



ACHIEVEMENT MEASUREMENT 2



INFORMATION FOR EMPLOYERS AND APPRENTICES

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The Achievement Measurement 2 (AM2) skill test must be taken by apprentices who are approaching the end of their training for the JIB Apprentice Training scheme and the electrical installation engineering Modern Apprenticeship and others who wish to use the test to accredit practical experience.

The leaflet contains information on the first major revision of the test to be carried out since its inception in 1985. The revision has been carried out to enable the test to match current working practice in the electrical installation industry and includes a completely new test section concerned with the rectification of faults. The AM2 (revised) skill test was effective from the 1st September 1997 and available through the approved test centres.

The duration of the AM2 skill test will be three days.

Throughout this leaflet, the term Candidate refers to an Apprentice or Adult undertaking the test

THE TEST

The AM2 skill test comprises four sections:

A1	Composite installation
A2	Visual inspection
A3	Functional operation
B	Inspection and testing of the composite installation
C1	Safe isolation of test unit (including risk assessment)
C2	Safe isolation of supplies
D1	Fault diagnosis
D2	Fault rectification

The four sections must be completed within the specified target times. The work must comply with the requirements of the current IEE Wiring Regulations (BS 7671) and Health and Safety Regulations. Candidates will be permitted to refer to the current edition of the IEE Wiring Regulations (BS 7671), IEE Guidance Note No.3 Inspection and Testing and the IEE On-Site Guide (OSG) during the tests. Candidates will work on a standard test unit, using drawings, block and circuit diagrams and written instructions.

Candidates must present themselves at the test centre dressed in suitable working clothing and wear sound footwear.

The AM2 skill test can only be taken at an Approved AM2 Test Centre, licensed annually by the National Electrotechnical Training Organisation (NET). A test place should be booked directly with an Approved AM2 Test Centre (see approved list). Candidates must provide photographic identification to the Approved AM2 Test Centre prior to commencement of the test.

EMPLOYER AND CANDIDATE CHECK LIST

Preparation on the points listed below should prove beneficial when taking the AM2 skills test.

Employer

- Provide sufficient lead time for the candidate to prepare
- Ensure candidate is prepared
- Provide refresher training as necessary
- Provide candidate briefing prior to the test
- Encourage the candidate to approach the test in a positive and confident manner

Candidate

- Understand what competencies you are required to demonstrate
- Familiarise yourself with correct isolation of supply procedures
- Study and understand the power circuit requirements
- Note carefully the motor control function requirements
- Familiarise yourself on the fault diagnosis techniques
- Check the inspection and testing procedures as listed in the IEE On-Site Guide
- Be familiar with the appropriate test instruments and their correct usage

Note on the provision of tools

A set of tools will be required to carry out the installation work. Candidates should use their own tools provided these have been checked by the examiner and found to be sound and in a safe condition. Stanley type knives and cordless screwdrivers are not permitted for installation work.

A1 COMPOSITE INSTALLATION

Target time 10 hours

This is an installation which includes a range of electrical wiring systems, each devised to test a candidate's proficiency in particular aspects of electrical installation work. The electricity supply will be provided from a TN-S three phase 4 wire 400V system.

The illustration (Figure A) shows the layout of prefixed components on the test unit. Figure B shows the layout of the completed installation.

INSTALLATION ASPECTS

SKILL ACTIVITY

PVC/SWA/PVC Cable 10MM ² four core	Measuring, cutting to length, installing and terminating between pre-fixed equipment.
Metal Conduit 20mm	Measuring, cutting to length, filing and reaming, bending, threading, installing between pre-fixed equipment.
Main Equipotential and Supplementary Bonding	Measuring, clipping and dressing, terminating and fixing bonding clamps on service pipes etc.
Mineral Insulated Cable (PVC sheathed) 4L 1.5mm ² MICC	Measuring, cutting to length, shaping, dressing, securing, terminating, glanding; identifying conductors and connecting between pre-fixed equipment.
Circuit Wiring - Lighting Circuit	Install PVC insulated cables for the two way and intermediate lighting circuit. Install key operated override 'on' switch adjacent to the intermediate switch.
Emergency Luminaire	Install FP200 2 core and earth cable between the plastic dado trunking and 20mm end box. Connections to be to the Luminaire Support Coupler (LSC).
Industrial Socket Outlet (400V)	Install and connect the 16A triple pole and earth socket outlet to the output terminals of the 20A TP&N switchfuse.
Three Phase Motor Circuit	Installing cables in trunking and conduit; terminating and making connections between a three phase squirrel cage motor, a motor starter, a remote start/stop/inch station and run and trip warning lights, with the aid of a wiring diagram. (see fig. C)
SRCD	Install cables in metal trunking to SRCD.

Circuit Wiring –
Ring Circuit

Installing cables in metal and PVC trunking and PVC conduit; terminating and making connections from the distribution board to:

- a ring circuit of 13A switch-socket outlets.
- a spur to a 13A socket outlet including flexible cable to a tubular heater via a 13A plug.

A2 VISUAL INSPECTION

Target Time 30 minutes

Candidates are to carry out a visual inspection of the completed installation as required by the current edition of the IEE Wiring Regulations (BS 7671) and establish whether the results are acceptable by completing the Visual Inspection test sheet provided.

A3 FUNCTIONAL TESTING

Target Time 30 Minutes

After the installation has been inspected and tested each candidate will be required to demonstrate that the following final circuits operate correctly:

- Two-way and intermediate switched lighting circuit
- Operate the Landlords Key Switch
- Operate the Emergency Luminaire Key Switch to effect simulated mains failure
- Tubular heater
- Motor and control circuit

B INSPECTION AND TESTING

Target Time 1 Hour 30

Minutes

On completing the composite installation, each candidate will be required to carry out prescribed pre-commissioning electrical installation tests in accordance with the IEE Wiring Regulations (BS 7671).

Each candidate will be supplied with necessary instructions, a copy of the current IEE OnSite Guide, test results sheets and a range of instruments from which to select and prepare the one appropriate for each test.

C1 SAFE ISOLATION OF TEST RIG (RISK ASSESSMENT)

Target Time 15 Minutes

Each candidate, prior to the commencement of the composite installation (Section A) will be required to demonstrate the safe isolation of their test unit to ensure and verify it is safe to work on. Candidates will be required to complete an assessment of safe working practice (risk assessment) sheet.

C2 SAFE ISOLATION OF SUPPLIES

Target Time 30 Minutes

Candidates will be required, under observation, to demonstrate how to safely isolate circuits or items of equipment to ensure and verify it is safe to work on. This section of the test is carried out on the Fault Diagnosis Unit. Safe isolation procedure is shown in Figure D.

D1 FAULT DIAGNOSIS

Target Time 1 Hour 45 Minutes

Candidates will be required to diagnose and locate seven faults, introduced to the Fault Diagnosis Unit (Figure F) by the examiner, selected from a range of common faults. Each fault will be introduced individually to the candidates by either the examiner demonstrating the fault symptom or by the use of job cards.

D2 FAULT RECTIFICATION (WHERE POSSIBLE)

Target Time 1 Hour 30 Minutes

Candidates will be required to diagnose, locate and rectify (where possible) five faults which will be introduced to the Fault Diagnosis Unit. Each fault will be introduced individually to the candidates with the use of job cards. (Figure E for example)

CANDIDATES NOTES

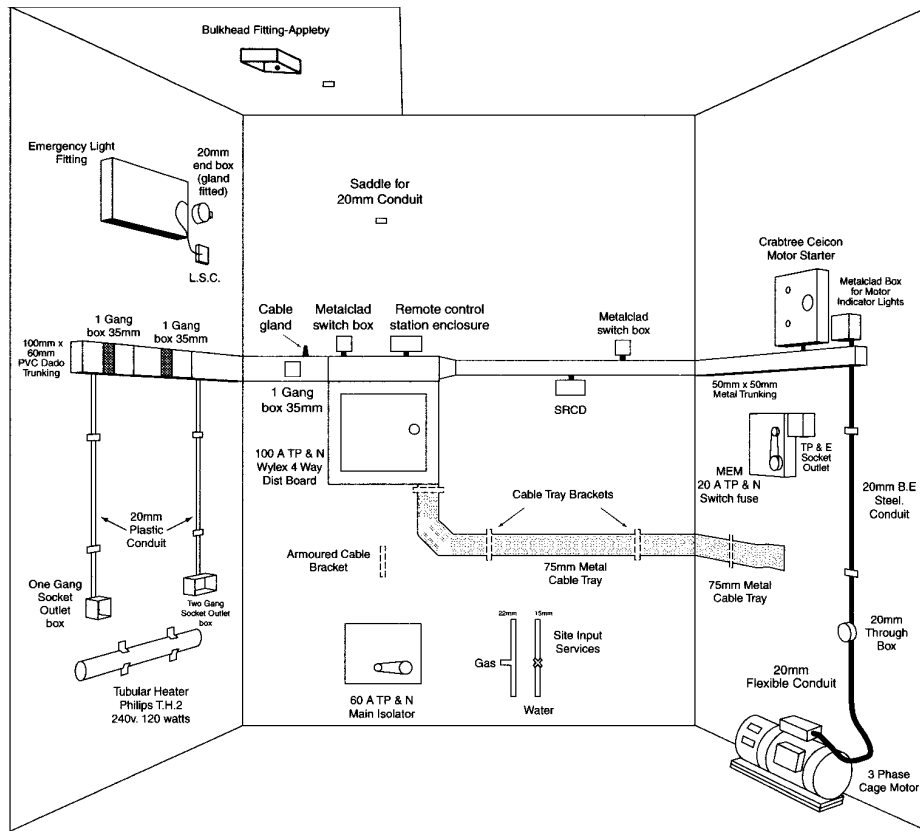


FIGURE A – AM2 TEST UNIT SHOWING PRE-FIXED COMPONENTS

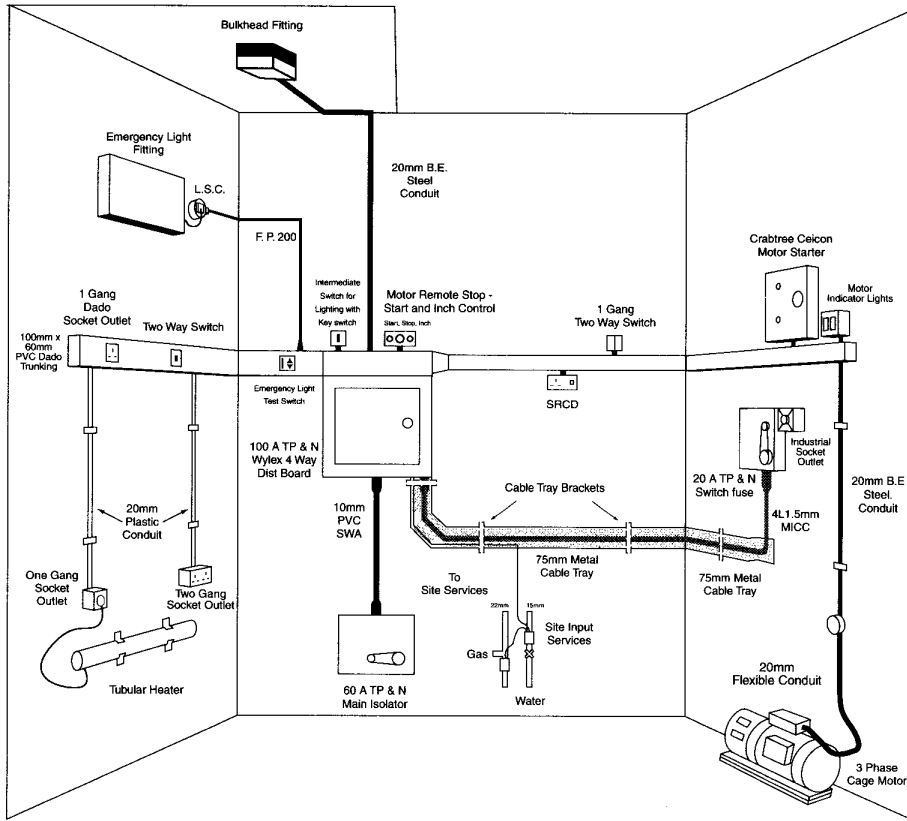


FIGURE B – AM2 TEST UNIT SHOWING COMPLETED COMPOSITE INSTALLATION

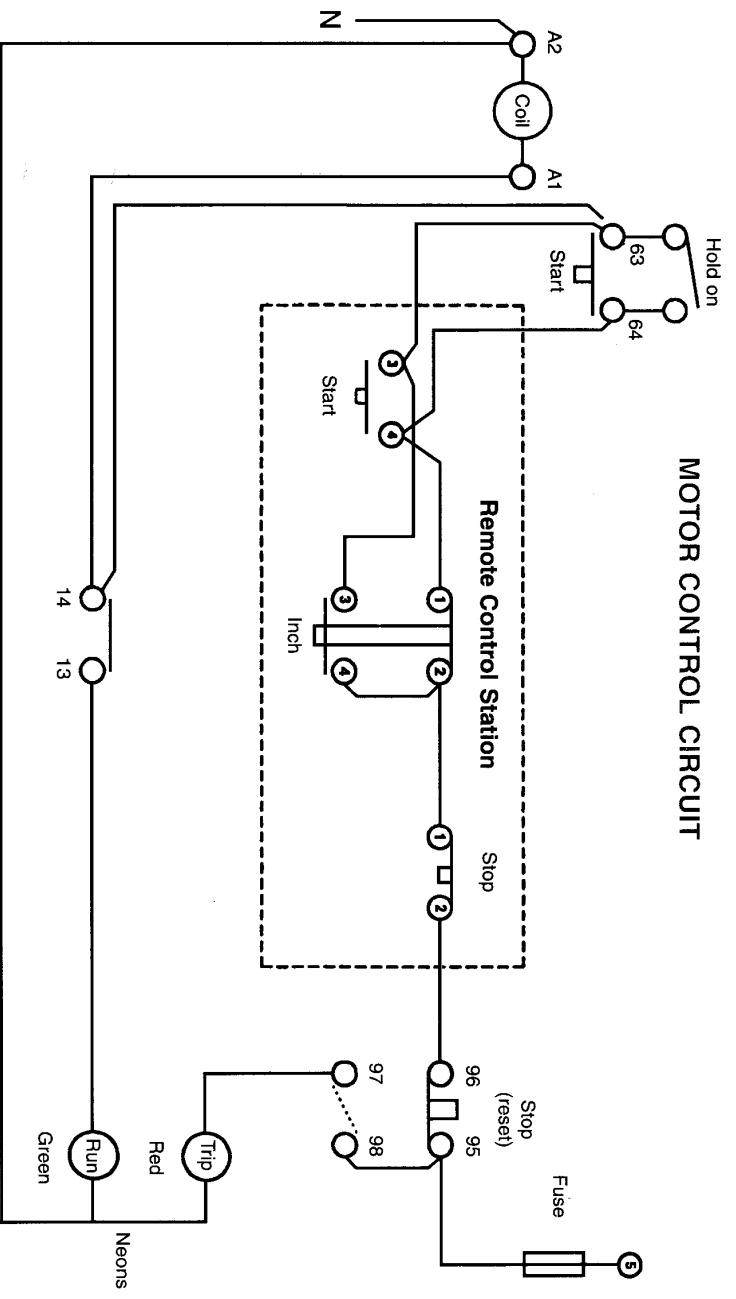


FIGURE C - MOTOR CONTROL CIRCUIT SCHEMATIC DIAGRAM

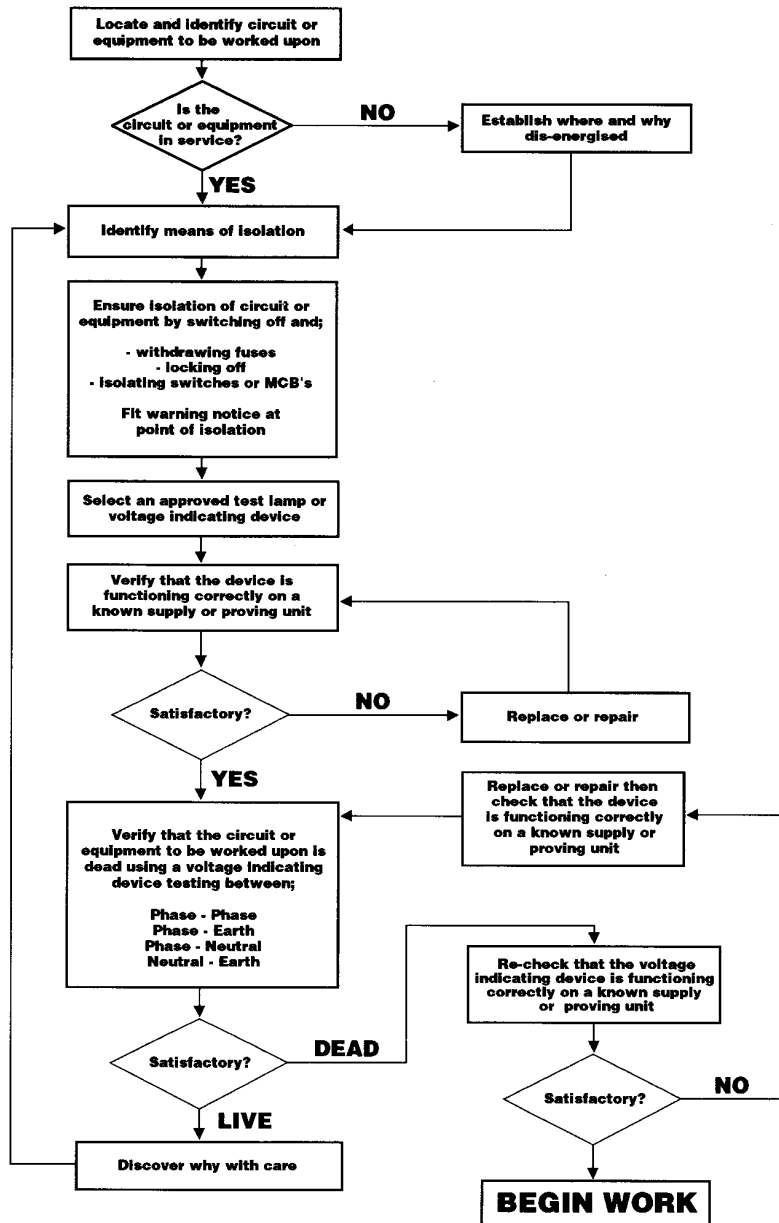


FIGURE D - SAFE ISOLATION PROCEDURE

JOB CARD
Section D2 Stage 2
Rectification with an additional resource

Fault R21

Motor circuit

Circuit arrangements

Fed from way RYB3 10amp Type C MCB

Fault Symptoms

The motor control does not work correctly when operated from the remote control station

FIGURE E - Example of Job Card

1. **GLASGOW**
SECTT FICA Test Centre*
14 Tabernacle Lane
Cambuslang
G72 8HP

Contact: Jack Wright
Tel: 0141 341 3127
Fax: 0 141 341 9221

2. **EDINBURGH**
Stevenson College
FICA Test Centre*
Bankhead Avenue
Sighthill
Edinburgh
Midlothian EH11 4DE

Contact: Malcolm Tonner
Tel: 0131 535 4600 Ext 1929
Fax: 0 131 535 4666

For more information and
booking details please contact

Gillian Young
Tel: 0131 445 5659
Fax: 0131 445 5661

3. **BLACKBURN**
Training 2000 (Services) Ltd
Furthergate Industrial Park
Harwood Street
Blackburn
Lancs
BB1 3BD

Contact: Jackie Hilton
Tel: 01254 586517
Fax: 01254 586517

* NOTE: **FICA is the AM2 equivalent
under the Scottish assessment system.**

4. **BLACKPOOL**
Blackpool & The Fylde College
AM2 Test Centre
Ashfield Road
Bispham
Blackpool
FY2 0HB

Contact: Fran Carter
Tel: 01253 504096
Fax: 01253 356127

5. **BILLINGHAM**
NETA Cleveland Training Centre
Purvis Building
Leeholme Road
Billingham
Cleveland
TS23 3TA

Contact: Elaine Whitehead
Tel: 01642 379440
Fax: 01642 564515

6. **MANCHESTER**
North Trafford College
Moss Road
Stretford
Manchester
M32 0AZ

Contact: Beverley McLoughlin
Tel: 0161 886 7106

7. **SHEFFIELD**
Sheffield College
Loxley Centre
Wood Lane
Sheffield
S6 5HG

Contact: Martyn Norton
Tel: 0114 260 3250

8. **WAKEFIELD**
Wakefield Skill Centre
Unit 41-43
Monkton Road Industrial Estate
Denby Dale Road
Wakefield
WF2 7AL

Contact: Brenda Slater
Tel: 01924 375826
Fax: 01924 362811
9. **BIRMINGHAM**
Birmingham Electrical Training
34 Bierley Street
Hockley
Birmingham
B19 3NR

Contact: Andy Davies/Jackie
Hussellbee
Tel: 0121 503 4760
Fax: 0121 503 4761
10. **GLOUCESTER**
Clarkson Evans Ltd
Meteor Business Park
Cheltenham Road East
Gloucester
GL2 9QL

Contact: Jon Dicken
Tel: 01452 530336
11. **NOTTINGHAM**
Elm Training Services
Unit 7
Breydon Industrial Centre
Main Street
Long Eaton
Nottingham
NG10 1GT

Contact: Mike Roper
Tel: 0115 946 3342
Fax: 0115 946 3342
12. **REDDITCH**
Pelcombe Training Ltd.
Unit 5A Springside
Howard Road
Park Farm North Industrial
Estate
Redditch
B98 7SE

Contact: Jane Daniels
Tel: 01206 868707
Fax: 0 1206 865210
13. **CHELMSFORD**
Chelmsford College
Moulsham Street
Chelmsford
Essex
CM2 9DX

Contact: Graham Gregory
Tel: 01245 265611 ext 3052
14. **CRAWLEY**
Crawley College
College Road
Crawley
West Sussex
RH10 1NR

Contact: Simon Nobbs
Tel: 01293 442349
15. **IPSWICH**
Pelcombe Training Ltd
Alpha House
Whitehouse Road
Ipswich
Suffolk
IP1 5LT

Contact: Jane Daniels
Tel: 01206 868707
Fax: 01206 865210

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|--|---|
| <p>16. LONDON
 JTL London Centre
 Unit 8
 Block 2
 Woolwich Church Street
 London
 SE18 5PQ</p> <p>Contact: Brian Riddle
 Tel: 020 8316 4007
 Fax: 020 8316 1870</p> | <p>20. PONTPRIDD (S.Wales)
 Pontypridd College
 AM2 Test Centre
 Unit 8
 Maritime Workshops
 Maritime Industrial Estate
 Pontypridd
 CF37 1NY</p> <p>Contact: Dudley Clist
 Tel: 01443 492836</p> |
| <p>17. PETERBOROUGH
 Peterborough Regional College
 Park Crescent
 Peterborough
 Cambs
 PE1 4DZ</p> <p>Contact: Barry Anderson
 Tel: 01733 762317</p> | <p>21. BALLYMENA (Northern Ireland)
 Electrical Training Trust (ETT)
 Balymena Business Centre
 Fenaghy Road
 Balymena
 County Antrim
 BT42 1FL</p> <p>Contact: Claire Alexander
 Tel: 028 2565 0750
 Fax: 028 2563 0725</p> |
| <p>18. SOUTHAMPTON
 SETA Ltd
 First Avenue
 Millbrook Trading Estate
 Southampton
 SO15 0LJ</p> <p>Contact: June Miller
 Tel: 02380 771908
 Fax: 02380 878317</p> | <p>22.</p> |
| <p>19. TAUNTON
 Western Power Training
 Venture Way
 Priorswood Industrial Estate
 Taunton
 Somerset
 TA2 8DG</p> <p>Contact: Jayne Hogan
 Tel: 01823 286901
 Fax: 01823 254701</p> | <p>23.</p> |