

1. SCOPE

This procedure specifies:

- i) The **Approved** method for checking the correct functioning of Voltage Indicators;
- ii) The **Approved** method for proving **High Voltage (HV)** conductors to be not **Live**;
- iii) The **Approved** method for phasing-out of **HV** conductors.

This document replaces OHL-22-011 'HV Phasing Using the Tag 5000 Phasing Device' which is now withdrawn.

2. ISSUE RECORD

This is a [Reference](#) document. The current version is held on the EN Document Library.

It is your responsibility to ensure you work to the current version.

Issue Date	Issue No	Author	Amendment Details
February 2013	2	Rob Edwards	Requirement to use Approved rubber gloves when testing switchgear spout contacts on metal-enclosed switchgear. Extension of use of Capacitive Voltage Indicators to voltages above 11kV. Introduction of external proving unit for Capacitive Voltage Indicators. Use of Capacitive Voltage Indicators from ground level. Introduction of Capacitive Phasing-out Device for HV overhead lines.
July 2018	3	Dave Naylor	Reference to AC and DC applications. Refers to guidance in OPSAF-12-004 (LWM 2.2). Inspection of withdrawn circuit breaker and spouts before use of Indicator. Clarified PPE requirements. Requirement for two Persons to be present for phasing-out. Use of bent-end adapters and extension pieces. Extra explanation of moving-coil instrument function. Use of cleaning kit. More guidance on use of capacitive indicators, including facilitating their use at voltages up to 400kV AC. Includes further guidance on use of capacitive phasing-out device, replacing OHL-22-011.

3. ISSUE AUTHORITY

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4. REVIEW

This is a **Reference** document which has a 5 year retention period after which a reminder will be issued to review and extend retention or archive.

DISTRIBUTION

This document is part of the Live Working Manual but does not have a maintained distribution list.

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6. DEFINITIONS

Terms printed in bold type are as defined in the current edition of the ScottishPower Safety Rules (Electrical and Mechanical).

The term **Approved** Voltage Indicator applies to instruments used to prove that **HV** conductors are not **Live**. The moving coil and capacitive device each have different capabilities which are described in the table below.

The term **Approved** Capacitive Phasing-out Device applies to an instrument for use on **HV** overhead lines or open busbar conductors to phase-out, applied by use of **Approved** insulated rods.

	Approved for use as a Voltage Indicator	Approved for use as a Phasing-out Device
Approved Voltage Indicator (moving coil type)	Yes – AC or DC System	Yes – AC System only
Approved Voltage Indicator (capacitive type)	Yes – AC System only	No
Approved Capacitive Phasing-out Device	No	Yes – AC System only

The instruments which meet these criteria are listed in the **Approved** equipment list in OPSAF-12-024 (Section 8.1 of the Live Working Manual).

7. DANGERS

The main **Dangers** to **Persons** arising from the use of **Approved** Voltage Indicators are:

- i) Failure to use the **Approved** Voltage Indicator in accordance with the **Approved** Procedure and the manufacturer's instructions.
- ii) Use of an **Approved** Voltage Indicator not fit for purpose.
- iii) Inadvertent insertion of a hand or tool into **Live** spouts.
- iv) Use of an **Approved** Voltage Indicator outside its rated voltage.
- v) Infringement of **Safety Distance**.
- vi) Electric shock or burns due to failure or flashover of **Apparatus** during testing.

8. TESTING OF SWITCHGEAR SPOUTS AND CONTACTS

- 8.1 Before inserting an **Approved** moving coil Voltage Indicator into switchgear spouts, the circuit breaker moving portion shall where practicable be inspected for evidence of distress to the bushings and contacts such as burning, arcing or soot deposits.
- 8.2 Observing the requirements of Specialised Procedure SP 5, and wearing a minimum of light eye protection, the switchgear spouts shall be visually inspected with the aid of a torch (or equivalent) for evidence of distress such as burning, arcing or soot deposits.
- 8.3 Should either of these inspections reveal any evidence of distress – especially if one or more bushings or spouts appear to be affected more than the rest – then testing shall not continue and a **High Voltage** shutdown shall take place for a more thorough inspection to be completed.
- 8.4 **Approved** rubber gloves and fire retardant coveralls fastened to the neck, wrists and ankles shall be worn. A full-face visor or helmet with integral visor deployed shall be worn.

- 8.5 Testing of metal-enclosed switchgear spout contacts to prove not **Live** may be carried out unaccompanied, provided:
- i) All switchgear shutters to which access is not required during the test are **Locked** in the closed position.
 - ii) An on-site risk assessment carried out by the **Authorised Person** does not indicate that the presence of a second **Person** would substantially contribute to safety.
- 8.6 Before proceeding to phase-out at **HV** with a moving coil Voltage Indicator, consideration shall be given to the guidance on phasing-out methods contained in OPSAF-12-004 (LWM 2.2) 'Operation of the **HV AC System** up to and including 33kV'.
- 8.7 Two suitable **Authorised Persons** shall be present when phasing-out on **Live** metal-enclosed switchgear spout contacts is carried out. One **Authorised Person** shall hold either OP-1 or OP-2 at **High Voltage**. The phasing-out operation may be completed by either that **Person** only or with the assistance of the second **Person** who shall be under his **Personal Supervision**. When two **Persons** are actively involved in the phasing-out process, each **Person** shall control a single probe.
- 8.8 When proving not **Live** or phasing-out on spouts of vertically withdrawable switchgear up to and including 11kV, in order to provide the maximum practicable separation between the spout contacts and the **Authorised Person(s)** using a Voltage Indicator, an **Approved** bent-end adapter(s) shall be used.

On spouts of other **Apparatus**, **Approved** bent-end adapters and/or extension pieces shall where reasonably practicable be used.

The table below specifies the specific requirements for testing of switchgear spouts and contacts:

		Up to & including 11kV	Over 11kV
Accompaniment	Proving not Live	Not required if shutters to which access is not required are Locked in the closed position and risk assessment does not indicate that the presence of a second Person would substantially contribute to safety	
	Phasing-out	Two suitable Authorised Persons shall be present	
Use of bent end adapters and/or extension pieces	Vertically withdrawable	Approved bent-end adapter(s) shall be used for phasing out or proving not Live	Approved bent-end adapters and/or extension pieces shall where reasonably practicable be used
	Horizontally withdrawable		

9. GENERAL

An **Approved** Voltage Indicator shall only be used for the voltage range indicated on the instrument¹.

¹ SP Energy Networks has received confirmation from the manufacturer that the **Approved** 33kV rated moving-coil voltage indicator may be used on 34.5kV **Apparatus**.

10. USE OF APPROVED VOLTAGE INDICATOR MOVING COIL TYPE (LIMITED UP TO 33KV SYSTEMS¹)

10.1 General

Approved Voltage Indicators are listed in OPSAF-12-024 (Section 8.1 of the Live Working Manual). Note only indicators model number 256B and 257B are suitable for use in wet weather. All other instrument models shall only be used in dry conditions.

The top part of the **Approved** Voltage Indicator consists of a chain resistor connected through the voltmeter via the handle to the earth connection. The voltmeter is actually a micro-ammeter calibrated to read voltage. This ammeter measures the current that flows from the **HV** conductor being tested, through the resistor to the earth connection. If the **HV** conductor being tested is **Live**, the instrument will indicate the RMS value of AC or approximate value to earth of the DC potential.

10.1.1 Check that the Indicator is rated for the operating voltage of the conductors to be tested¹ and that an **Approved** proving unit with a valid test date is available to test the instrument.

10.1.2 Check that there is a valid test label on the Indicator indicating that the instrument is within test date. If out of date do not use.

10.1.3 Examine the Indicator and connecting cables for any visual indication of damage. If damaged do not use. Ensure that any moisture that may be present on the surface of the Indicator is removed using a clean dry cloth. If required, use the cleaning kit supplied with the instrument.

10.2 Proving conductors not Live using a Moving Coil Voltage Indicator

This method may be employed to prove exposed conductors (e.g. overhead lines or busbars) or circuit breaker fixed portion spouts contacts not **Live**.

The indicator is assembled as shown in figure 1 below. Note that bent-end adaptors and extension pieces are available in the kit which enable the operator to be positioned further from the **Apparatus** being tested. These should be selected as appropriate.

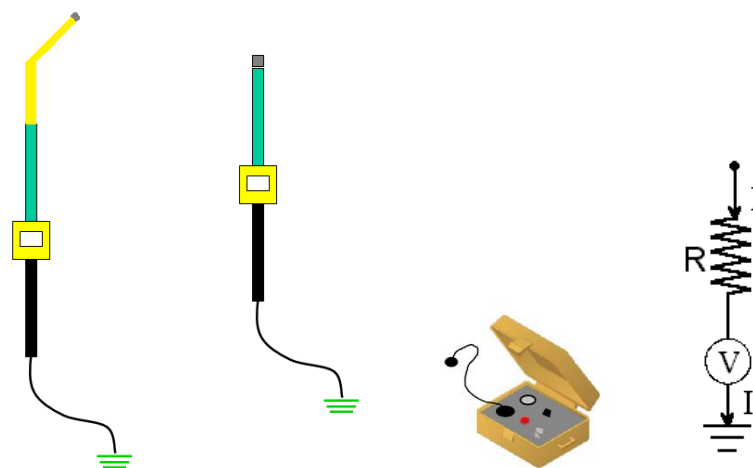


Figure 1: Proving unit and **Approved** voltage indicator configured to prove conductors not **Live**. Shown with and without the bent-end adaptor. Note the second lead is required for the ammeter proving test. Also resistor equivalent diagram with ammeter calibrated in volts.

- 10.2.1 Prove the functioning of the Indicator in accordance with the instructions indicated on the proving unit. The Indicator shall be tested in its final configuration – i.e. with bent-end adaptor or extension piece attached if necessary. The full test for proving correct operation is in two stages and it is vital that both stages are completed in order to prove both the micro-ammeter movement and the continuity of the internal resistor. The full-scale deflection test requires a second lead to be connected to the rear of the Indicator unit; this second lead shall be removed after the completion of the proving unit test. If the results are not correct do not use the Indicator.
- 10.2.2 Connect the crocodile clip on the earth lead of the Indicator to a suitable earth connection. Whilst there is no **Danger** to the operator if a poor earth connection is established, it is essential for the correct operation of the Indicator that the earth lead is connected correctly.
- 10.2.3 Wear **Approved** rubber gloves, fire retardant coveralls fastened to the neck, wrists and ankles, a minimum of light eye protection (full-face visor or helmet with integral visor deployed when testing switchgear spouts) and other appropriate PPE where required (e.g. hard hat when working at height).
- Grip the Indicator by the handle, ensuring both hands are below the voltmeter. Apply the Indicator contact to the conductor to be tested. If a reading of zero is obtained, this indicates that the **HV** conductor being tested is not **Live**. If the **HV** conductor being tested is **Live**, the instrument will indicate the RMS value of AC or approximate value to earth of the DC potential.
- 10.2.4 Apply the probe of the Indicator to all phase conductors of the **Apparatus** in order to prove that the circuit is not **Live**.
- 10.2.5 When all phase conductors have been tested, the Indicator shall be re-checked, in accordance with the instructions indicated on the proving unit, to prove that the Indicator is still fully functional. Both stages of the test shall be completed in order to prove both the micro-ammeter movement and the continuity of the internal resistor.
- 10.2.6 The Indicator shall be dismantled and the probes, extension pieces and bent-end adapters (where applicable) shall be cleaned using the cleaning kit supplied with the instrument, and returned to storage.

10.3 Phasing-out on the HV AC System using a Moving Coil Voltage Indicator

Before proceeding to phase-out at **HV** with a moving coil Voltage Indicator, consideration shall be given to the guidance on phasing-out methods contained in OPSAF-12-004 (LWM 2.2) 'Operation of **HV AC System** up to and including 33kV'.

This method may be employed to phase-out at suitable positions such as: across busbar and circuit spouts of circuit breaker panels, across an open pole-mounted switch or free-standing circuit breaker, overhead line jumpers or cable terminal poles. Whilst it is mandatory for two **Authorised Persons** to be present whilst phasing-out on **Live** metal-enclosed switchgear spout contacts, it is likely that two **Persons** will be required to phase-out at other positions.

Because of the scaling of the instrument, the use of the **Approved** Voltage Indicator for phasing-out **HV** conductors is valid only to identify like phases of two AC **Systems** whose three phase voltage vectors coincide and have the neutral earth points of each **System** connected together. When phasing-out tests are to be carried out on **Systems** where there may be a phase angle difference, such as produced by transformers of different vector groups, the tests shall not be carried out using an **Approved** Voltage Indicator, but shall be performed at **Low Voltage** using an accurate instrument.

A moving coil Voltage Indicator and Phasing Rod are required for this procedure. Alternatively, two Voltage Indicators may be used, with the reading on one being disregarded. The Indicator is assembled as shown in figure 2 below. Note that bent-end adaptors and extension pieces are available in the kit,

which enable the operators to be positioned further from the **Apparatus** being tested. These should be selected as appropriate (bent-end adapters mandatory on vertically withdrawable switchgear up to and including 11kV).

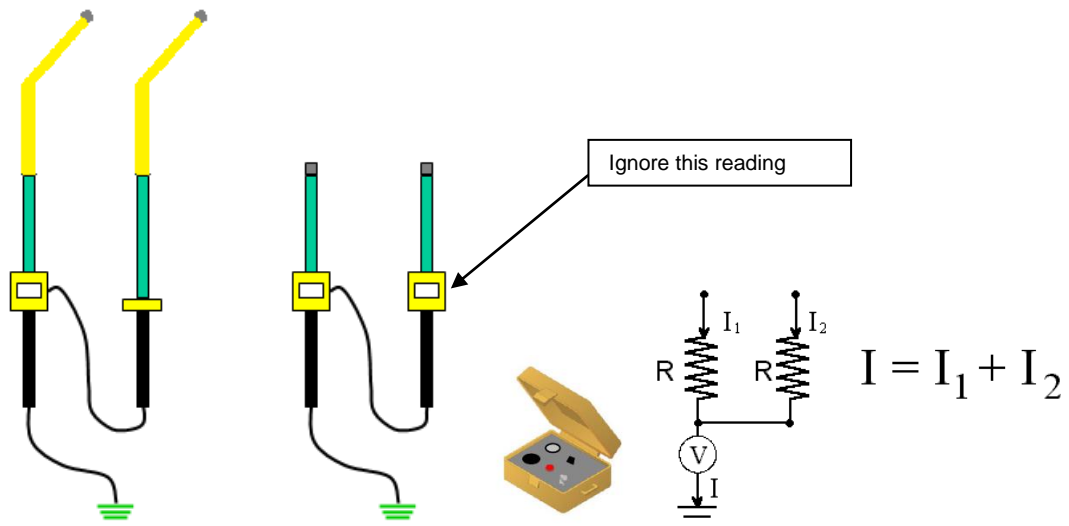


Figure 2: **Approved** voltage indicator configured to phase-out, including option of using two voltage indicators. Shown with and without the bent-end adapters – note also extension pieces may be used. Also resistor equivalent diagram with ammeter calibrated in volts.

The principle of the dial displaying the current measured flowing through the resistor also applies when using the Indicator to phase-out. Due to the connection of the two resistors the voltmeter indicates the vector sum of the two currents. When the voltages are in phase the sum of the currents is equal to twice the current flowing in each one - hence the reading is twice the magnitude of the phase to earth voltage. See figure 3 below. When the voltages are out of phase by 120° the currents are also out of phase by 120°. The currents add together vectorally giving a resultant current of equal magnitude i.e. half the current flowing when the sources tested are in phase. This is also shown in the figure 3 vector diagram below for when Red and Yellow phases are tested.

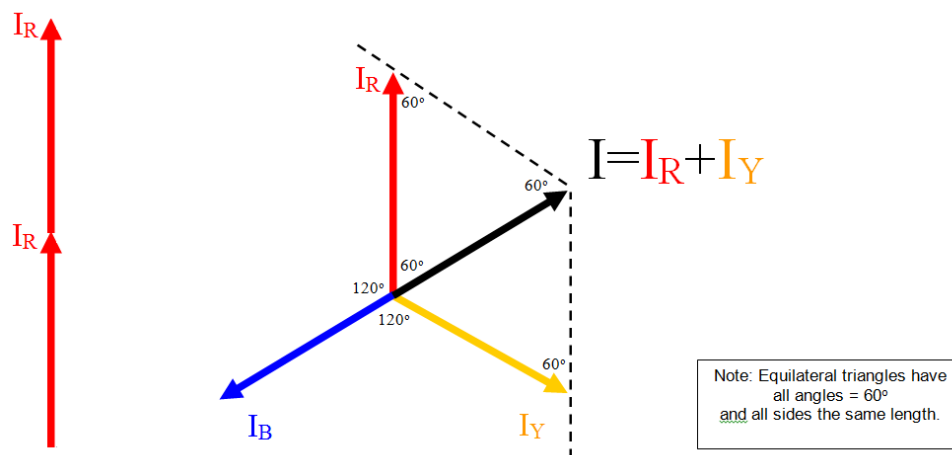


Figure 3: Vector diagrams showing vector sum of two in-phase voltages resulting in double voltage indication and two out-of-phase voltages showing the resultant equal to the value of one.

- 10.3.1 To check the phase relationship between phases across a break, the phase to earth voltages shall first be measured using the Indicator as explained in section 10.2 on its own for all phases on both sides of the break.
- 10.3.2 Assemble the Indicator and Phasing Rod as shown in figure 2, using **Approved** bent-end adapters and/or extension pieces as necessary. In its final configuration, check that the assembled Indicator and Phasing Rod are functioning correctly using the proving unit to confirm continuity of both the Indicator and Phasing Rod.
- 10.3.3 Connect the crocodile clip on the earth lead of the Indicator to a suitable earth connection. Whilst there is no **Danger** to the operator if a poor earth connection is established, it is essential for the correct operation of the Indicator that the earth lead is connected correctly.
- 10.3.4 Wear **Approved** rubber gloves, fire retardant coveralls fastened to the neck, wrists and ankles, a minimum of light eye protection (full-face visor or helmet with integral visor deployed when testing switchgear spouts) and other appropriate PPE where required (e.g. hard hat when working at height).

Grip the Indicator and Phasing Rod by the handles, ensuring both hands are below the voltmeter or hand shield. Apply the Indicator and Phasing Rod contacts to the conductors to be tested. The voltages between all three phases on both sides of the break shall be measured and compared with the individual phase to earth values.

- 10.3.5 For phases that are in-phase, the resultant voltage measured is equal to the sum of the individual phase to earth values (e.g. $11\text{kV} \div \sqrt{3}$). For phases that are out-of-phase, the resultant voltage measured is equal to the individual phase to earth value e.g.

	6.6kV System measured values	11kV System measured values	33kV System measured values
Individual phase to earth	3.81kV	6.35kV	19.05kV
Phase to phase, phases in phase	7.62kV	12.7kV	38.1kV
Phase to phase, phases out of phase	3.81kV	6.35kV	19.05kV

- 10.3.6 The Indicator and Phasing Rod shall be dismantled and the probes, extension pieces and bent-end adapters (where applicable) shall be cleaned using the cleaning kit supplied with the instrument, and returned to storage.

11. USE OF APPROVED VOLTAGE INDICATOR CAPACITIVE TYPE – ALSO KNOWN AS PROXIMITY INDICATORS

11.1 General

Approved Voltage Indicators are listed in OPSAF-12-024 (LWM 8.1). **Approved** devices shall only be used on the AC **System** within their designed voltage range as stated on the unit. **Approved** voltage indicators shall be electrically tested annually.

Capacitive type Voltage Indicators detect the electrical field around a **Live** conductor. The conductor need not necessarily have current flowing for an electrical field to exist.

The devices have a threshold voltage below which there will be insufficient electrical field for the device to operate. How the detector is used could impact its ability to operate reliably if it is placed in a position where multiple electrical fields counter-act and cancel each other out. It may also operate unreliably if the sensors inside it are shielded (e.g. in heavy rain or if conductive stickers are used on the shell).

Situations where the detector may not operate reliably are listed below:

Reaching between same-phase conductors.

This may prevent the device's sensors from detecting an electrical field around it. Always apply the device to a conductor away from anything in-phase.

Use close to **Apparatus**, jumpers or downleads.

These disturb the steady electrical field the detector relies on. It is good practice to test an overhead line with the detector at right angles to the conductor and away from anything that could disturb the steady field around it.

No direct contact with the metallic conductor.

Although the device is likely to detect the presence of an electrical field simply from proximity, the metal contact electrode of the detector must make direct contact with the metal conductor in order for a test to be completely effective.

Heavy rain causing a continuous water film on the shell of the detector.

The rain will be conductive and can shield the device's sensors. Clean the device's outer shell with an **Approved** silicone or wax polish to aid water shedding.

Heavy surface scratching on the shell of the detector.

This can impact shedding of rain water as well as affecting the rated insulation properties of the shell. Store the detector in clean, dry conditions free from damp or condensation and protected from damage.

Use of paper or metallic stickers on the shell of the detector.

As with rain water, paper and metallic labels can conduct and will shield the internal sensors.

Interference from an adjacent **Live** source.

This may cause the detector to indicate that the conductor is **Live** when it is not e.g. where a **Live** line crosses an **Isolated** line being tested. This can be minimised by testing at an appropriate position and ensuring the electrode touches the conductor.

Detectors with Auto Shut-Off and Stand-By mode

Some detectors have auto shut-off while others are in constant standby mode and will 'wake-up' when placed in an electrical field. It is important to understand how a device operates to prevent it shutting-off before a test is completed. Refer to manufacturer's instructions for self-test and operating instructions.

11.2 Proving conductors not Live on the AC System (up to 400kV)

Capacitive type Voltage Indicators are designed to be attached to **Approved** insulated rods. They are only **Approved** for testing overhead line conductors and open busbars.

Approved Capacitive Voltage Indicators shall where reasonably practicable provide both visual and audible indication in the event that a **Live** conductor is tested.

Prior to use, the Indicator shall:

- Be examined to ensure that it is rated for the operating voltage of the conductor to be tested, there is no visual indication of damage or distress and it is within the current test and inspection periods.
- Be tested to prove that it is functional. Where reasonably practicable, this test shall include the use of an external proving unit to prove correct operation, the test shall prove the functionality of both the audible and visual indications. Only where it is not reasonably practicable to use an external proving unit may the test be carried out by use of the self-test button only.

Where reasonably practicable, when overhead conductors are tested by means of Capacitive Voltage Indicators, the test shall be carried out from ground level. Where this is not reasonably practicable, sufficient insulated rods shall be used to ensure that the **Safety Distance** is not infringed; a minimum of two rods shall be used.

Prior to use, the insulated rods shall be examined to ensure that there is no visual indication of damage and that they are within the current test and inspection periods.

At the completion of the test of the overhead conductor, the Indicator shall be re-tested in accordance with this section to ensure that it is still fully functional.

11.3 Phasing-out using Capacitive Phasing-out Devices

Capacitive Phasing-out Devices comprise two units – an Emitter unit and a Receiver unit. Both units are designed to be attached to **Approved** insulated rods and are **Approved** for phasing-out overhead line conductors and open busbars, up to and including 33kV.

Approved Phasing-out Devices are listed in OPSAF-12-024 (Section 8.1 of the Live Working Manual). Neither the Emitter nor the Receiver is **Approved** as a Voltage Indicator and they shall not be used for that purpose. They are **Approved** for use only to identify like phases of two **Systems** whose three phase voltage vectors coincide and which have neutral earth points of each **System** connected together.

When phasing-out tests are to be carried out on **Systems** where there may be a phase angle difference, such as produced by transformers of different vector groups, the tests shall not be carried out using a Capacitor Phasing-out Device.

Where reasonably practicable, phasing-out tests on overhead conductors by means of Capacitive Phasing-out Devices shall be carried out from ground level. Where this is not reasonably practicable, sufficient insulated rods shall be used to ensure that the **Safety Distance** is not infringed; a minimum of two rods shall be used.

Prior to use, the insulated rods shall be examined to ensure that there is no visual indication of damage and that they are within the current test and inspection periods.

Prior to use, both units of the Phasing-out Device shall:

- Be examined to ensure that: they are rated for the operating voltage of the conductors to be tested, there is no visual indication of damage or distress and they are within the current test and inspection periods.

- Be tested to prove that they are fully functional. These tests shall be carried out in accordance with the manufacturer's instructions.

The manufacturer's instructions may offer more than one procedure to be followed to prove the 'in-phase/out-of-phase' test functionality of the Phasing-out Device. However, where reasonably practicable, prior to phasing-out across a break in conductors, the Phasing-out Device shall be proved to be functioning correctly by application to the primary circuit conductors to identify the phase relationship between all three phases on one side of the break.

Refer to Appendix 1 for guidance on the use of specific **Approved** phasing-out devices.

12. APPENDIX 1 – PHASING-OUT USING THE TAG 5000 PHASING DEVICE

12.1 Main Components

The Tag 5000 consists of a transmitter and receiver, as shown below.

The receiver is **BLUE**. The transmitter is **GREY**.



12.2 Operation Information

The Tag 5000 has a range of 10m in air, and 1km along the **System**. Radio-frequency transmission allows the device to operate on the principle of real-time phase comparison. Consideration shall be given to the possibility of two Tag 5000 kits interfering with each other if being used concurrently within their signal transmission range.

The transmitter has two functions. It determines the status of the line it touches, so the operator can tell if the line is live or not (note the device is not **Approved** for proving conductors not **Live**). After this test is complete, it switches automatically to phase measurement mode.

In phase: when the phase shift angle is < (lower than) $\pm 20^\circ$ the correct phase relationship is indicated.

- Indication: constant red and permanent tone.

Out of phase: when the phase shift angle is > (over) $\pm 20^\circ$ the incorrect phase relationship is indicated.

- Indication: 1 short beep and 4 lights flashing once.

The Tag 5000 does not have an on/off button. Both the transmitter and receiver switch on automatically when they come into contact with a **Live** line. They both switch off automatically when contact is broken.

To indicate Phase Coincidence, the receiver sends a constant, intense light and sound signal.

To indicate Phase Difference, the receiver sends a weak light signal, demonstrating only that there is voltage on the line that it is touching.

Refer to the manufacturer's operating instructions for full operation of device.

12.3 Testing

The transmitter and receiver both have an integrated testing system, which tests all the components, including electrical components, batteries, wiring and antenna. This test corresponds to a **Live** line touch.

There is a TEST button on both the transmitter and the receiver, which, when pressed, indicates whether or not the device is functioning correctly.

12.3.1 Transmitter Test

Screw on the hook-shaped electrode to the end of the device.

Press the TEST button. Keep it pressed in.

All four LEDs should flash on and off simultaneously, and the beeper should beep on and off at the same time as this.

After a few seconds, this stops and only LED 1 remains on. Release the TEST button if you have not already done so by now.

If any part of this description does not happen, particularly a lack of sound signal or partial lighting, replace the battery.

12.3.2 Receiver Test

Screw on the Y-shaped electrode to the end of the device.

Press the TEST button. Keep it pressed in.

LED 1 should come on and stay on.

A short beep will be emitted, and LED 2, LED 3 and LED 4 will flash once in sync with this signal. Release the TEST button if you have not already done so by now.

If any part of this description does not happen, particularly a lack of sound signal or partial lighting, replace the battery.

12.3.3 Complete Auto-Test

Screw on the hook-shaped and Y-shaped electrodes to their respective modules.

Hold one of the modules in each hand.

Press and hold down the TEST button on the transmitter module, and wait for the beeping to stop so that only LED 1 is on.

Press the TEST button on the receiver module. LED 1 should stay on constantly, while LEDs 2, 3 and 4 flash on and off at a regular rate, at the same time as the buzzer.

Release the TEST button if you have not already done so by now.

12.4 Phasing Methodology

After checking the presence of voltage on every conductor involved, phasing operation can be started. The transmitter on the conductor switches to “phase transmission mode” after about 5 seconds.

All combinations of in phase and out of phase test shall be completed between conductors on both sides of the break. For example, first complete a positive check using the transmitter and receiver on the same side of the break before completing the test on opposite sides of the break.

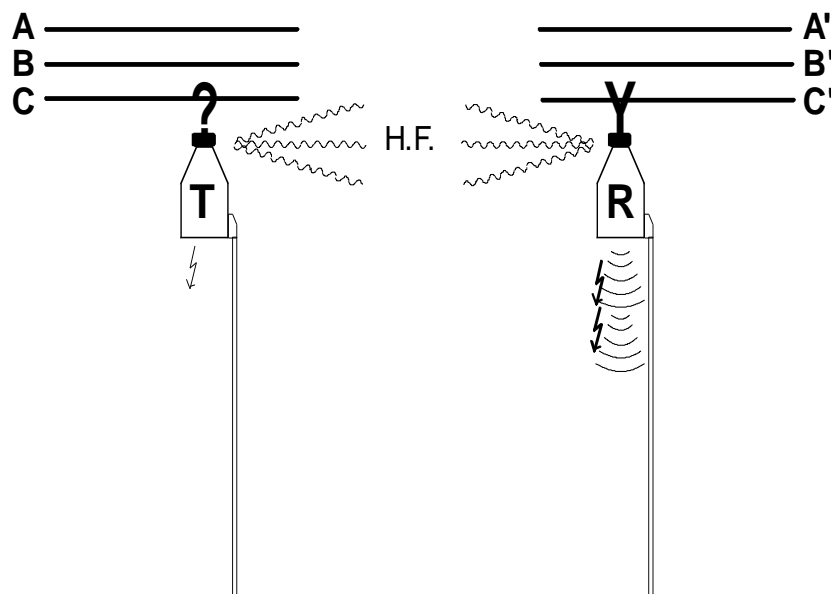
Indication: One constant red light (1 LED).

Then the receiver must be offered to the corresponding conductor. Upon contacting the **Live** conductor, the receiver switches automatically from standby to operating mode.

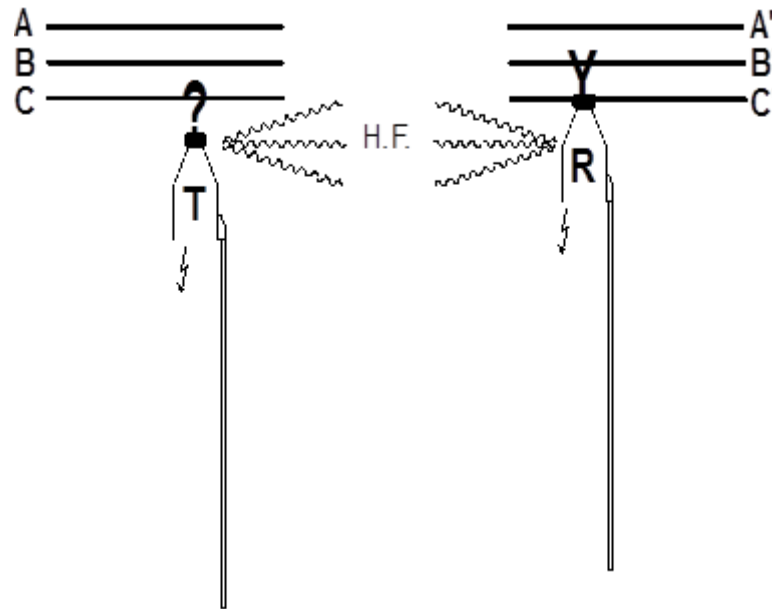
Indication: One constant red light (1 LED).

Depending on the phase angle measured, it indicates one of two possible situations:

1. In phase: when the phase shift angle difference is < (less than) $\pm 20^\circ$ the correct phase relationship is indicated.
 - Indication: constant 4 red lights (1+3 LEDs) and permanent tone.



2. Out of phase: when the phase shift angle is $>$ (greater than) $\pm 20^\circ$ the incorrect phase relationship is indicated.
 - Indication: 1 short beep and 4 lights flashing once then one constant red light (1 LED).



Note: When the voltage disappears from the tested conductor, the phasing indication disappears.

In this case you can check which unit stops. Indication: NO light.

When the receiver or transmitter is disconnected from the energised line or if voltage disappears on the conductor then the units automatically enter standby mode after a few seconds.