Toolbox talk

Correct isolation

Seven steps for correct electrical isolation

10 minutes | For: Anyone who works on or near electrical installations

Why it matters

HSE warns of accidents on equipment assumed dead but still live, and live work without adequate precautions. Installations may have multiple sources: mains, PV, batteries and bidirectional EV systems. A PEN fault can put dangerous current on earth or bonding even with the main switch off.

Key points

1. Step 1, permission and planning: get permission, identify every supply, complete your risk assessment, check if a permit is needed.
2. Step 2: check for danger before touching equipment. Competent people assess supply faults, including diverted neutral current, where relevant.
3. Step 3: isolate the circuit from ALL sources: mains, PV, batteries, UPS, generators and any vehicle-to-building supply. Do not rely on an off button.
4. Step 4: use suitable isolating devices, lock off and label each source. Secure against reconnection and make stored energy safe.
5. Step 5: check a suitable two-pole voltage detector, then prove it works on a proving unit or suitable known live source before testing.
6. Step 6: prove dead at the point of work: test all relevant conductor combinations, including line-to-line, line-to-neutral and line-to-earth.
7. Step 7: re-prove your indicator on the same source. If it fails, the test can't be trusted. Start again.
8. Throughout: use your own lock, keep the key on you, and never trust labels or an 'off' light.

Sources: HSE HSG85; HSE GS38; IET isolation and switching guidance (2026); Electricity at Work Regulations 1989. Full linked source map and A4 qualifications: page 8.

This talk supports, but does not replace, your site-specific risk assessment, method statement, training and supervision. Free to copy and use. tradefoxapp.com/toolbox-talks/correct-isolation

Correct isolation

Do

- Use a suitable two-pole detector meeting GS38 guidance. Additional fuses are not required for every detector.
- Only competent people assess earth or bonding current. A low reading does not prove there is no PEN fault.
- Lock off each source with a safety padlock and notice. Use a hasp for group isolations.
- Photograph your isolations so there is a record.
- Report suspected supply-side faults to the DNO on 105 and keep a log.

Don't

- Don't use a multifunction tester, multimeter or non-contact 'volt stick' to prove dead.
- Don't trust an inverter or charger's off state. Isolate ALL feeds using its safe shutdown procedure and prove dead.
- Don't touch or disconnect bonding conductors that may be carrying current.
- Don't skip re-proving your indicator, even if you're in a hurry.
- Don't do electrical work you are not trained and authorised to do.

Ask the group

- What other sources of supply could be on the jobs we're doing now?
- Who has a clamp meter, and when did we last clamp the main earth?
- What would you do if you found current on the earth before starting?
- How do we make sure nobody switches back on while someone is still working?

If it goes wrong: Do not touch a casualty or suspect metalwork until every source is made safe. Call 999 and get a first aider. Stop if danger is found; only competent, authorised people may investigate. Report supply faults on 105 in Great Britain.

On this site

Nearest first aider _____ Emergency assembly point _____

Site-specific hazards and controls _____

_____

Sources: HSE HSG85; HSE GS38; IET isolation and switching guidance (2026); Electricity at Work Regulations 1989. Full linked source map and A4 qualifications: page 8.

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Attendance register

Correct isolation

Site / project

Date and time

Presented by

Company

	Name (print)	Company	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

By signing, attendees confirm they took part in this toolbox talk and understood the key points. Keep this record with your site safety file.

Presenter signature

Follow-up actions

Scan for the latest version of this talk online ›

Go further: HSE HSG85 safe working practices; current source map on page 8

Sources: HSE HSG85; HSE GS38; IET isolation and switching guidance (2026); Electricity at Work Regulations 1989. Full linked source map and A4 qualifications: page 8.

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Quick check

Correct isolation

Tick one answer for each question. Your presenter has the answers.

Name _____ Date _____

1. What is step 1 of correct isolation?

- [ ] Switch off the main switch
- [ ] Get permission, identify every supply and plan the work
- [ ] Test the circuit dead

2. Which instrument should be used to prove dead?

- [ ] A GS38 two-pole voltage indicator
- [ ] A multifunction tester or volt stick
- [ ] A non-contact detector

3. Why do you clamp the main earth before starting?

- [ ] To check for current on the earth from a fault
- [ ] To measure the voltage
- [ ] It isn't needed

4. You find a supply-side fault. Who do you call?

- [ ] Nobody, just carry on
- [ ] The DNO on 105
- [ ] The customer's energy supplier

5. Your indicator won't prove live after testing. What now?

- [ ] Trust the dead result
- [ ] Stop, take the indicator out of use and start the isolation again
- [ ] Try a different socket

Sources: HSE HSG85; HSE GS38; IET isolation and switching guidance (2026); Electricity at Work Regulations 1989. Full linked source map and A4 qualifications: page 8.

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For the presenter

Answers and sources

Quick check answers

1. Get permission, identify every supply and plan the work

Plan the work, obtain authority and identify all sources before isolation. Follow the site safe system of work.

2. A GS38 two-pole voltage indicator

HSE recommends a suitable voltage detector. Non-contact indicators cannot prove dead; a proving unit checks the detector.

3. To check for current on the earth from a fault

Earth or bonding current can indicate danger. No clamp reading proves a PEN fault absent; stop and escalate concerns to a competent person.

4. The DNO on 105

Report supply-side faults to the network operator: 105 in Great Britain. In Northern Ireland, use NIE Networks emergency contact.

5. Stop, take the indicator out of use and start the isolation again

If the indicator fails the re-prove, the test results can't be trusted. Stop and restart the isolation.

Sources

Current linked sources and A4 qualifications: see page 8.

> **Presenting tips:** keep it to about 10 minutes, use real examples from your site, ask the group questions rather than reading everything out, and record attendance on the register.

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TRADEFOX

Never assume. Always prove dead.

1. Isolate and lock off every supply
2. Check for danger before touching
3. Prove, test, prove again

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Never assume. Always prove dead.

1. **Isolate and lock off every supply**
2. **Check for danger before touching**
3. **Prove, test, prove again**

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Sources and qualifications

Correct isolation

Scope: Great Britain safety legislation unless a nation is identified. Northern Ireland has separate legislation. Site rules can be stricter than minimum legal duties; use the site assessment, instructions and competent supervision.

A4-related review: suitable isolation devices (Table 537.4) and multiple supplies, including PV, batteries and vehicle-to-building supply. The safe-work sequence is based on HSG85/GS38, not a PENfault campaign threshold. No 15 mA pass/fail limit is asserted.

A4 basis: published IET guidance on BS 7671:2018+A4:2026. The full licensed standard was not available for clause-by-clause verification. This is an editorial/source review, not installation certification. IET: current edition.

S1. HSE HSG85: Electricity at work - safe working practices

Talk sheet steps 1-7; all-source isolation, stored energy, lock-off, proving dead, competence and emergency precautions (paras 48-55).

https://www.hse.gov.uk/pubns/priced/hsg85.pdf

S2. HSE GS38: Electrical test equipment

Detector choice, proving before/after use, non-contact limitations and fuse qualification (paras 12-13, 19-20); quiz 2 and 5.

https://www.hse.gov.uk/pubns/priced/gs38.pdf

S3. IET: Protective, isolation and switching devices explained (2026)

A4 context: Table 537.4, suitable isolating devices and distinction between switching off and isolation.

https://electrical.theiet.org/wiring-matters/years/2026/110-july-2026/protective-isolation-and-switching-devices-explained-electrical-safety-guide/

S4. IET: Broken PEN

PEN fault and diverted neutral current hazards; main switch off or one low clamp reading does not establish safety; quiz 3.

https://electrical.theiet.org/wiring-matters/years/2021/84-march-2021/broken-pen/

S5. Electricity at Work Regulations 1989, regulation 13

Legal precautions against equipment becoming electrically charged while work is carried out.

https://www.legislation.gov.uk/uksi/1989/635/regulation/13

Presenter qualification: No 15 mA threshold is used as a BS 7671 rule or proof of safety. A clamp check must be performed only where competent and safe; do not disturb current-carrying bonding.