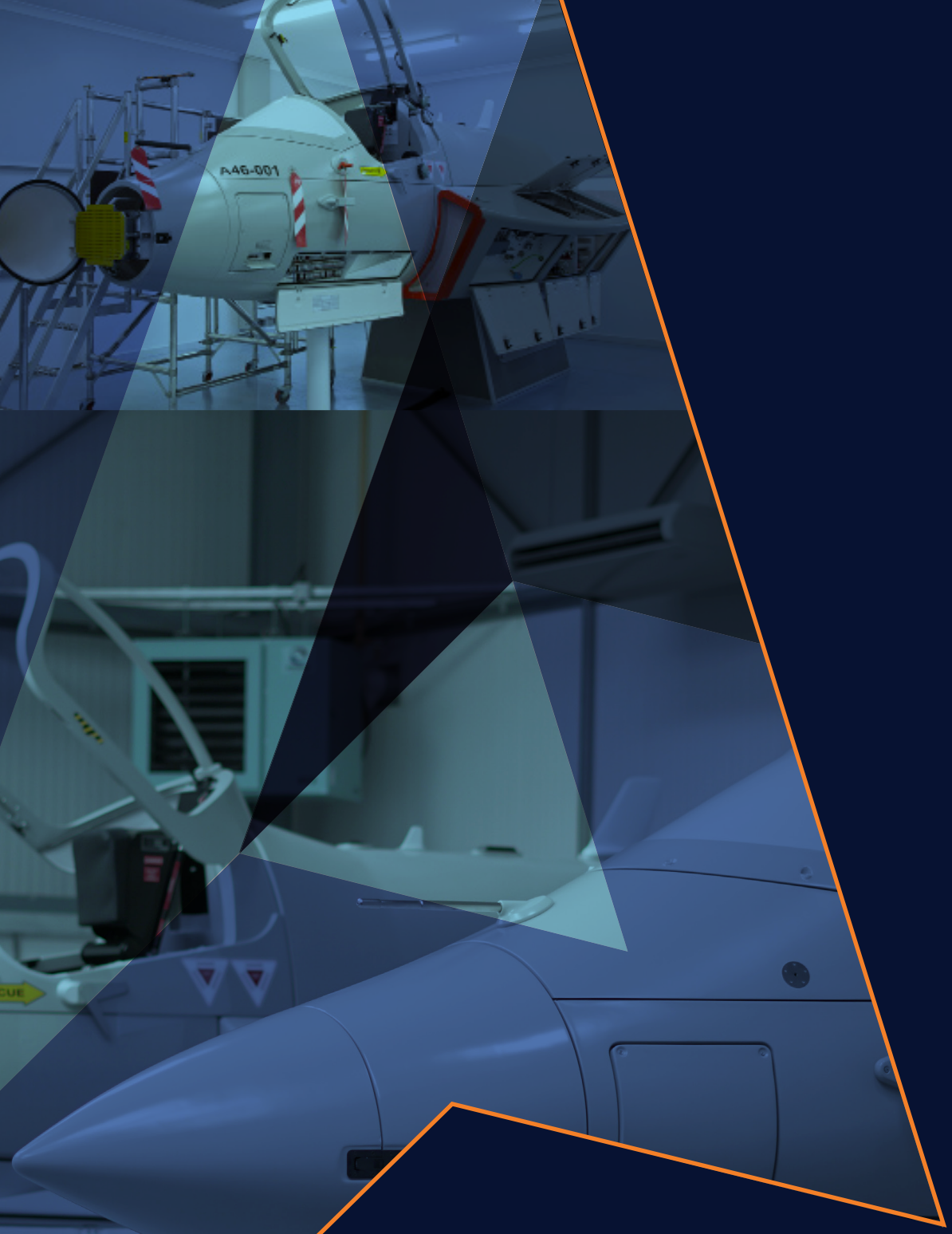


# Integrated Avionics Maintenance Trainer

Overview Brochure

Pennant

# Introduction

The Integrated Avionics Maintenance Trainer (IAMT) is a Part Task Trainer (PTT) that enables maintenance tasks to be taught by either instructor demonstration or independent, practical exercises by the student.

Students can perform a range of practical training exercises, enabling a progressive understanding of the fundamental principles of modern integrated avionics systems.

The IAMT leverages the fully integrated aircraft systems software simulation that underpins Pennant's desktop emulation trainer to provide consistent, real-time aircraft responses to user interactions and access to virtual Ground Support Equipment and Special Tools and Test Equipment (GSE and STTE).

**www.pennantplc.com**
**Contact: sales@pennantplc.co.uk**

# Key Features

- High fidelity simulated cockpit;
- Partial aircraft structure;
- Functional testing of aircraft and fault finding systems;
- Operation of avionic systems and their controls;
- Removal and Installation (R&I) of aircraft LRUs;
- Instructor Operating Station (IOS) for fault insertion and aircraft parameter setting;
- Virtual GSE and STTE;
- Aircraft technical publications suite for the generic aircraft;
- No security restrictions e.g. ITAR;
- Extensive use of COTS equipment;
- Simulated and replica components.

# Aviation Regulations Alignment

| EASA/EMAR PT 66 | FAA | CITY & GUILDS | CASA MEA UNITS |
|---|---|---|---|
| **Module 5** Digital techniques Electronic Instrument Systems<br><br>**Module 6** Materials & hardware<br><br>**Module 7** Maintenance practices<br><br>**Module 11** Aeroplane, aerodynamics, structures & systems<br><br>**Module 13** Aircraft structures & systems | **ATA 12** Servicing<br><br>**ATA 23** Communications<br><br>**ATA 24** Electrical Power<br><br>**ATA 26** Fire Protection<br><br>**ATA 31** Indicating / Recording systems<br><br>**ATA 34** Navigation<br><br>**ATA 51** Standard Practices & Structures | **2675-01** City & Guilds Level 2 Certificate in Aircraft Maintenance (Military Aircraft) Unit 104<br><br>**2675-02** Level 2 Diploma in Aircraft Engineering: Unit 103<br><br>**2675-03** Level 3 Diploma in Aircraft Maintenance (Military/ Civil) Aircraft Mechanical/ Avionics: Units 030, 201, 208 & 210<br><br>**4608-50** Level 2 Diploma in Aerospace & Aviation Engineering (Military Foundation Competence): Units 201, 202, 203, 258 & 259<br><br>**4608-60** Level 3 Diploma in Aviation Maintenance (Military Development Competence) Units 301, 302, 304, 354, 355, 358, 360, 362, 363 & 455 | **MEA107** Interpret & use aviation industry manuals & specifications<br><br>**MEA118** Conduct self in the aviation maintenance environment<br><br>**MEA154** Apply work health & safety practices in aviation maintenance<br><br>**MEA155** Plan & organise aviation maintenance work activities<br><br>**MEA157** Complete aviation maintenance industry documentation<br><br>**MEA158** Perform basic hand skills, standard trade practices & fundamentals in aviation maintenance<br><br>**MEA203** R & I advanced aircraft electrical system components<br><br>**MEA210** Inspect, test & troubleshoot basic aircraft electrical systems & components<br><br>**MEA213** Inspect, test & troubleshoot advanced aircraft instrument systems & components<br><br>**MEA214** Inspect, test & troubleshoot aircraft basic communication & radio navigation systems and components<br><br>**MEA215** Inspect, test & troubleshoot advanced aircraft communications systems & components<br><br>**MEA216** Inspect, test & troubleshoot instrument landing systems & components<br><br>**MEA220** Inspect, test & troubleshoot aircraft primary radar systems & components |

| EASA/EMAR PT 66 | FAA | CITY & GUILDS | CASA MEA UNITS |
|---|---|---|---|
| | | | **MEA221** Inspect, test & troubleshoot aircraft secondary radar systems & components<br><br>**MEA233** Inspect, test & troubleshoot aircraft inertial navigation & reference systems & components<br><br>**MEA234** Inspect, test & troubleshoot aircraft global navigation systems & components<br><br>**MEA261** Use electronic test equipment<br><br>**MEA278** Inspect, test & troubleshoot instrument display systems & components<br><br>**MEA280** Inspect, test & troubleshoot flight management systems & components<br><br>**MEA293** R & I aircraft electronic system components<br><br>**MEA296** Use electrical test equipment in aviation maintenance activities |

# Physical Specifications

| PARTICULAR | VALUE | UNIT |
|---|---|---|
| **IAMT STRUCTURE** | | |
| Length | 5700 | mm |
| Width | 2700 Note 1 | mm |
| Height | 3550 | mm |
| Weight | 1250 Note 2 | Kg |
| **INSTRUCTOR OPERATING STATION** | | |
| Length | 2128 | mm |
| Width | 1028 | mm |
| Height | 1584 | mm |
| Weight | 275 | Kg |

**Note** [1] : 3270mm with the addition of Access / Viewing Platform
**Note** [2] : 1900kg with the addition of Access / Viewing Platform

# Supported Training

| SIMULATED SYSTEM | PRACTICAL TASKS | SIMULATED FAULTS |
|---|---|---|
| **CENTRAL WARNING SYSTEM** | 1. Operational Check of the Auxiliary Power Unit Fire Detection system<br>2. Operational Check of the Engine Bay Fire Detection System<br>3. Operational Check of the Central Warning System<br>4. Functional Check of the Central Warning System<br>5. Remove and Install APU Bay Firewire Control Unit<br>6. Remove and Install Engine Bay Firewire Control Unit<br>7. Remove and Install Master Control Unit | 1. CWS Supply Fault (1), CB WQ03 pulled in scenario<br>2. CWS Supply Fault (2), CB WQ03 pulled in scenario<br>3. CWS Master Control Unit Fault (1), Internal Failure<br>4. CWS Master Control Unit Fault (2), Avionics not indicated during CWS Operational Check<br>5. CWS Central Warning Panel Fault, both 'Fire' bulbs open circuit<br>6. CWS Attention Getter Fault, lamp failure<br>7. ENG Fire Detection Fault, Permanent Warning Output<br>8. APU Fire Detection Fault, Permanent Warning Output |
| **COMMUNICATIONS SYSTEM** | 1. Operational Check of the Crash Position Indication System<br>2. Functional Check of the Crash Position Indication<br>3. Bonding Resistance Check (Communications Audio Monitoring Unit)<br>4. Operational Check of the Communications Control System<br>5. Functional Check of the Communications Control System<br>6. Operational Check of the Standby V/UHF Control System<br>7. Operational Check of the V/UHF<br>8. Functional Check of the V/UHF Radios<br>9. Remove and Install Fuse (070)<br>10. Remove and Install Relay (Crash Position Indication Switch)<br>11. Remove and Install Communications Audio Monitoring Unit<br>12. Remove and Install V/UHF 1 Tx/Rx<br>13. Remove and Install V/UHF 2 Tx/Rx | 1. Crash Position Indicator Fault, Internal Switch Fault<br>2. Crash Position Indicator Fault, LED Fault<br>3. Communications Audio Management Unit Fault, Internal Failure<br>4. CPI Switch Relay Fault, Coil open circuit<br>5. Flight Select Switch Fault, Switch welded in the Non-flight position<br>6. Audio Control Panel Fault, Internal Failure<br>7. V/UHF Radio 1 Fault, RT Control failure<br>8. Radio 1 Supply Fault, Fuse No 070 open circuit<br>9. V/UHF Radio 2 Fault, Internal Failure<br>10. Radio 1 Switch Fault, COM 1 ON/OFF Switch open circuit<br>11. Mute Switch Fault, Open circuit |

# Supported Training

| SIMULATED SCENARIO | PRACTICAL TASKS | SIMULATED FAULTS |
|---|---|---|
| **ELECTRICAL SYSTEM** | 1. Operational Check of the Failure Indicators<br>2. Engine Pre-Start Checks<br>3. Engine Start/Stop<br>4. Battery Power – Apply and Remove<br>5. External Electrical Power - Apply and Remove<br>6. Auxiliary Power Unit Start<br>7. Auxiliary Power Unit Stop<br>8. Auxiliary Power Unit Data Retrieval<br>9. Functional Check of the DC Electrical Power System<br>10. Functional Check of the Battery<br>11. Functional Check of the AC Main Generator<br>12. Functional Check of the AC Auxiliary Generator<br>13. Functional Check of the External Electrical Power<br>14. Remove and Install Bus-tie Contactor<br>15. Remove and Install Battery 1<br>16. Remove and Install Battery 2<br>17. Remove and Install Main Generator Control Unit<br>18. Remove and Install Auxiliary Generator Control Unit<br>19. Remove and Install External Power Monitor<br>20. Remove and Install External Power Contactor | 1. External Power Contactor Fault, Coil open circuit<br>2. External Power Monitor Fault, Internal Relay Failure<br>3. Bustie Contactor Fault, Coil open circuit<br>4. Battery 1 Fault, Battery Flat<br>5. Battery 2 Fault, Battery Flat<br>6. Main Generator Control Unit Fault, Internal failure<br>7. Auxiliary Generator Control Unit Fault, Internal Failure |
| **FLIGHT NAVIGATION SYSTEM** | 1. Operational Check of the Inertial Navigation & Global Positioning System<br>2. Inertial Navigation & Global Positioning System, Harmonisation Data Input<br>3. Reset Inertial Navigation & Global Positioning System Current Data<br>4. Functional Check of the Inertial Navigation & Global Positioning System<br>5. Remove and Install Fuse (095)<br>6. Remove and Install IN/GPS | 1. IN/GPS Fault (1), Fault in Gyro Compass Alignment<br>2. IN/GPS Fault (2), INS Power Supply failure<br>3. IN/GPS Switch Fault, Contacts welded closed<br>4. IN/GPS Supply Fault, Fuse blown |
| **FLIGHT RECORDING SYSTEM** | 1. Video Data Module Loading/Unloading<br>2. Functional Check of the Video Monitoring and Recording System<br>3. Remove and Install Video Interface Unit | 1. Video Monitoring and Recording System Switch Fault, Switch Open Circuit<br>2. Video Interface Unit Fault, No Power Supply Output |
| **HEALTH AND USAGE MONITORING SYSTEM (HUMS)** | 1. Operational Check of the Data Acquisition Unit<br>2. Data Acquisition Unit Download<br>3. Data Acquisition Unit Upload<br>4. Operational Check of the Crash Survivable Memory Unit<br>5. Functional Check of the Audio Monitor Ground Test Jack Box<br>6. Bonding Resistance Check (Data Acquisition Unit)<br>7. Remove and Install Data Acquisition Unit<br>8. Remove and Install Cockpit Audio Not Recording Relay<br>9. Remove and Install Flight Data Not Recording Relay | 1. Data Acquisition Unit Fault, Internal Failure<br>2. HUMS DAU Memory Warning Indicator Fault, The indicator bulbs have blown<br>3. HUMS DAU Memory Warning Switch Fault, The internal switch welded closed<br>4. HUMS Cockpit Audio Not Recording Relay Fault, Coil open circuit<br>5. HUMS Flight Data Not Recording Relay Fault, Coil open circuit |

# Supported Training

| SIMULATED SCENARIO | PRACTICAL TASKS | SIMULATED FAULTS |
|---|---|---|
| **IDENTIFICATION SYSTEM** | 1. Operational Check of the IFF System<br>2. Functional Check of the IFF System<br>3. Remove and Install IFF Transponder | 1. IFF Transponder Internal Fault |
| **INSTRUMENTATION SYSTEM** | 1. Operational Check of the Inertial Navigation & Global Positioning System<br>2. Inertial Navigation & Global Positioning System, Harmonisation Data Input<br>3. Reset Inertial Navigation & Global Positioning System Current Data<br>4. Functional Check of the Inertial Navigation & Global Positioning System<br>5. Remove and Install Fuse (095)<br>6. Remove and Install INGPS<br>7. Functional Check of the Barometric Altimeter<br>8. Functional Check of the Combined Speed Indicator<br>9. Functional Check of the Vertical Speed Indicator<br>10. Functional Check of the Angle Of Attack System<br>11. Bonding Resistance Check (Directional Gyro Unit)<br>12. Bonding Resistance Check (Air Data Sensor)<br>13. Functional Check of the Standby Heading Indicator System<br>14. Functional Check of the Standby Compass<br>15. Functional Check of the Air Data Sensor<br>16. Operational Check of the Radar Altimeter<br>17. Functional Check of the Radar Altimeter<br>18. Remove and Install Angle Of Attack Probe<br>19. Remove and Install Air Data Computer<br>20. Remove and Install Fuse (212)<br>21. Remove and Install Directional Gyro Unit<br>22. Remove and Install Air Data Sensor<br>23. Remove and Install Radar Altimeter Transmitter/Receiver | 1. Air Data Sensor Fault, Internal Failure<br>2. Angle Of Attack Probe Fault, Open circuit wiper<br>3. Air Data Computer Fault, Internal Failure<br>4. Radar Altimeter Supply Fault, Fuse blown<br>5. Radar Altimeter Indicator Fault, Internal Failure<br>6. Radar Altimeter Transmitter/ Receiver Fault, Internal Failure<br>7. Directional Gyro Unit Fault, Internal Failure<br>8. Heading Indicator Fault, Internal Failure<br>9. Directional Gyro Slave/Slew Switch Fault, Contact welded |
| **MISSION COMPUTER SYSTEM** | 1. Functional Check of the Databus<br>2. Functional Check of the Data Transfer System<br>3. Functional Check of the Cockpit Display System<br>4. Remove and Install Databus Coupler A1<br>5. Remove and Install Databus Coupler B2<br>6. Remove and Install Primary Display Mission Computer | 1. Data Bus Switch Fault, Stuck at Auto<br>2. Data Transfer Unit Fault, Interface Failure<br>3. Primary Display Mission Computer Processor Fault, Internal Failure<br>4. Primary Display Mission Computer Fault, Cooling does not operate |

# Supported Training

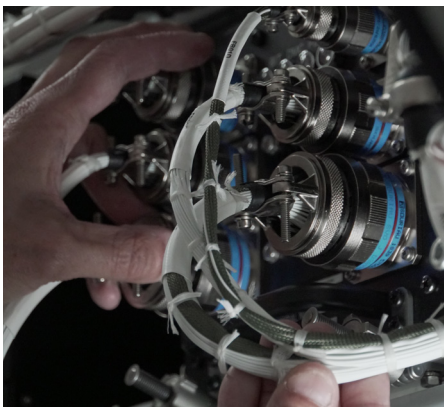
| SIMULATED SCENARIO | PRACTICAL TASKS | SIMULATED FAULTS |
|---|---|---|
| **MULTI-FUNCTION DISPLAY SYSTEM** | 1. Operational Check of the Multi-Function Display | 1. Left Multi-Function Display Supply Fault, CB FB64 pulled in scenario<br>2. Right Multi-Function Display Supply Fault, CB FB66 pulled in scenario<br>3. Left Multi-Function Display Processor Fault, Processor failure<br>4. Right Multi-Function Display Processor Fault, Processor failure |
| **NAVIGATION LANDING AIDS SYSTEMS** | 1. Operational Check of the TACAN<br>2. Functional Check of the TACAN<br>3. Operational Check of the VOR/ILS<br>4. Functional Check of the VOR/ILS<br>5. Operational Check of the Automatic Direction Finder<br>6. Functional Check of the Automatic Direction Finder<br>7. Remove and Install Fuse (215)<br>8. Remove and Install Fuse (113)<br>9. Remove and Install Manual control Relay<br>10. Remove and Install VOR/ILS Receiver<br>11. Remove and Install Automatic Direction Finder Receiver | 1. Automatic Direction Finder Supply Fault, Fuse open Circuit<br>2. Automatic Direction Finder Receiver Fault, Internal Failure<br>3. Automatic Direction Finder Switch Fault, Pin 2 Open Circuit<br>4. VOR/ILS Receiver Fault, Internal Failure<br>5. VOR/ILS Supply Fault, Fuse open Circuit<br>6. VOR/ILS Manual Control Relay Relay Fault, Coil Open Circuit<br>7. TACAN ON/OFF Switch Fault, Pin 2 Open Circuit |
| **RADAR SYSTEM** | 1. Operational Check of the RADAR<br>2. Functional Check of the RADAR<br>3. Remove and Install RADAR Scanner<br>4. Remove and Install RADAR Computer<br>5. Remove and Install RADAR Power Supply Unit | 1. RADAR Power Supply Unit Fault, No Output<br>2. RADAR Computer Fault, PBIT Failure<br>3. RADAR Scanner Transmit Fault, fails on transmission |
| **STORES MANAGEMENT SYSTEM** | 1. Operational Check of the Stores Management System (IBIT)<br>2. Operational Check of the Stores Management System (Switch BIT)<br>3. Operational Check of the Stores Management System (Assisted BIT) | 1. No associated faults |

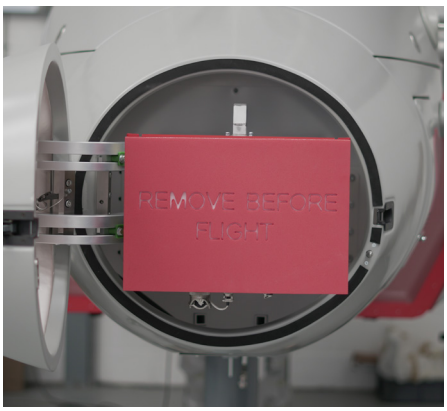
# Supported Training

| SIMULATED SCENARIO | PRACTICAL TASKS | SIMULATED FAULTS |
|---|---|---|
| **GENERAL MAINTENANCE PROCEDURES** | 1. Remove and Install Blanks & Covers<br>2. Aircraft Parking Procedure<br>3. Pins Safe for Parking Condition<br>4. Pins Safe for Maintenance Condition<br>5. Open and Closing the Canopy Procedures<br>6. Remove and Install Engine Air Intake Debris Guards<br>7. Safe for Maintenance Condition<br>8. Make the Aircraft Electrically Safe<br>9. Make the Aircraft Selectively Safe<br>10. To Connect & Disconnect Headsets<br>11. Ground Cooling Air – Apply and Remove<br>12. Functional Check of Battery On-Load Voltage<br>13. Remove and Install Miscellaneous Switch Panel | 1. No associated faults |

# Electrical Specifications

| PARTICULAR | NOMINAL | UNIT |
|---|---|---|
| Supply Voltage | 220 / 240 | Vac |
| Frequency | 50 / 60 | Hz |
| Maximum Current | 5 | A |



# Supplied Documentation

| |
|---|
| Operation Manual |
| Maintenance Manual |
| Student Manual (Technical Publication) |

# Optional Accessories

| |
|---|
| Student Toolkit |
| Spares Kit |
| Consumables Starter Pack |
| Bolt-on systems, Engine Start, Refuel/Defuel |

# Ordering Information

| | |
|---|---|
| 97910-0001A | Integrated Avionics Maintenance Trainer |
| 97910-3020 | Consumables Starter Kit |
| 97910-3021 | Spares Kit |
| P000835 | Student Toolkit |