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# User Instructions: Remote Operating Device (ROD)

## 1. Introduction

The ROD kits are designed to be used to operate switch gear remotely. The intention is to isolate the operator from the switch gear thus reducing the likelihood of injury in the event that the switch gear fails catastrophically. It should in no way be considered justification for decreased maintenance frequency. It is purely a means of reducing the risks associated with switching. Simple risk reduction techniques dictate that it should be used wherever the device can be fitted to and used effectively to operate a switch.

The kits are supplied with handles that facilitate its use on high population switch gear types but this does no preclude its use on other types of switch gear. **These handles are not fitted with 3 second delay, break back facilities and therefore MUST NOT be used without the dedicated lanyard.**

The kits are specifically designed to operate the following types of switchgear but this does not preclude other switches from being operated using the ROD if the switch design allows. New designs can be accommodated by contacting Clydesdale:

Brush NSM ("A" version also available where automation has been fitted)
Brush "L" type
Lucy FRMU
YSE Tyke and Tyke IIA
YSE FMS
Reyrolle LMI/LDI
Switchgear and Cowans RA4/RAO4/RA6
Reyrolle "J" Range
Long and Crawford J, J2, J3, J4 and JX
Long and Crawford T3GF3

### 1. Kits available:

**CLY 217 EDF-EPN**

- Retractable Lanyard Assembly(CLY 217 EDF-001)
- Additional chain and running block for changing directional pull (CLY 217 EDF-002)
- Additional chain and carabineer (CLY 217 EDF-003)
- Brush NSM handle (CLY 217 EDF-005)
- Brush "L" handle (CLY 217 EDF-006)
- YSE FMS and Tyke "T" bar handle (CLY 217 EDF-007)
- Lucy FRMU handle (CLY 217 UKPN-008)
- Skyhook (CLY 217 EDF-011)
- Wrap around anti slip rope (CLY 217 EDF-012)
- Tubular extension handle to fit on solid handles (CLY 217 EDF-009)
- Canvas ROD kit Carry bag (CLY 421 005)

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**CLY 217 EDF-SPN**

- Retractable Lanyard Assembly (CLY 217 EDF-001)
- Additional chain and running block for changing directional pull (CLY 217 EDF-002)
- Additional chain and carabineer (CLY 217 EDF-003)
- Brush “L” handle (CLY 217 EDF-006)
- YSE FMS and Tyke “T” bar handle (CLY 217 EDF-007)
- Lucy FRMU handle (CLY 217 UKPN-008)
- Skyhook (CLY 217 EDF-011)
- Wrap around anti slip rope (CLY 217 EDF-012)
- Tubular extension handle to fit on solid handles (CLY 217 EDF-009)
- Canvas ROD kit Carry bag (CLY 421 005)

**CLY 217 EDF-LPN**

- Retractable Lanyard Assembly (CLY 217 EDF-001)
- Additional chain and running block for changing directional pull (CLY 217 EDF-002)
- Additional chain and carabineer (CLY 217 EDF-003)
- Skyhook (CLY 217 EDF-011)
- Wrap around anti slip rope (CLY 217 EDF-012)
- Tubular extension handle to fit on solid handles (CLY 217 EDF-009)
- Canvas ROD kit Carry bag (CLY 421 005)

**CLY 217 ROD-ENM**

- Retractable Lanyard Assembly (CLY 217 EDF-001)
- Additional chain and running block for changing directional pull (CLY 217 EDF-002)
- Additional chain and carabineer (CLY 217 EDF-003)
- Lucy FRMU handle (CLY 217 UKPN-008)
- Skyhook (CLY 217 EDF-011)
- Wrap around anti slip rope (CLY 217 EDF-012)
- Tubular extension handle to fit on solid handles (CLY 217 EDF-009)
- Canvas ROD kit Carry bag (CLY 421 005)

**CLY 217 SSE-001**

- Retractable Lanyard Assembly (CLY 217 EDF-001)
- Additional chain and running block for changing directional pull (CLY 217 EDF-002)
- Additional chain and carabineer (CLY 217 EDF-003)
- Lucy FRMU handle (CLY 217 UKPN-008)
- Statter Handle (CLY 217 EDF-010
- Skyhook (CLY 217 EDF-011)
- Wrap around anti slip rope (CLY 217 EDF-012)
- Tubular extension handle to fit on solid handles (CLY 217 EDF-009)
- Canvas Lanyard Kit Carry bag (CLY 421 009)

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# User Instructions: Remote Operating Device (ROD)

CLY 217 EDF-001

Lanyard fitted with karabiners, “D” shackles and pulleys (3.5mm kevlar rope)

CLY 217 EDF-002

Additional anchor point chain fitted with pulley and karabiner

CLY 217 EDF-003

Additional anchor point chain fitted with karabiner

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CLY 217 EDF-011

Skyhook, cabinet top anchor point

CLY 217 EDF-007

Yorkshire FMS and Tyke handle

CLY 217 EDF-005

Brush NSM handle

CLY 217 EDF-006

Brush “L” type handle

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CLY 217 UKPN-008

Lucy FRMU handle

CLY 217 EDF-012

Anti slip ropes

CLY 217 EDF-009

Handle tubular clamp

CLY 217 EDF-010

Statter handle

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# User Instructions: Remote Operating Device (ROD)


CLY 421 005

"ROD kit" bag


CLY 421 009

"Lanyard kit" bag

## 2. General Notes on Operation

**2.1** The ROD consists of 2 pulleys linked by a cord from a hand held extensible/retractable lanyard. Connected to each pulley is a karabiner of varying sizes. By attaching one karabiner to a special handle supplied in the ROD kit or, in certain circumstances, directly to the normal operating handle or via the wrap around anti slip rope and then securing the other karabiner to a suitable anchorage point, the lanyard can be pulled to operate the switch. The pulley with the larger clip should be connected to the operating handle whilst the smaller clip should be connected to the anchor point. A chain is supplied to help secure the unit to any selected anchorage point.

**2.2** Before the kits are used the components should be inspected for any defects. As the cord is run out, it should be checked for fraying. When the cord is retracted, it should be checked for excessive foreign matter which might prevent full retraction if present.

**2.3.** When setting up the kit it is important to make sure that the pulleys are a reasonable distance apart. The gap between the pulleys is reduced when operating and obviously a successful operation is dependant on there being enough travelling distance for the cord between the pulleys.

**2.4** The anchor point should be selected so that the force applied by the pulley on the handle is as straight as possible or allows a natural rotational operation to prevent damage to the mechanism. This does not mean however that the operator can not pull from an angle to the switch.

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**2.5** The cords between the pulleys should not be crossed. If the cords are crossed they may get tangled in the pulleys blocks and impede operation of the switch. It is acceptable for the cord to rub against the switch gear surfaces during operation. The cord is made from Kevlar based materials and is therefore resistant to wear and fraying.

**2.6** The additional pulley in the kit can be used to change the direction of pull during the operation, whilst keeping the pulleys in an acceptable plane for effective operation of the switch. Wherever possible the lanyard should be extended so that the operator is either outside the substation or has a physical barrier, such as a fence, wall, gate or door, between them and the switch being operated. In the event that the operator can not place themselves outside of the substation, they should consider the location of the exit routes when setting up the ROD. It is not desirable for the operator to pass across the switch gear being operated to exit the substation.

**2.7** On approaching the switch after operation the operator must also check the location of the position indicator and that the operating handle has latched correctly.

**2.8** The “skyhook” is supplied to provide an additional anchor point. The skyhook sits on top to the switch and hooks under the lip of the switch gear lid. The lanyard is then connected to the upper most point of the skyhook via one of the lanyard clips to provide an elevated anchor point. Its positioning should be such that it facilitates operation of the switch in the correct plane whether that is a simple upward motion or a rotational operation.

## 3. Operating Instructions for Types of Switch Gear

### 3.1 Brush NSM

**3.1.1** When operating an NSM in the upward direction (On to Off and Earth On to Earth Off) the anchor point should be around the test orifice lid. The chain attached to the pulleys on the lanyard should be wrapped around the orifice lid making sure that it is secure and wont slip during the operation. Alternatively the “skyhook” can be placed on top of the switch and hooked under the rear lip of the switch lid. The “skyhook” should be placed in line with the appropriate operating slot for that operation.

**3.1.2** When operating an NSM in the downward direction (Off to On and Earth Off to Earth On) a suitable anchor point is the switch frame at the bottom of the switch. Depending on the age of the switch, the handle may fall out of the operating slot when the operation is complete. This is because the slots vary in widths and the handle is produced to fit the smallest size slot.

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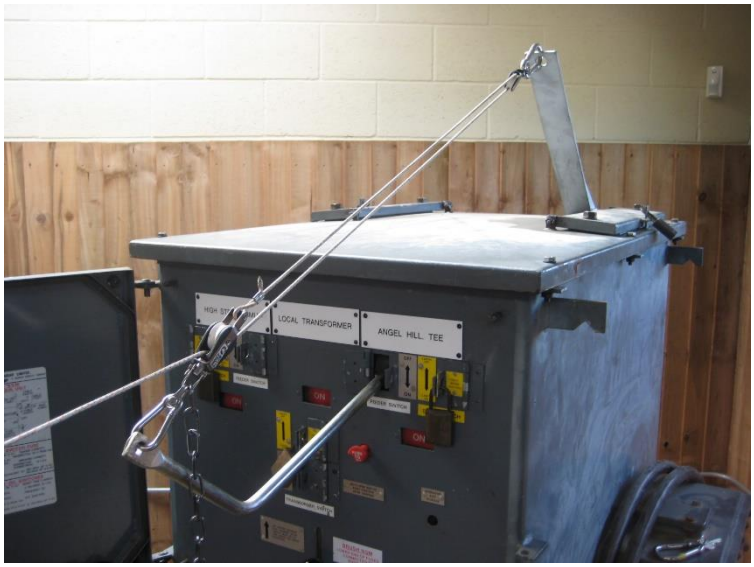


Brush NSM – On to Off

Brush NSM – Skyhook location

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Brush NSM – Off to On

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# User Instructions: Remote Operating Device (ROD)

**3.2 Brush "L"**

**3.2.1** There are a number of variations of the "L" switch on the network but the predominant types are OLU, OLE, HFNOLN, HFOLNF, ILSA1, ILSA", IL1 and IL2. These switches can also be fitted with 2 different strengths of mechanism, 250MVA or 350MVA mechs. The 350MVA mechanisms use stronger springs and therefore require more force to be applied when operating the switch. It is therefore important to ensure that the operating plane adopted when using the ROD is as straight as possible. This reduces any friction that may be introduced through operating the switch from an angle.

**3.2.2** The frame or cable box can be used for the downward operation (On to Off and Off to Cable Earth). The chain attached to the lanyard should be secured around the cable box.

**3.2.3** The "skyhook" can be used on most of the Brush "L" switches for the upwards operation (Cable Earth to Off and Off to On), however, on those switches where the "skyhook" can not be used, the test plug orifice should be used as the anchor point for the pulleys.

**3.2.4** The ROD can also be used for Off to On operations on Brush switch fuses.


Brush L Range – Off to On

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Brush L Range – On to Off

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Brush HFE switch fuse, Off to On

**3.3 Brush OJ11**

**3.3.1** The Brush "L" handle can be used in conjunction with these switches. Because the "L" handle provided with the kits is not threaded on the end, it will fall out of the operating slot at the end of the downward operation. For the downward operation (Off to On and Cable Earth to Off) the switch gear leg or cable box should be used as a suitable anchorage point.
**3.3.2** The upwards operation (On to Off and Off to Cable Earth) should use the test access cover for an anchorage point. The skyhook can also be used as an alternative to the test orifice.

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**3.4 YSE FMS**

**3.4.1** When operating an FMS switch in the downward direction (Main Off to Main On and Earth On to Earth Off) a good anchorage point is on the cable box plate with the use of an additional chain.

**3.4.2** With the upward operation (Main On to Main Off and Earth Off to Earth On) an anchor point can be achieved around the racking frame, if fitted, or the racking frame boss on the back of the gear using a length of chain. This is not the easiest of locations to establish an anchor point so in circumstances where the substation surroundings permit, other anchor points should be used (fence posts etc.). The objective when establishing an anchor point should always be to obtain a point which is in line with the operating plane of the switch.

YSE FMS Off to On

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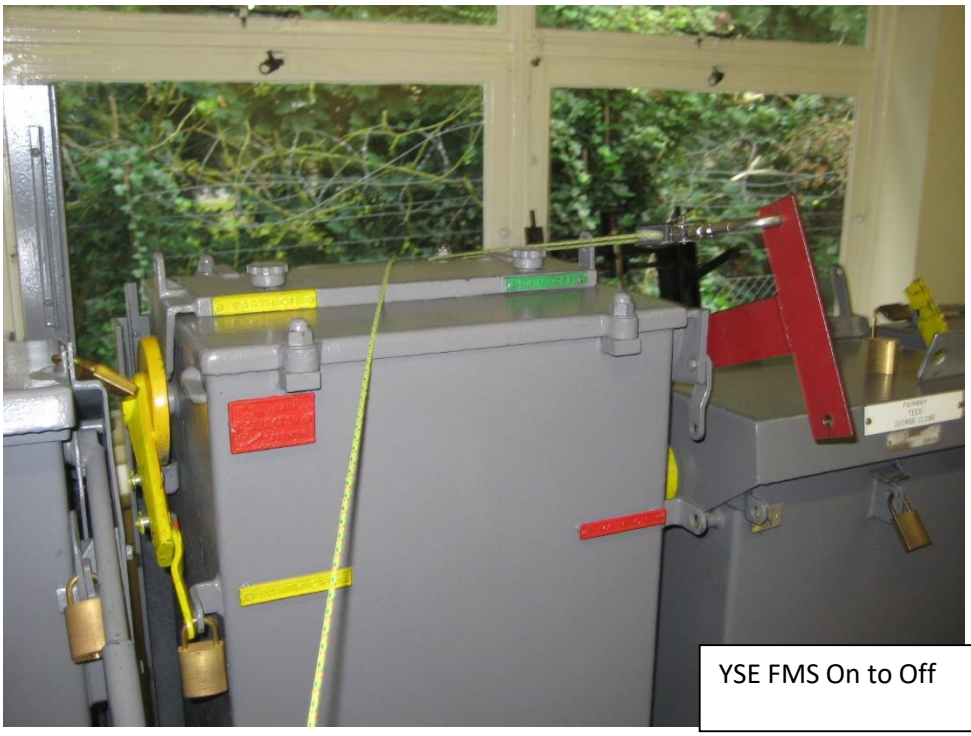

YSE FMS On to Off

YSE FMS Rear Anchor point

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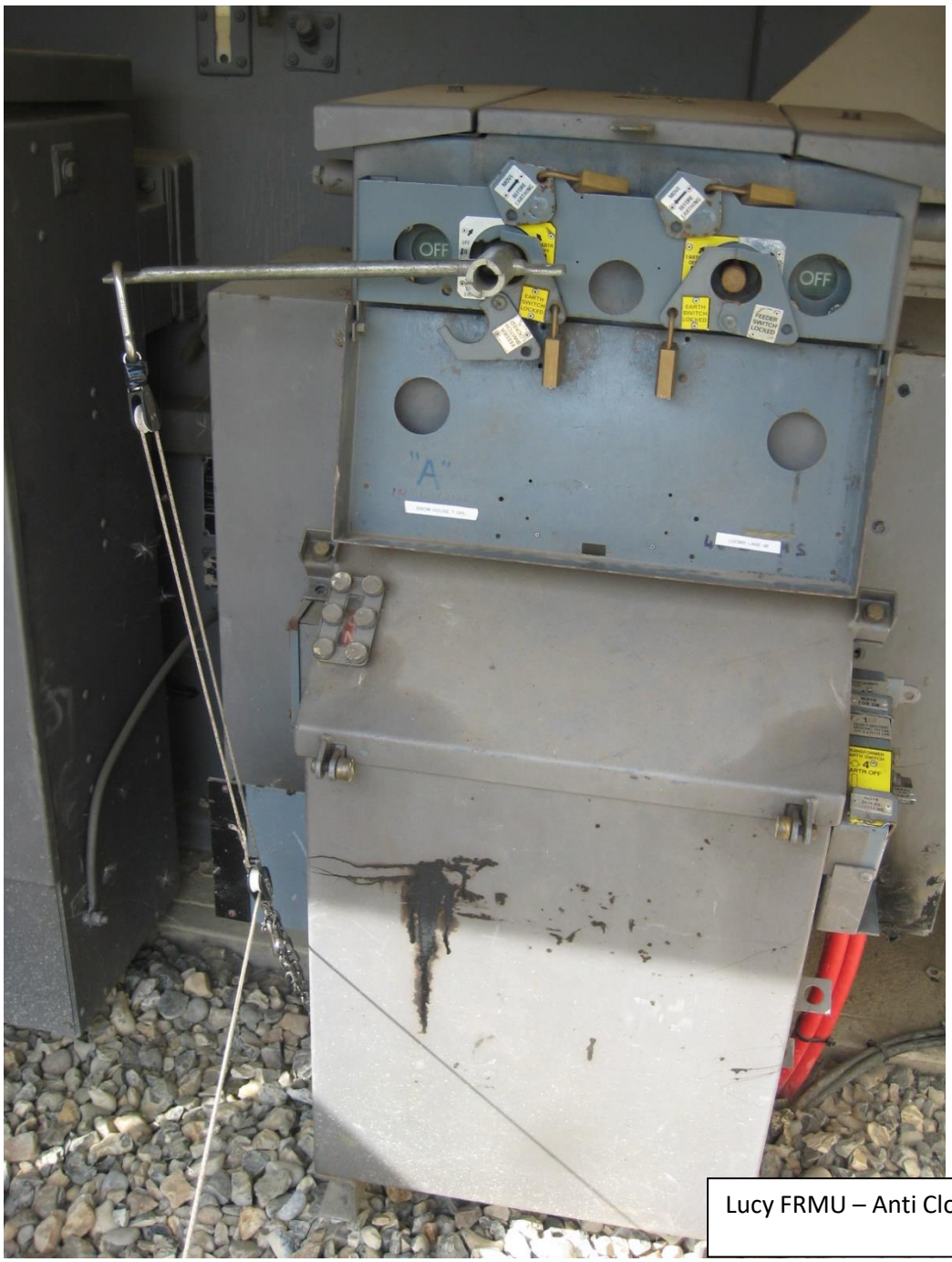
**3.5 Lucy FRMU**

**3.5.1** The Lucy FRMU has a rotary operating motion around a central operating shaft and all that changes is the direction of the operation, clockwise or anti clockwise. The handle supplied with the kit is specifically designed to always allow a downward rotary operation. The spigot on the handle shaft slides from end to end to cater for the different operating positions of the switch. This means that the anchor point will always be located at the base of the switch gear on the frame or legs.




Lucy FRMU – Anti Clockwise

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Lucy FRMU – Clockwise

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**3.6 YSE Tyke**

**3.6.1** In order to operate this piece of equipment the operator is required to fit the "T" bar operating handle supplied with the kit. The handle fits over the 2 spigots fitted to the operating shaft of the switch. For forward or downward operations (Off to On and Earth Off to Earth On) the lanyard is secured to the base of the cable box.

**3.6.2** For rearwards or upwards operations the lanyard can be anchored to the rear of the switchgear or a suitable anchor point such as a fence post at the rear of the switch gear.


YSE TYKE, Off to On

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# User Instructions: Remote Operating Device (ROD)


YSE TYKE, On to Off

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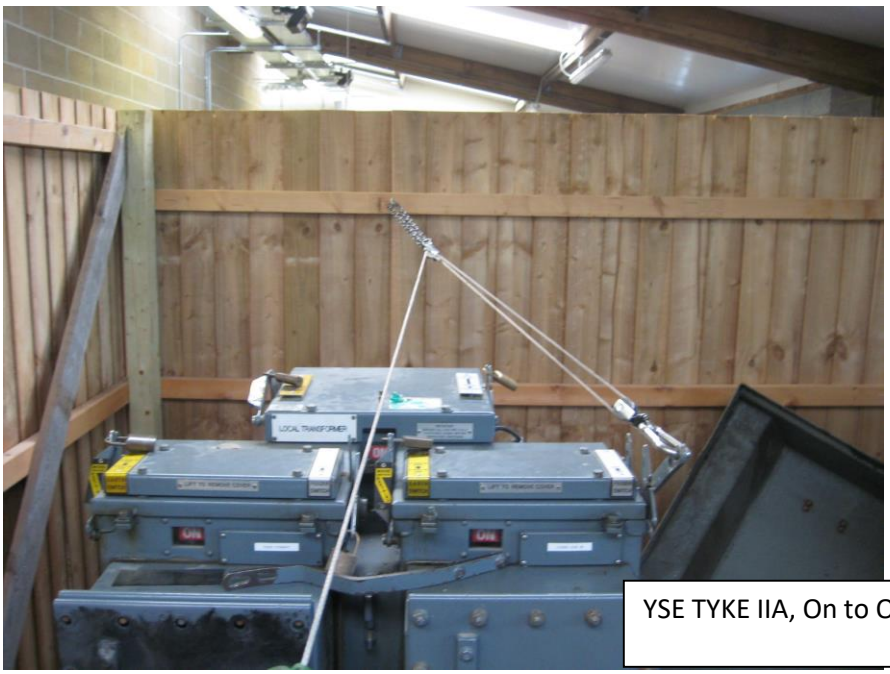
**3.7 YSE Tyke IIA**

**3.7.1** When using the ROD for operations on a Tyke IIA the normal operating handle supplied with the switch gear is used. For forward or downward operations (Off to On and Earth Off to Earth On) the lanyard can be secured to the base of the cable box, the standing platform or to a suitable anchor point in front of the switch gear such as a fence post. If the operation is a straight pull then no anchor point for the lanyard is required, the lanyard can simply be connected to the top of the operating handle.

**3.7.2** For rearwards or upwards operations (On to Off and Earth On to Earth Off) an anchor point at the rear of the switch gear needs to be established. This can be on a fence post or the switch fuse cable box

YSE TYKE IIA, Off to On



YSE TYKE IIA, On to Off

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**3.8 Reyrolle LMI/LDI**

**3.8.1** With this type of switch gear the normal operating handle is used. The lanyard is simply connected to the operating handle via the anti slip double eyed ropes supplied with the ROD kit. For downwards operations (clockwise and anticlockwise, On to Off and Earth On to Earth Off) a suitable anchor point can be established around the cable box below the switch being operated.

**3.8.2** For upwards operations (clockwise and anticlockwise, Off to On and Earth Off to Earth On) the lanyard can be anchored using the chain attached to the pulley block around the test orifice cover or by clipping the Karabiner attached to the pulley block to the front lip at the top of the switch gear.


Reyrolle LMI On to Off

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Reyrolle LMI Off to On

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**3.9 Switchgear and Cowans RA4**

**3.9.1** When operating RA4 switches using the ROD, the normal operating handle is used. The ROD is attached to the end of the handle via the chain and karabiner attached to the lanyard or by using the anti slip rope supplied with the ROD kit which is then attached to the karabiner.

**3.9.2** This switch requires a sideways motion to operate it so anchor points can easily be established either on the cable boxes, side of the switch or by using the lifting eyes situated at the rear of the gear. When operating these switches the operator will need to place the handle in the switching orifice and then press in the interlock button at the top of the mechanism to allow the handle to swing in to the “free” operation position. The operator can then retire to a suitable position to operate the switch using the ROD.


Switchgear and Cowans RA4 Anti Clockwise

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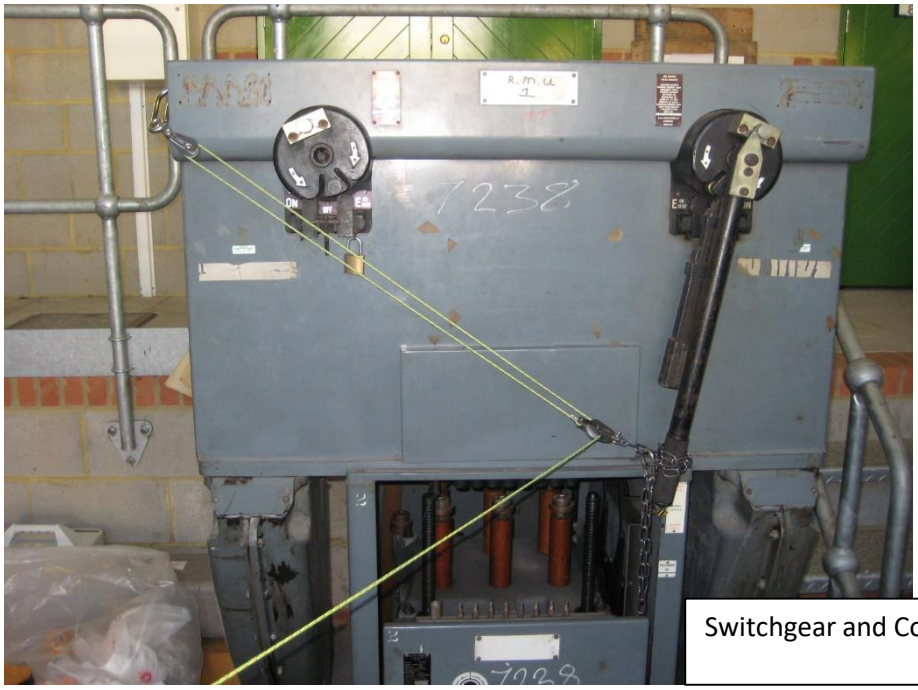
# User Instructions: Remote Operating Device (ROD)



Switchgear and Cowans RA4 Clockwise

**3.10 Reyrolle and Long & Crawford "J" Range**

**3.10.1** For upwards operations (On to Off) the Skyhook is fitted to the top of the switch. The skyhook simply sits on top of the switch and is hooked under the rear lip of the lid. The lanyard is attached to the normal operating handle via the chain and Karabiner or the anti slip rope supplied with the ROD kit. The other pulley on the lanyard is then connected to the sky hook. The lanyard can then be extended so that the operator is at a safe distance before the switch is operated.


Reyrolle "J" Range – On to Off

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# User Instructions: Remote Operating Device (ROD)

Reyrolle "J" Range – Skyhook

**3.10.2** The downward operation (Off to On) can be carried out by establishing an anchor point around the switch support structure or cable box at the bottom of the switch gear.

Reyrolle "J" Range – Off to On

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Long and Crawford J Range – On to Off

Long and Crawford J Range – Skyhook

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Long and Crawford J Range – Off to On

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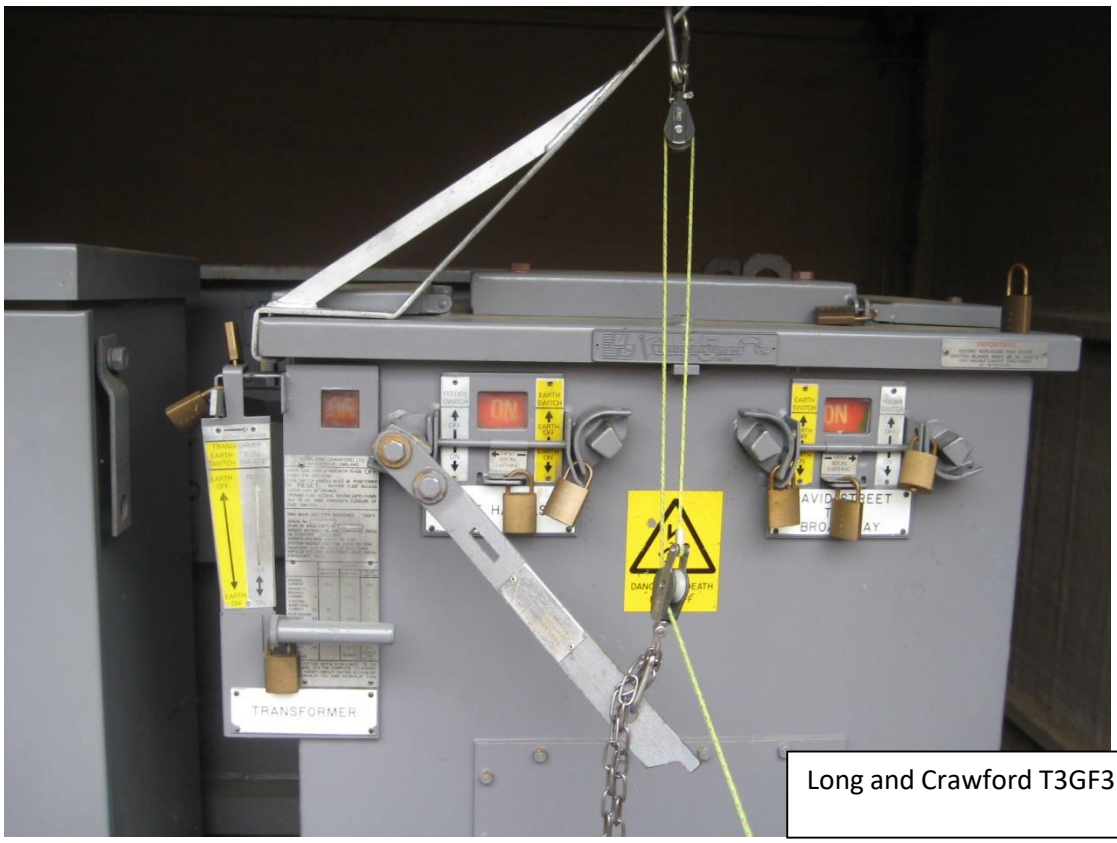
**3.11 Long and Crawford T3GF3**

**3.11.1** These switches operate in a rotary motion around a spigot. When using the ROD the normal operating handle supplied with the switch is used in conjunction with the skyhook supplied in the ROD kit.

**3.11.2** For On to Off operations (anticlockwise in attached photo) the skyhook provides the anchor point for the lanyard pulley. The skyhook is placed on top of the switch and hooked under the lip of the switchgear lid. The lanyard is then connected to the top of the skyhook and to the end of the operating handle. The operating handle has a hole in the end of the handle which allows a karabiner to be connected to it. When operating this switch the skyhook will rotate slightly but the size of the lip on the skyhook prevents the skyhook from slipping out from under the switch lid. If the operator is not comfortable with the skyhook slipping, it can be relocated to the rear of the switch where the forces applied to the skyhook do not cause it to move.

**3.11.3** For downward (clockwise and anticlockwise), anchor points can be established around the standing plate or support structure of the switch gear.




Long and Crawford T3GF3 – On to Off

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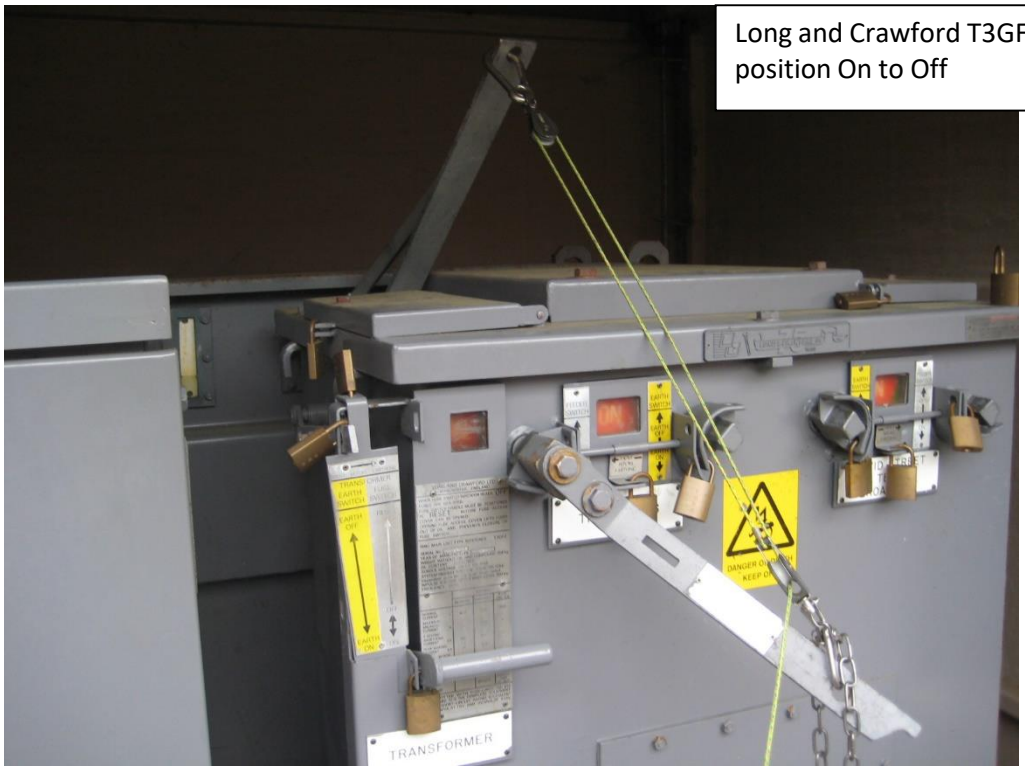
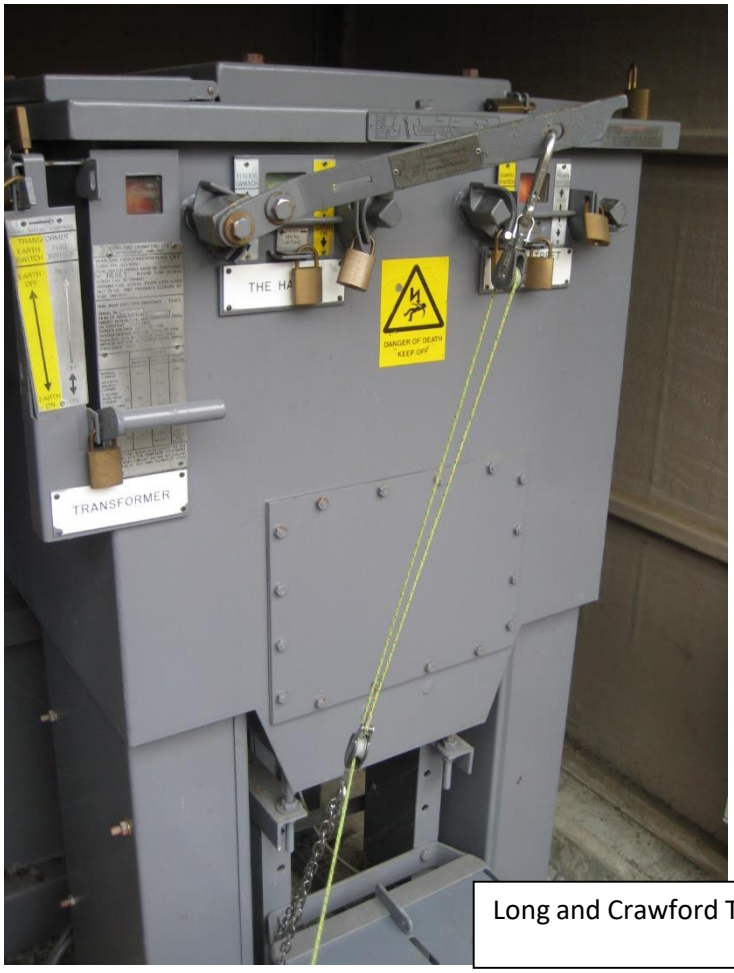
# User Instructions: Remote Operating Device (ROD)




Long and Crawford T3GF3 – Alternative position On to Off




Long and Crawford T3GF3 – Off to On

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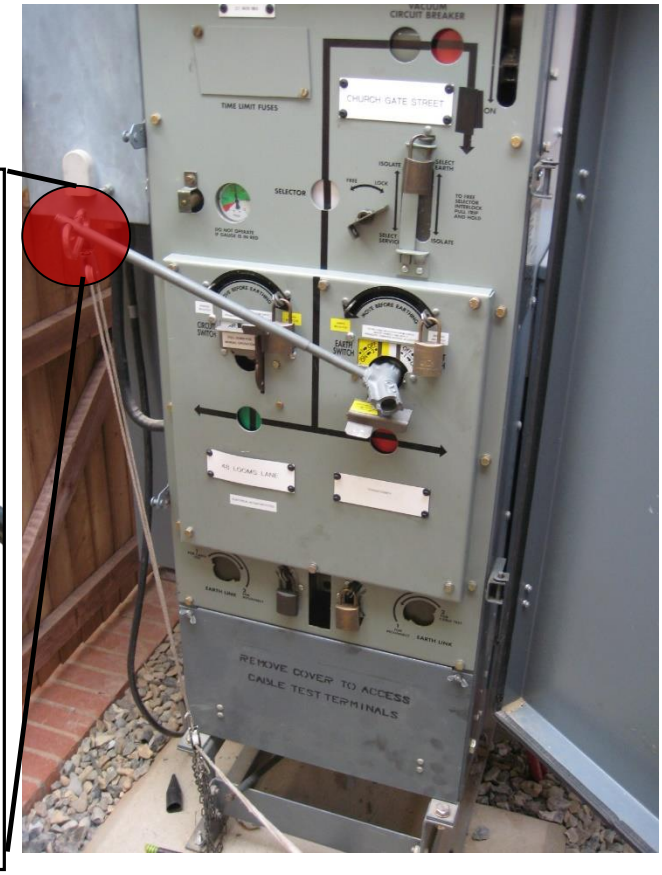
# User Instructions: Remote Operating Device (ROD)

**3.12 SF6 and other alternative switch gear**

**3.12.1** Although not specifically designed for SF6 switchgear, the ROD can be used on most types of switchgear if the operator desires. The ROD kit is supplied with a handle clamp to allow the lanyard to be connected to solid round bar and tubular handles



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