



# Mitigating Meter Tampering practices

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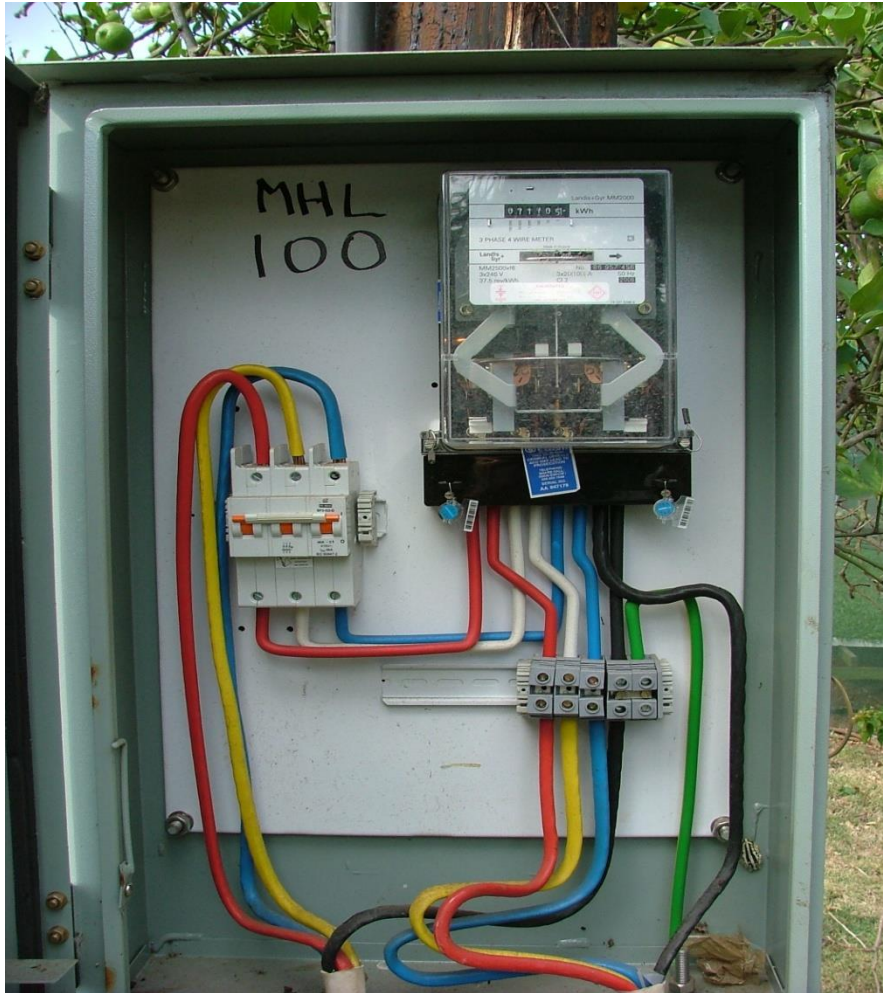
## The Business must understand the purpose and importance of the measurement device (meter)

- ✓ Revenue Is the foundation of any business
- ✓ The measurement device (meter) records the consumption of the consumer
- ✓ Revenue Assurance is fundamental for success

Industry Losses = ?

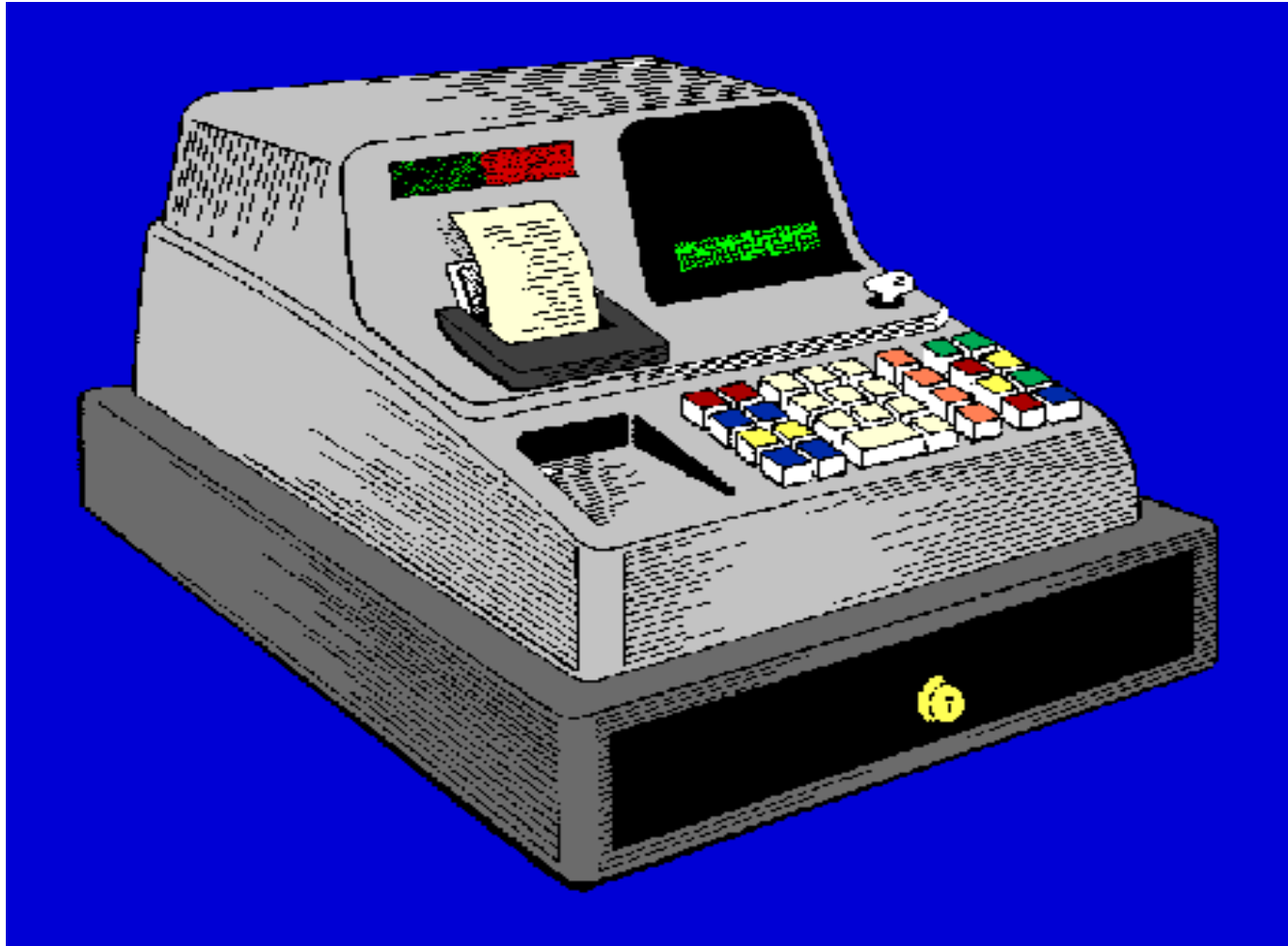


# What is this?



A meter?

NO ! It is a cash register!





# The TILLS are open!!



Non-Technical losses – Industry estimate =  
>R16- R20 billion p.a.

## Billed

- Completeness
- Accuracy of Billing
- Severance Process
- Security
- Revenue/ Cr management
- Debt Management

## Unbilled

- Non-technical losses
- Feeder Balancing
- Risk based audits
- Blanket audits
- Analytical tools
- Decisive action

# How much are we losing?

- Do we undertake energy feeder balancing – What does this mean?
- Do we effectively measure where our leakage occurs?
- Can we quantify the loss?
  - Pot of Gold (we need the flags)
- Are our strategies effective?
- DO we identify risks and mitigate against them?
- Do we track and manage anomalies to resolution?
- Do we use latest technology to our benefit?
- Is our Revenue Assurance effective?

- **The actions we take and the controls/ processes that we implement to ensure protection and sustainability of Revenue stream – across all boundaries.**
  - Risks exist on each part of the Revenue cycle
  - Effective Revenue Assurance and management of risks will provide will always provide positive returns which could even be >500% on Cost.
- **Why do we need it?**
  - Revenue is the foundation of the business
  - High volume of low value transactions
  - Multiple complex Revenue streams
  - Access to and understanding of billing data
  - Changes in systems and people
  - Unexplained margin of revenue erosion
  - Process fragmentation – multiple players in different spaces



# Importance of Revenue Assurance/ Protection/ Recovery

## **The Business must understand the purpose and importance of the measurement device (meter)**

- ✔ Revenue is the foundation of any business
- ✔ The measurement device (meter) records the consumption of the consumer
- ✔ Focus must be on reducing losses and maintaining low levels of loss and ensuring effective credit management to timeously recover energy billed
- ✔ Timeous complete action to recover lost revenue, and implement material corrective measures (incl. fees) is critical for sustainability
- ✔ Revenue Assurance is fundamental for success



- **It is not working!**
- Then by definition we have lost revenue
  - 1 day
  - 1 week
  - 1 month
  - 1 year .....

- **There must be a CAUSE/ Reason**
- **The customer must be legally liable either**
  - contractually – Agreement, or
  - based on common law - unjust enrichment (used power but not paid for it)
- Meter non-function (tamper or failure) will be liable for calculation and recovery of lost revenue
- Calculation of lost revenue must be based on standardised process
- Charges must be raised to the customer's account (billed)
- Application of prescription and associated risks must be taken into consideration.
- Once-off settlement process can be applied and approved by management for errors.
- Treatment of all customers must be on a fair and consistent basis
- A meter error may in actual fact be a tamper

- **Consistent application dependant on nature of non-function**
- **Standard processes for calculation**
- **Templates SPU**
- **LPU – data correction and rebill**
- **Customer interaction critical – know the facts**
- **Customer liability**
- **Application of prescription for errors**
- **Negotiated settlements**
- **Timeous billing and action**

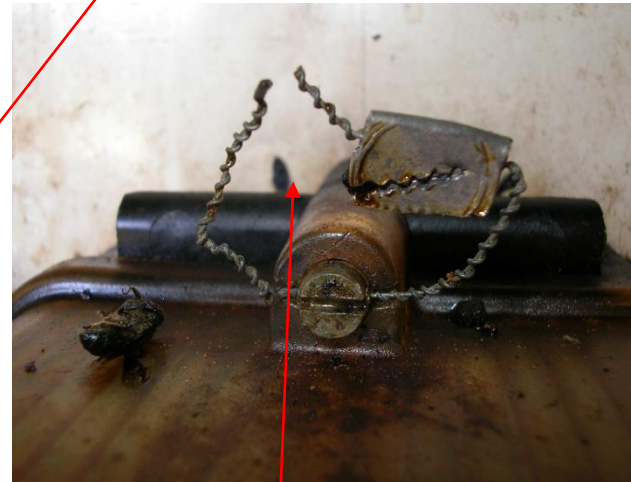


- Effective Management
- Continuous evaluation and improvement to reduce risk
- Hold staff accountable for their actions
- Timeous identification and actioning of meter non-function
- Consequence of action for customer
  - Criminal action
  - Recovery
  - Remedial charge
- Ongoing DATA Analytics
- Technology enhancements

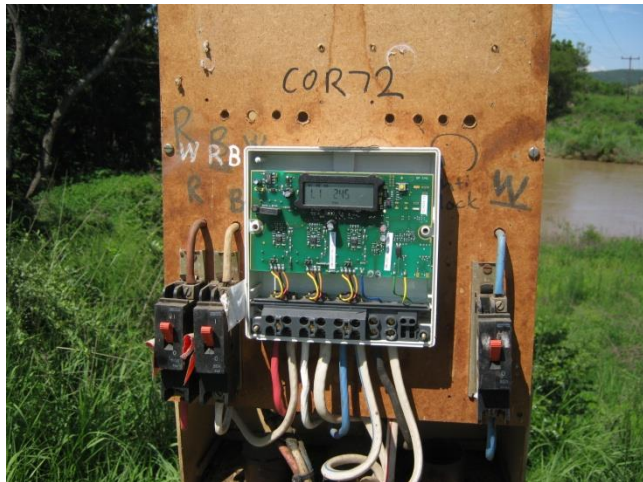
# Meter tampering - Meter seals are a key indicator of a problem

- Non standard seals
  - PMT/ KCM ....
- No seals on a meter
- Meter seals come adrift when pulled (not secure)
- Thinner gauge sealing wire
- Dust – Meter cover full of dust but seals shiny and new
- Often seals are opened and re-crimped
- Risk from within
- In some instances tamper is not successful
- New seals to minimise risk

# Inspect the meter seals



# Meter seals

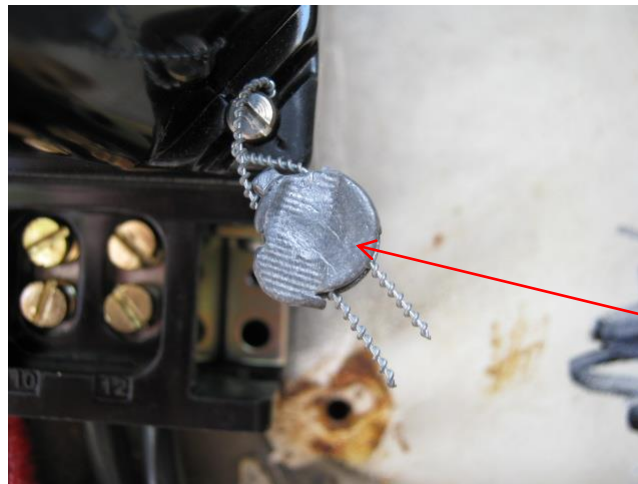




# Meter seals

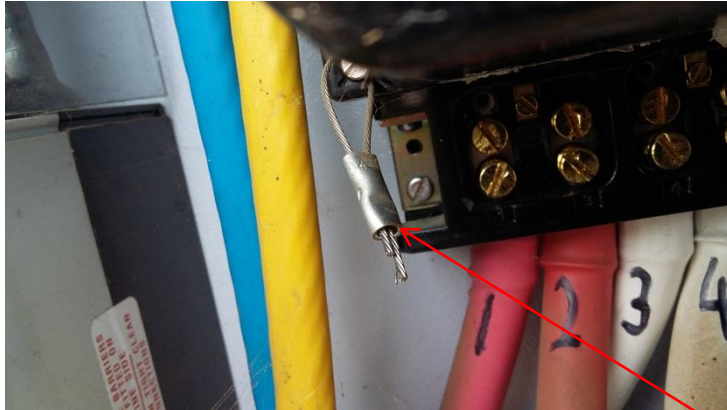


Manufacturer  
seal filed  
away



Seal  
recrimped  
with pliers

# Meter seals cont.

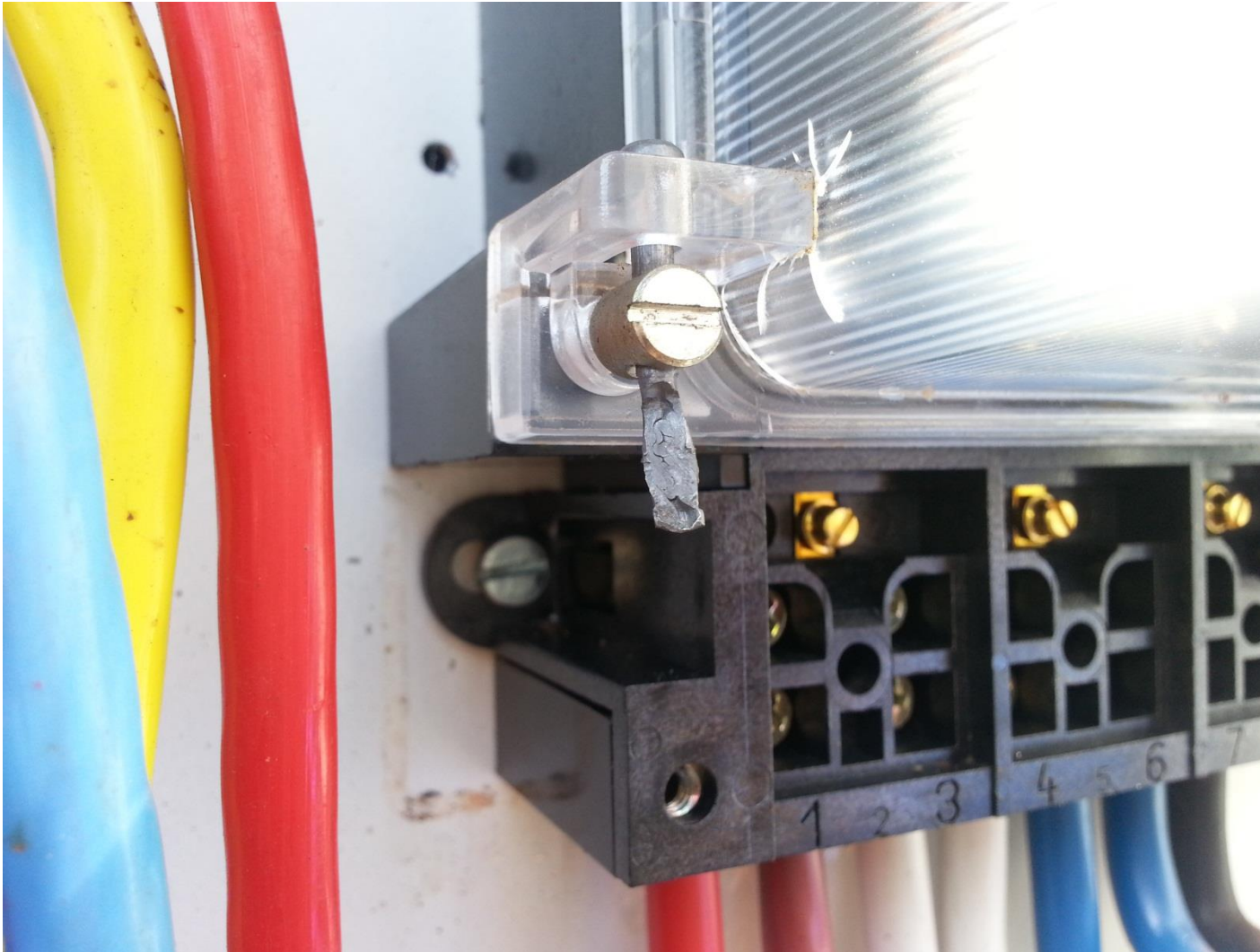


Illegal seals



Paper seals cut

# Tampered seals





# Tampered seals



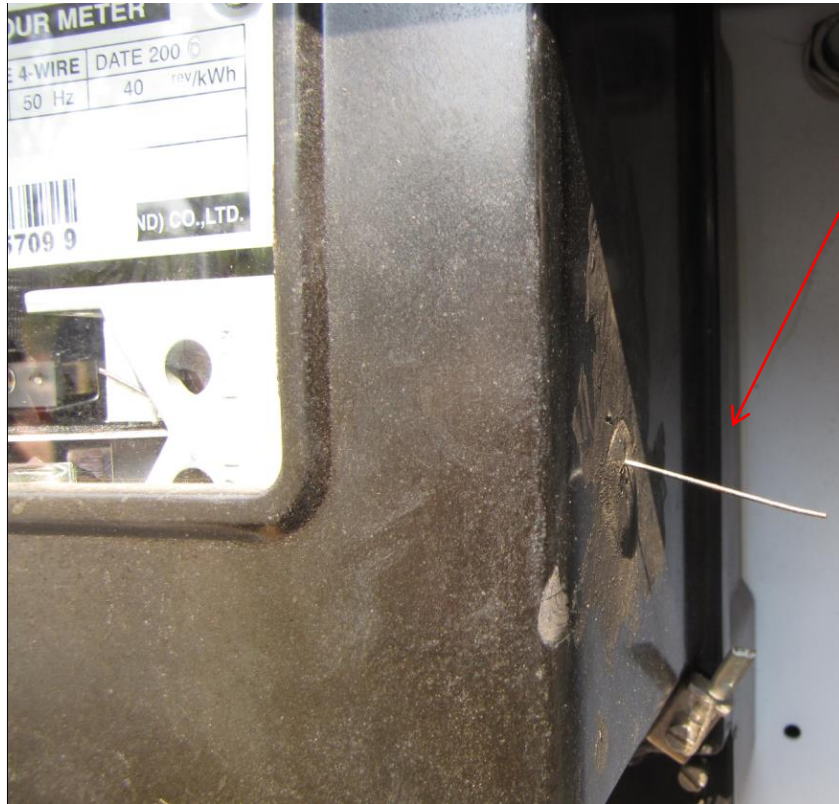


- Meters are tampered and manipulated in a number of different ways
  - >130 different modus operandi
- It increases business risk to document and communicate these in any great detail
- It is more important to teach on how to
  - Identify
  - Correct
  - Recover Revenue
  - Manage going forward

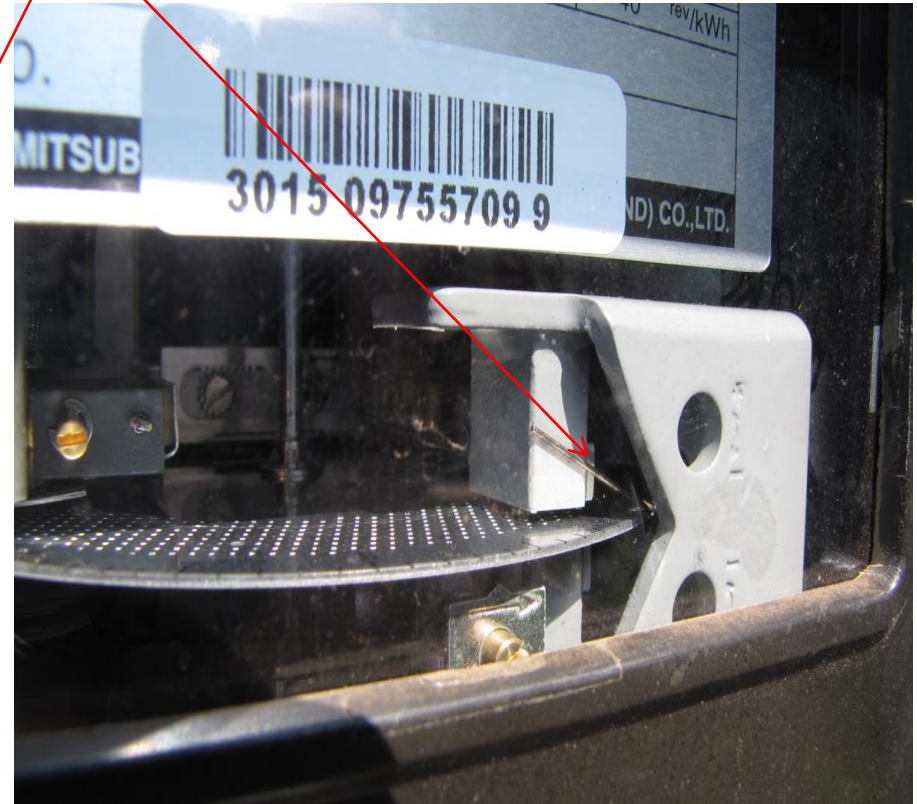
- Obtain information relating to tamper (photo's, test results, reports etc.)
- Decide if risk of multiple accounts – (No continue; Yes – wait)
- Conduct a review of linked accounts – search by
  - Linked accounts/ Phone numbers/ Id numbers etc..
- Data/ account analysis will enable risk assessment these linked accounts
- Perform Audits on risk accounts
- Decide on internal vs Criminal
- Include problems in Revenue Recovery Process
- We need to preserve status of installations to review (no self fix)
- We want to deal with all installations of a customer at once

- There are certain signs that indicate that an installation has been tampered with:
  - The meter seals are broken.
  - No or non standard seals on cover.
  - The PT links have been opened.
  - The meter disk has been dropped/ lifted onto the magnets.
  - Marks on the upper or lower side of disk.
  - Physical damage to meter including drilling of holes on meter cover.
  - Scratch marks on the PT links accompanied by trend deviations.
  - Meter by-passed.
  - Line and load jumpers swopped around.
  - Connection direct off circuit breaker.
  - Secondary cable not metered
  - Crimping on insulation
  - Wires cut
  - Metering c/b switched off
  - CT polarity switched
  - Neutral disengaged.
  - Etc..

# Interference with disc

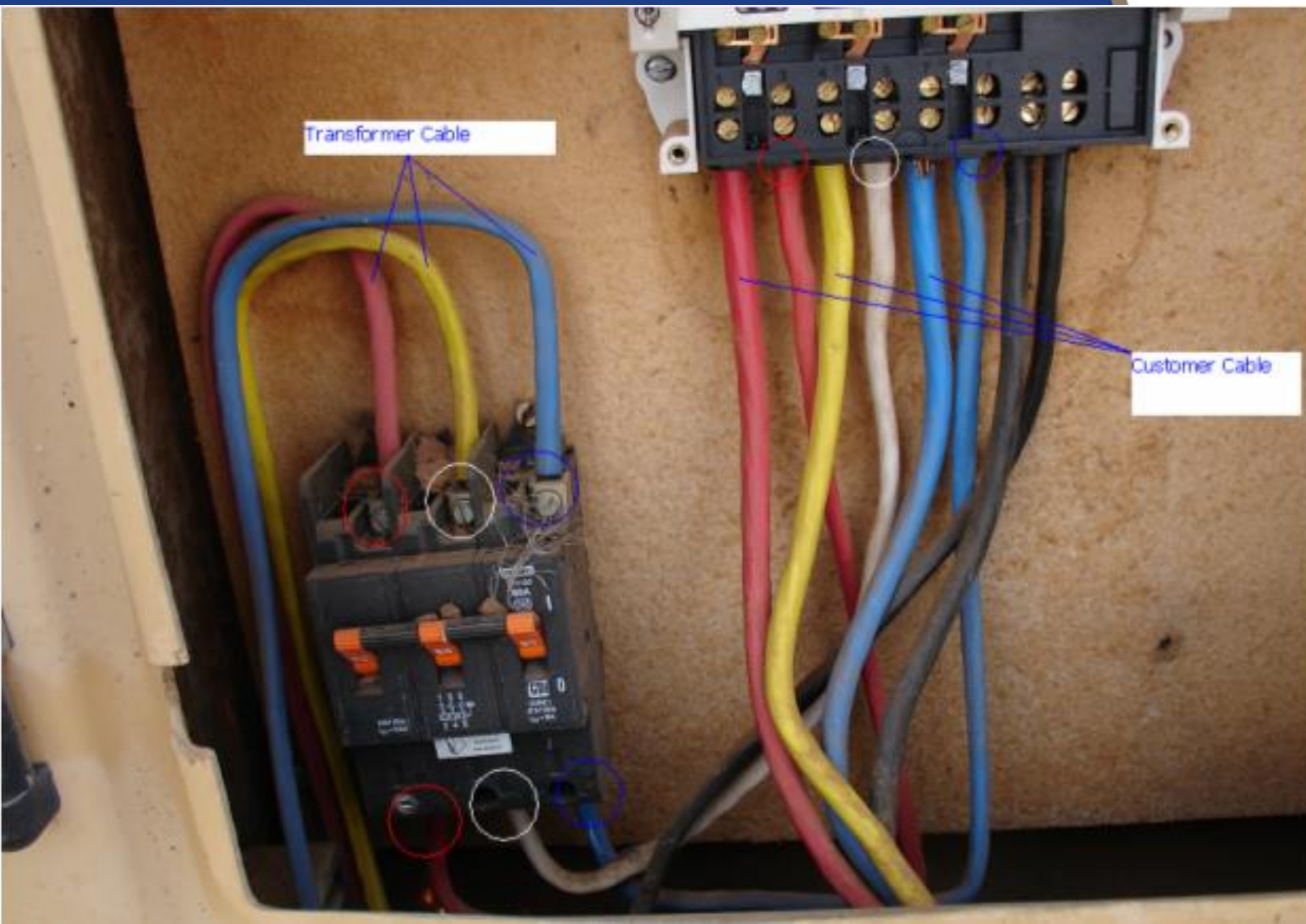


Wire impeding  
disc

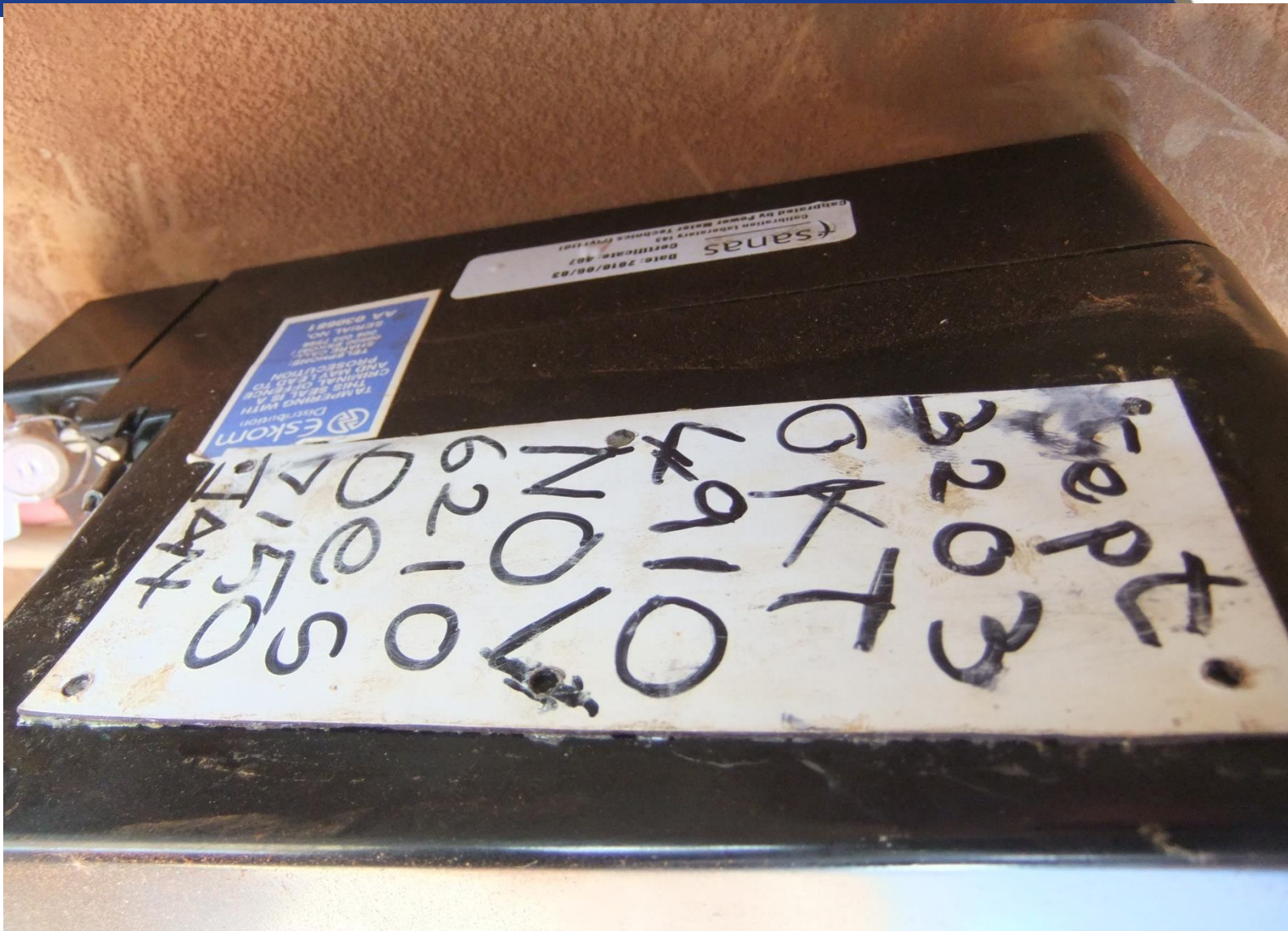




# Check cable configuration



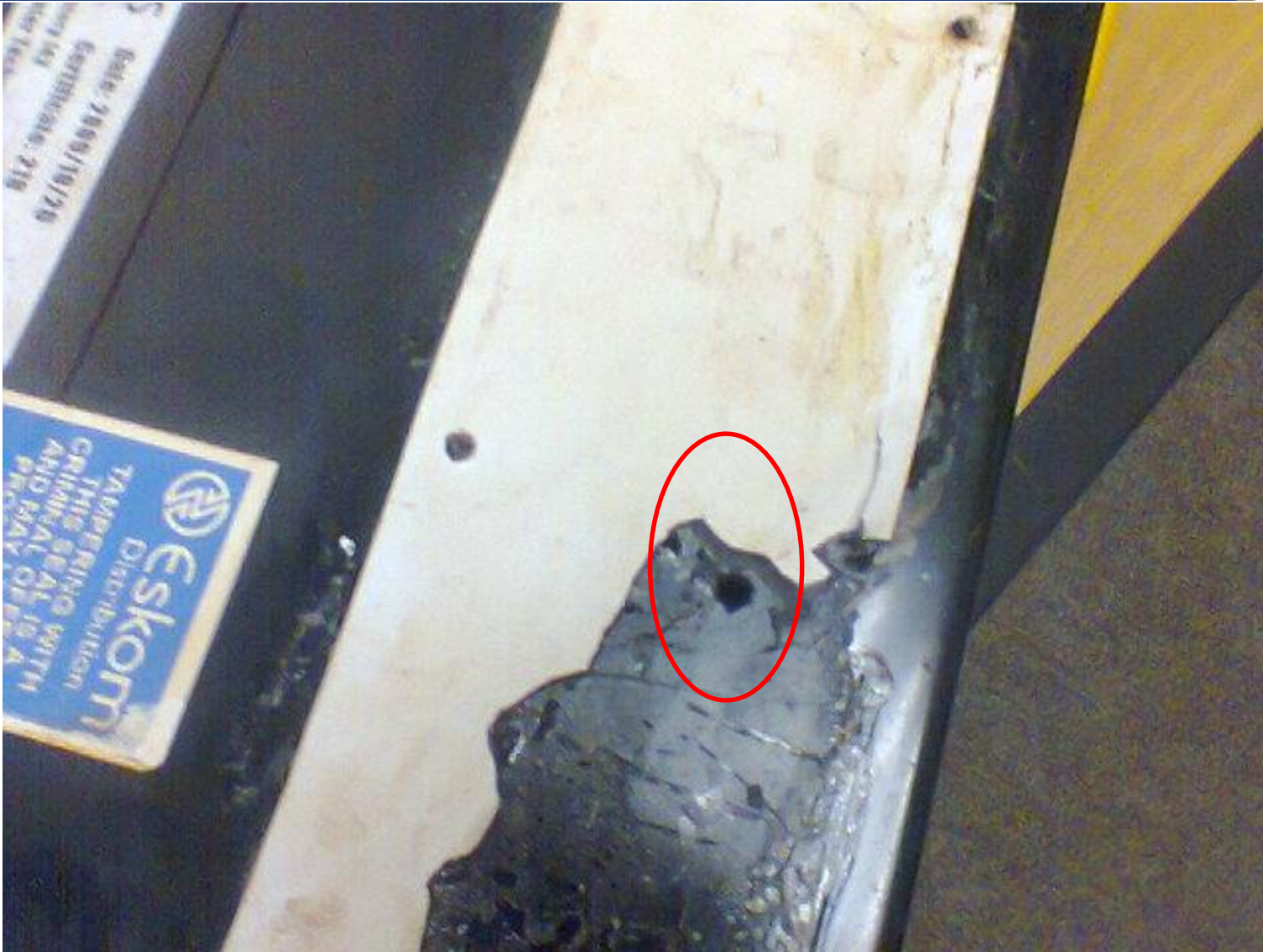
# Meter tamperers



Tamper disguise



# Meter tampers



Behind the covers



Tamper disguise



# Meter tampers



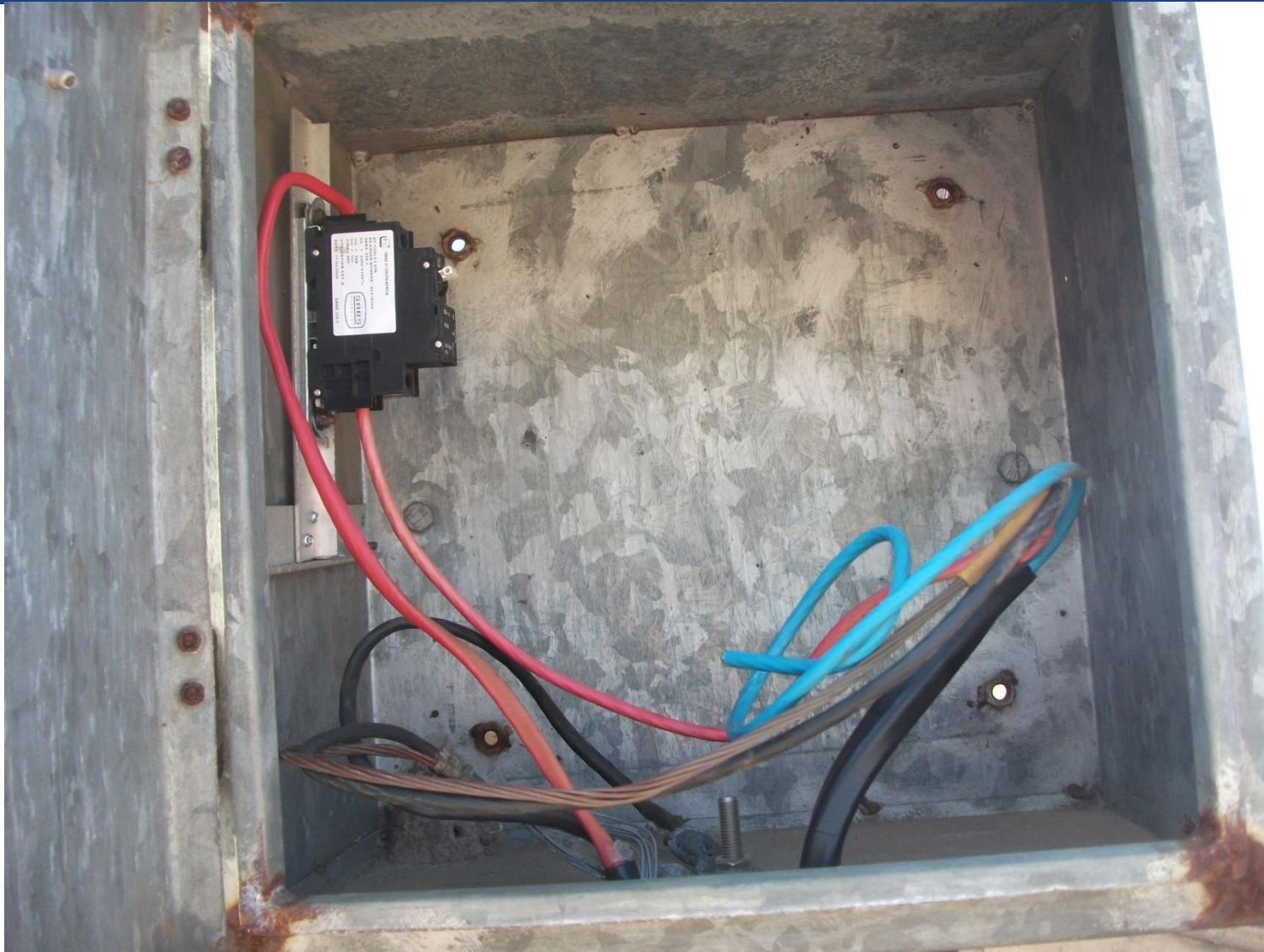
Holes drilled



Holes drilled



# Meter tamperers



No Meter

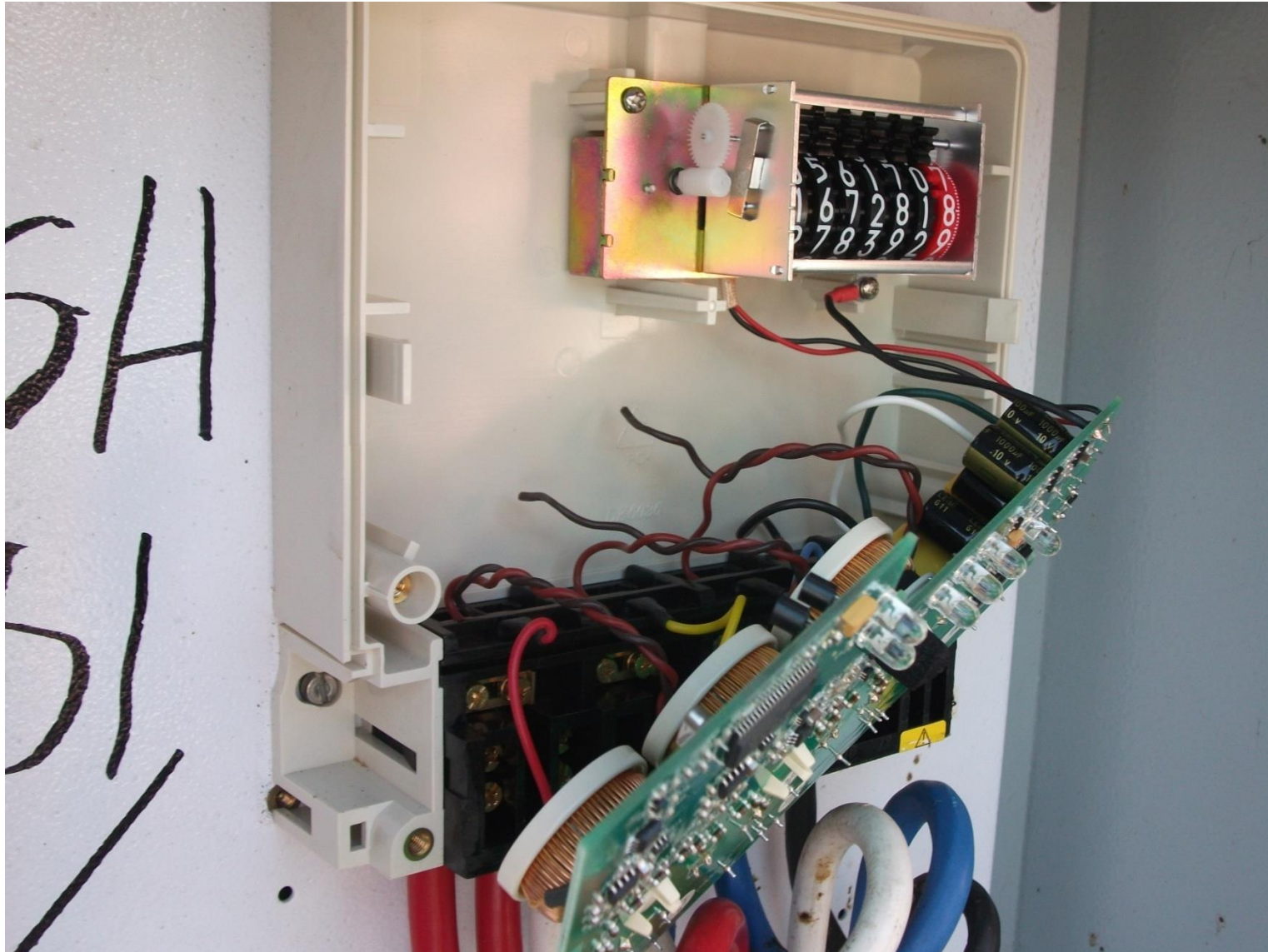
# Meter tamperers



Phase wires cut

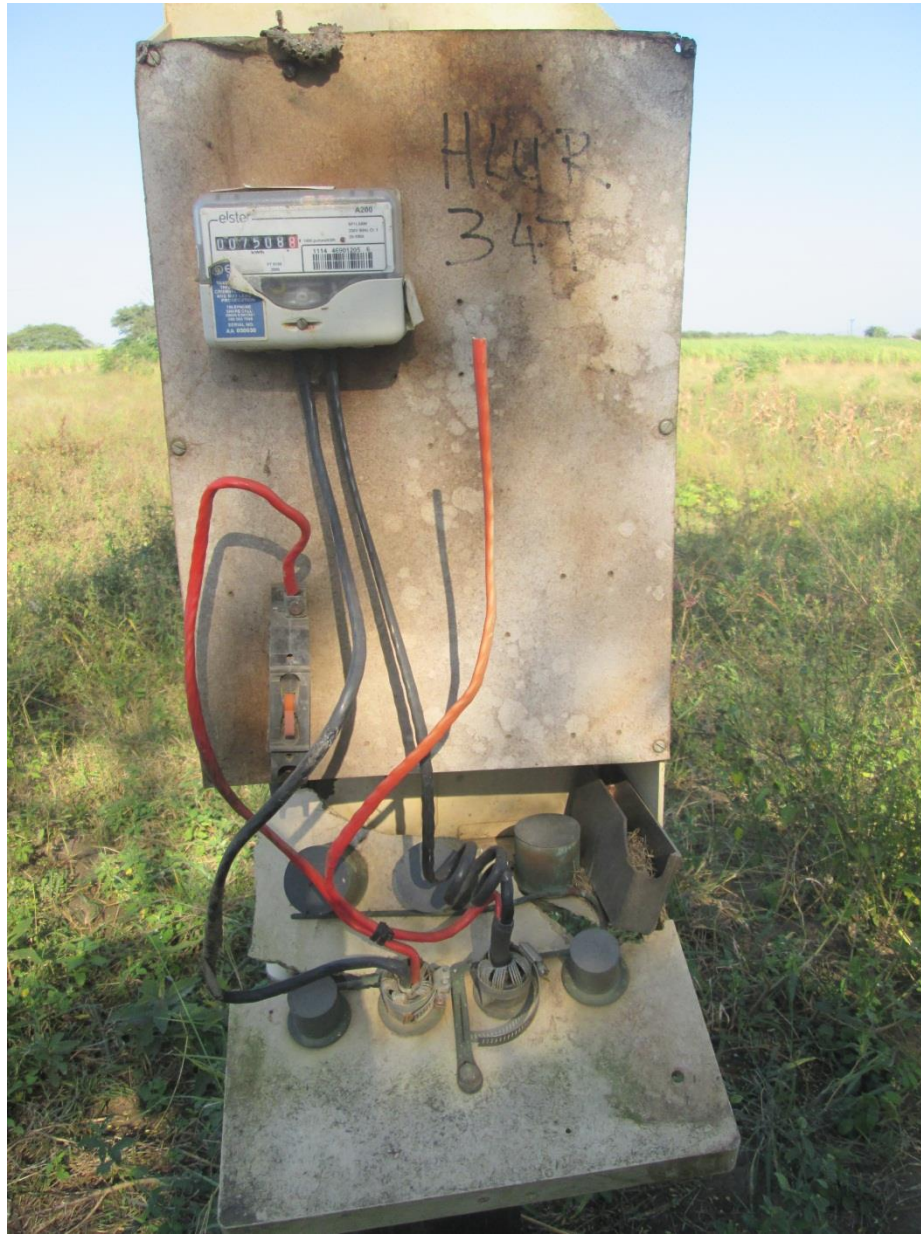


# Meter tamperers



Phase wires cut

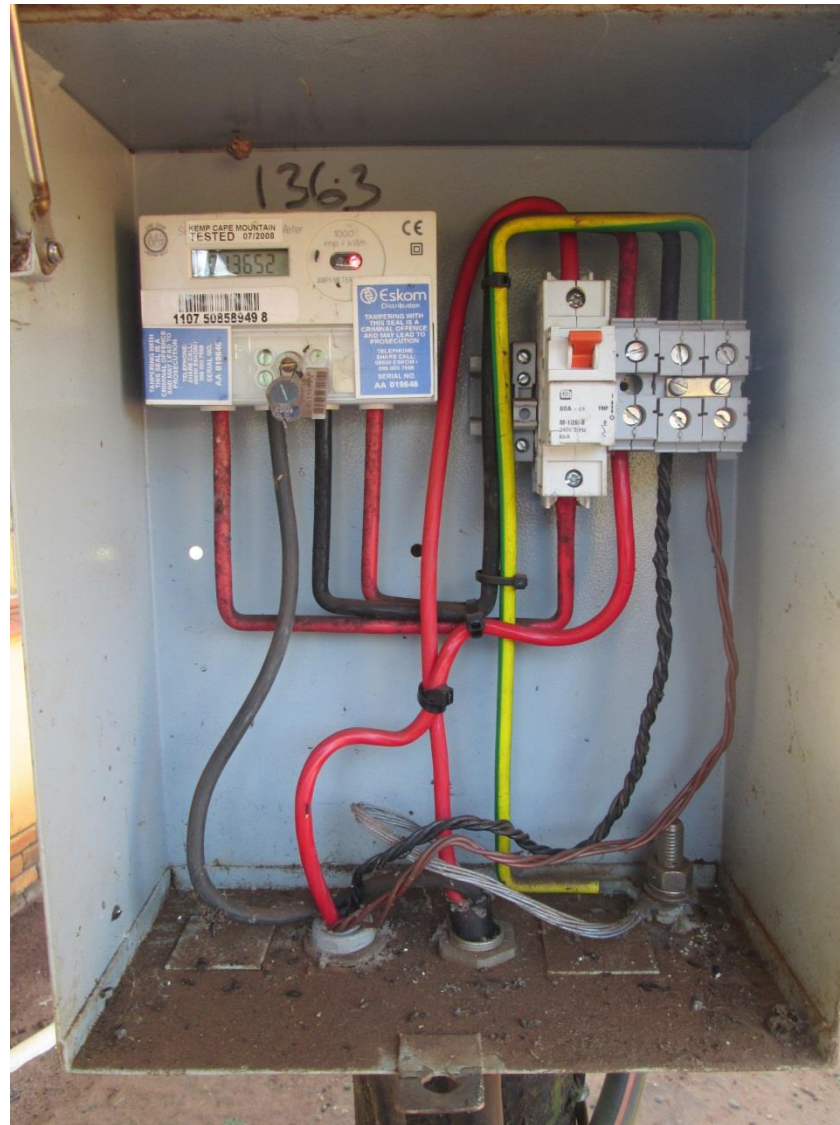
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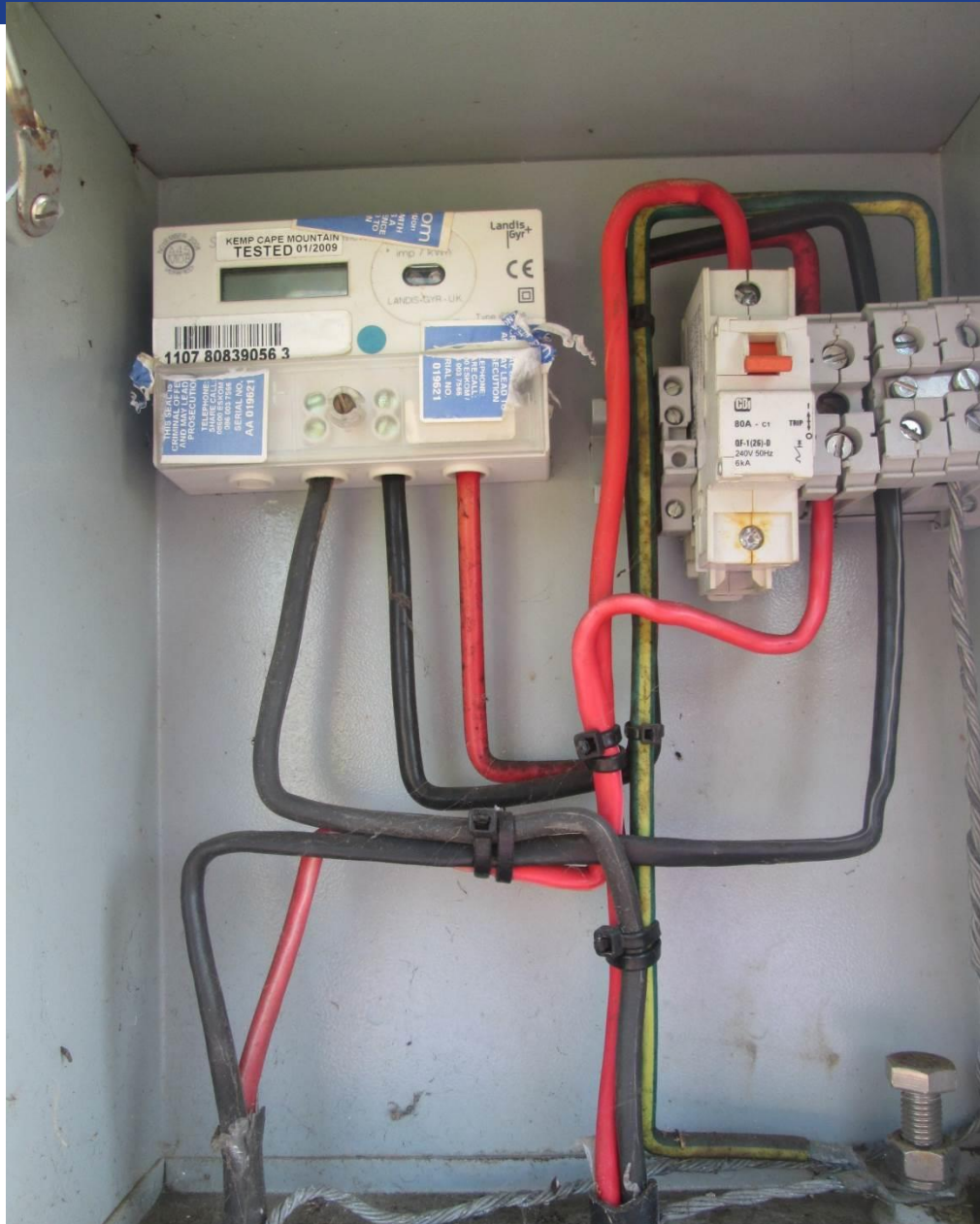




# Meter Tamperers



# Meter Tamperers











# Meter Tamperers



# Meter Tamperers



phases

two



# Meter Tamperers



06/08/2014 10:20

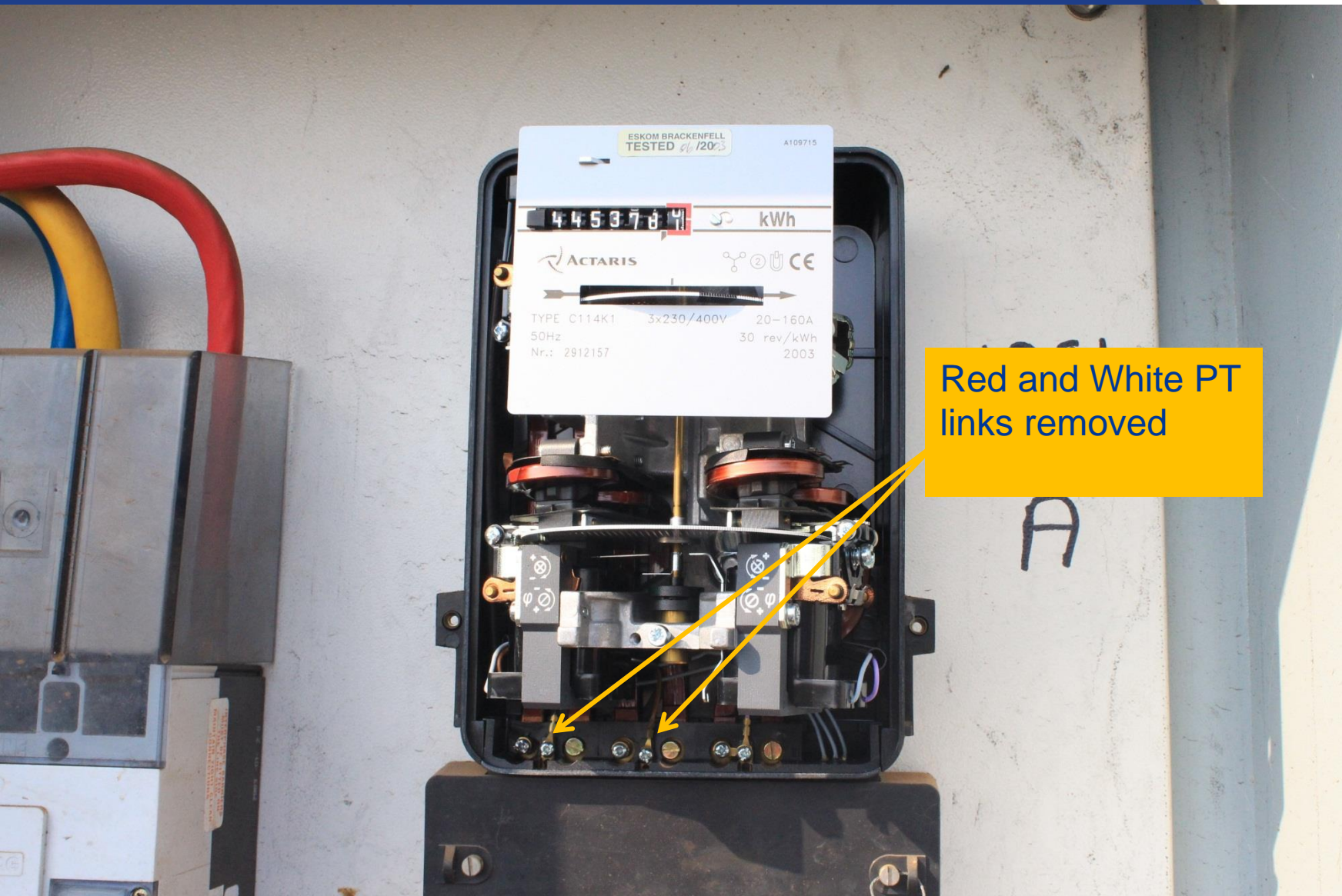
# Meter Tamperers



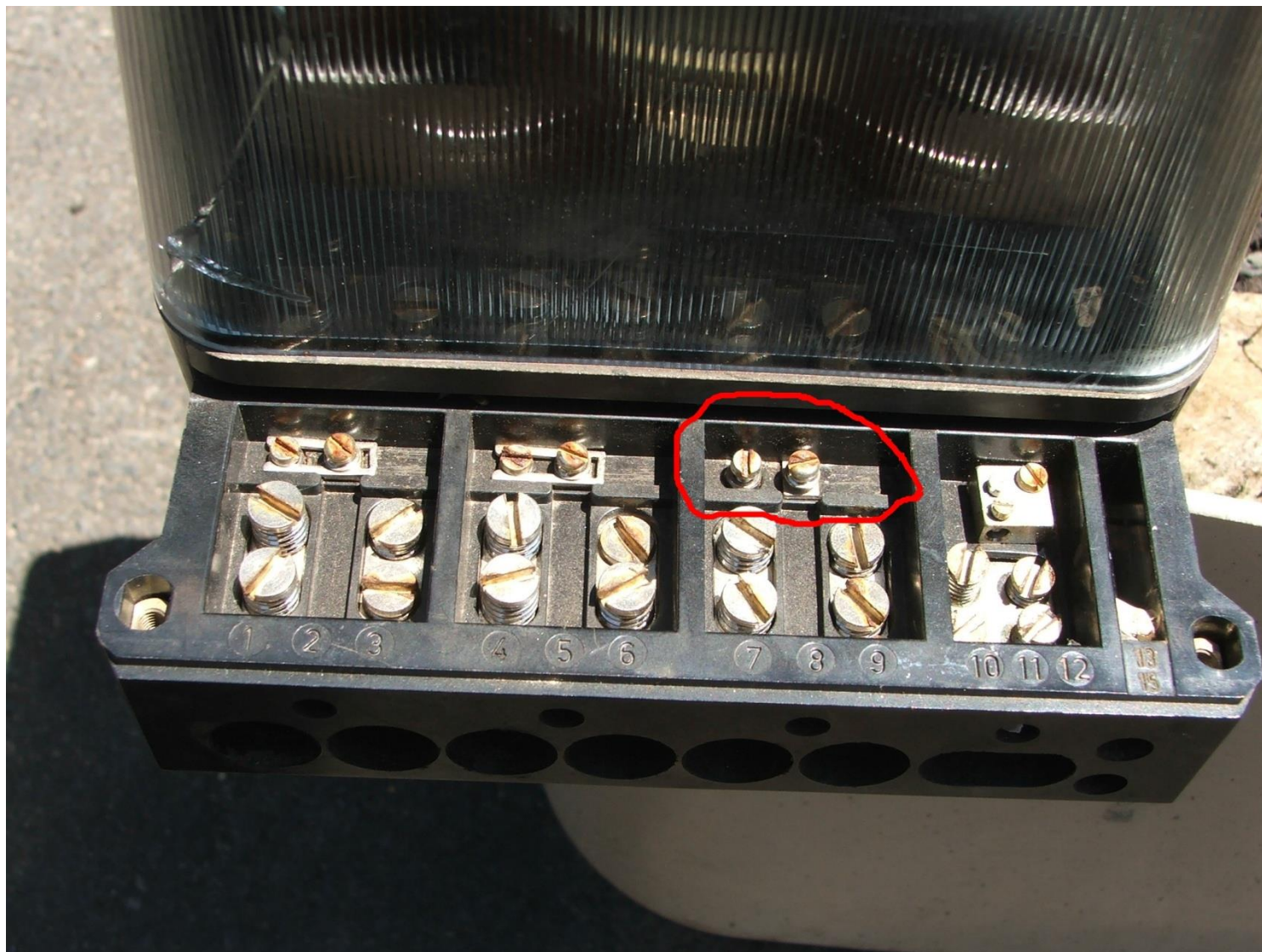
One PT  
phases



# Meter Tamperers



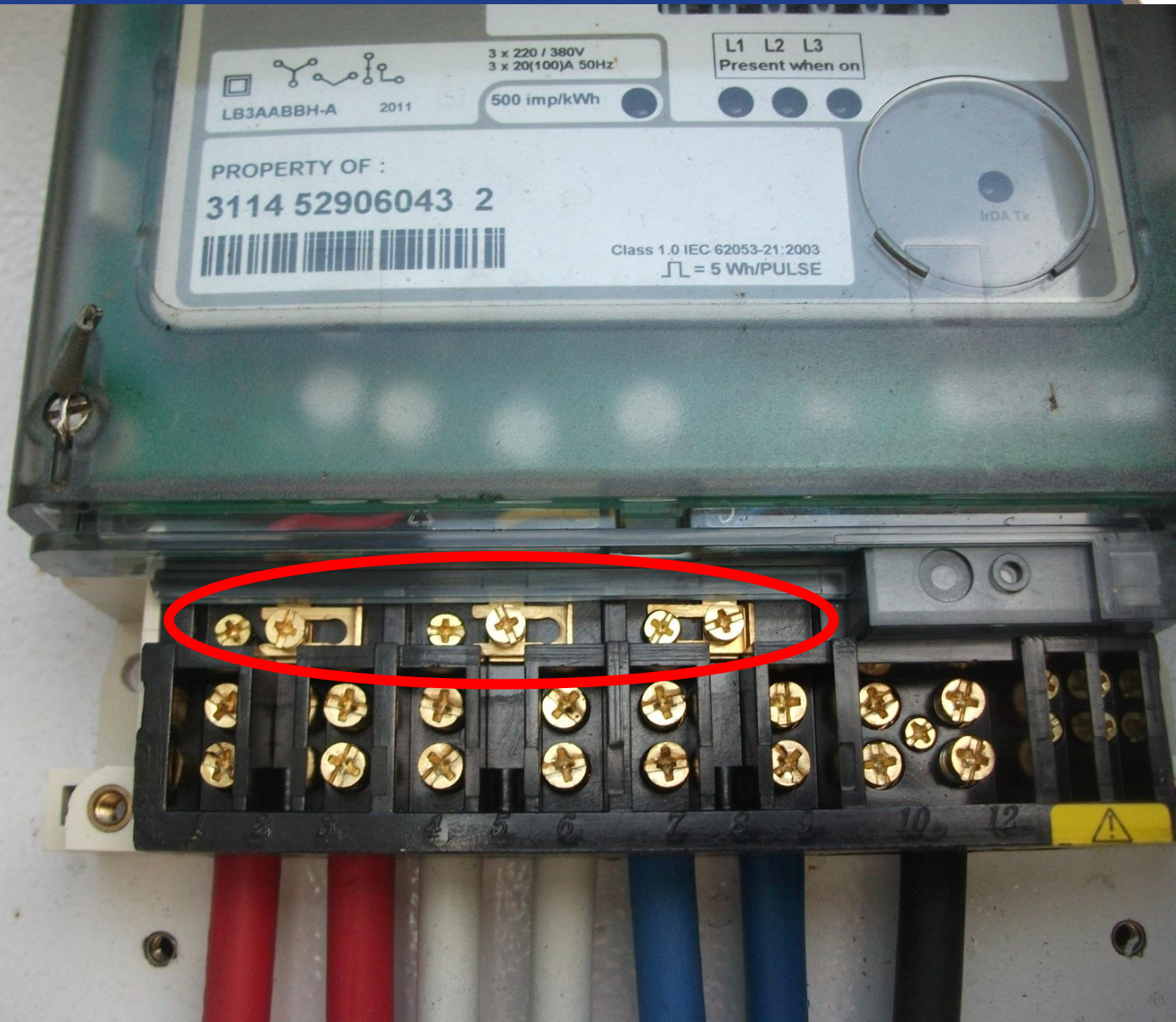
# Meter Tamperers



two



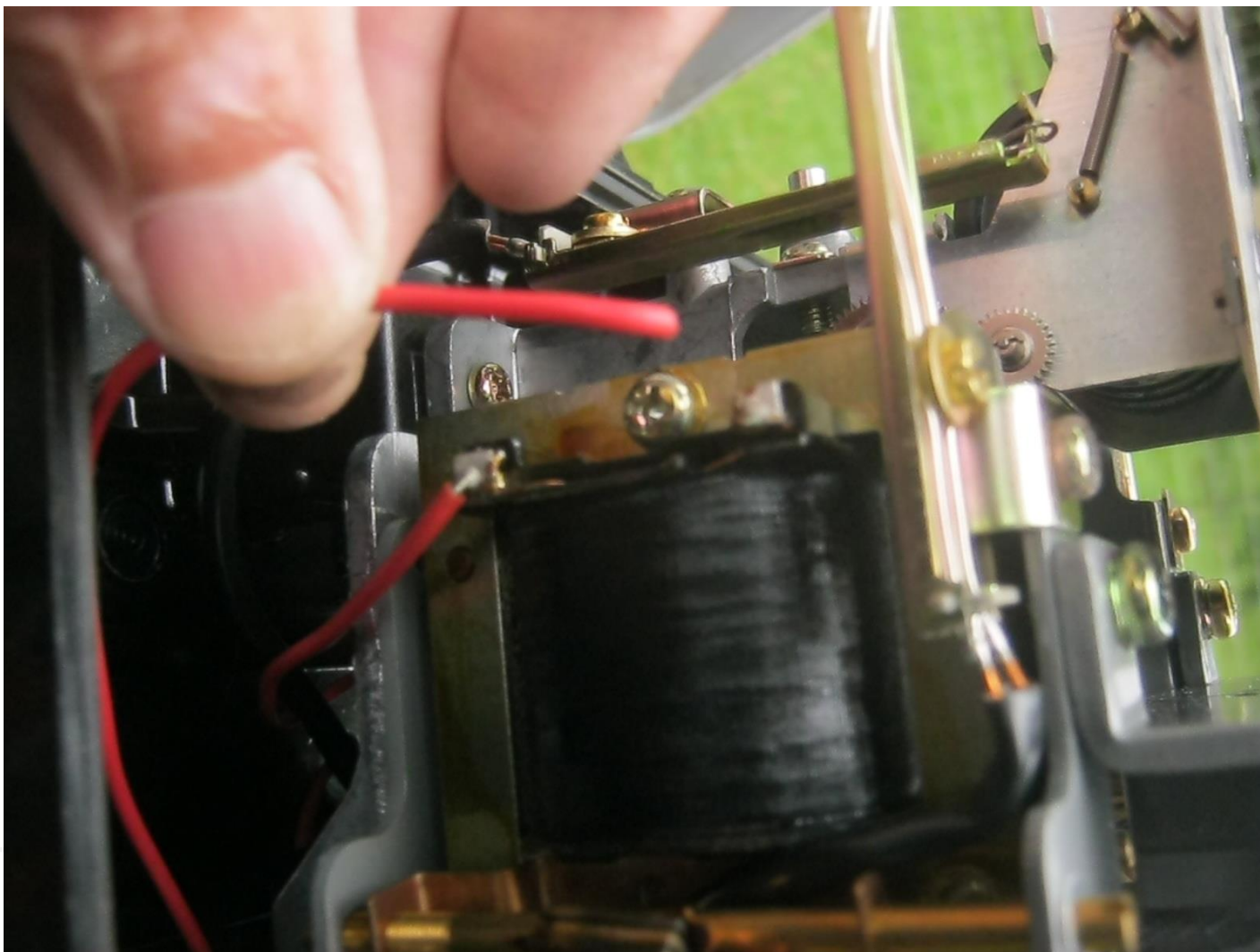
# Meter Tamperers





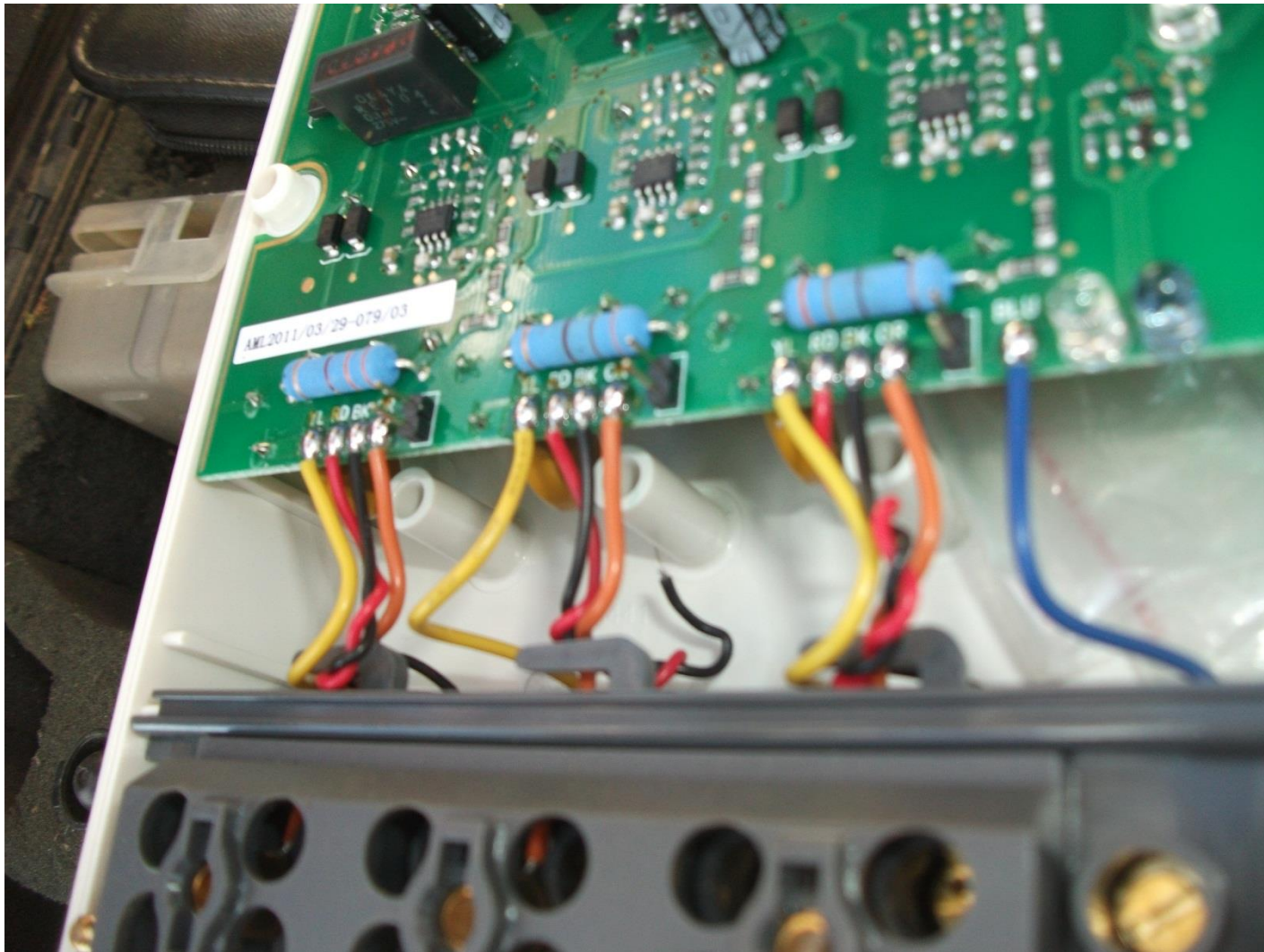


# Meter Tamperers



One PT  
phases

# Meter Tamperers



phases

two



# Meter Tamperers – Dials turned back



One P  
phases

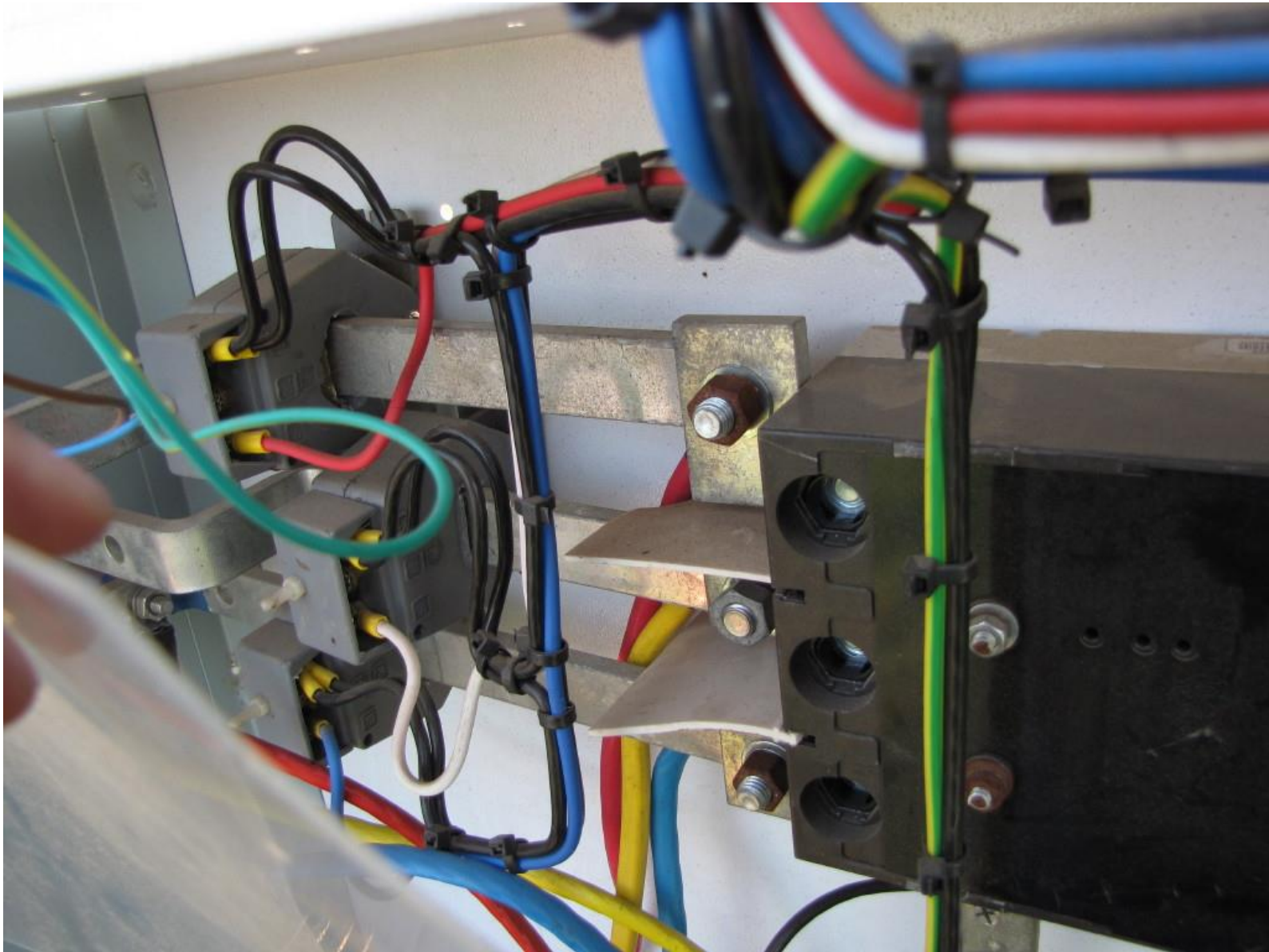
# Meter Tamperers – Dials turned back



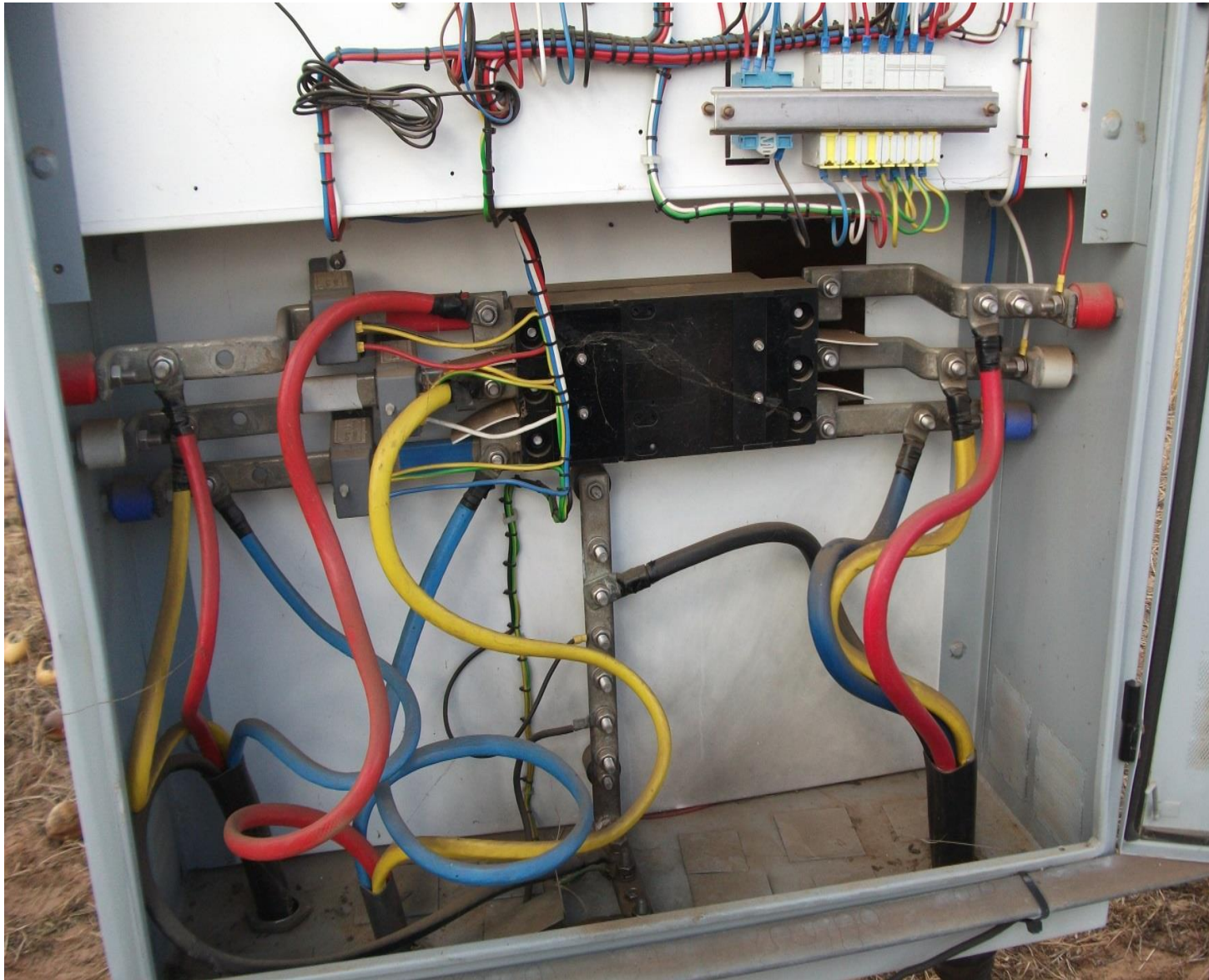
pha Meter audit conducted on 6 Dec 2016 – Disc not advancing under load



# LPU Installation tamperers



# LPU Installation tamperers



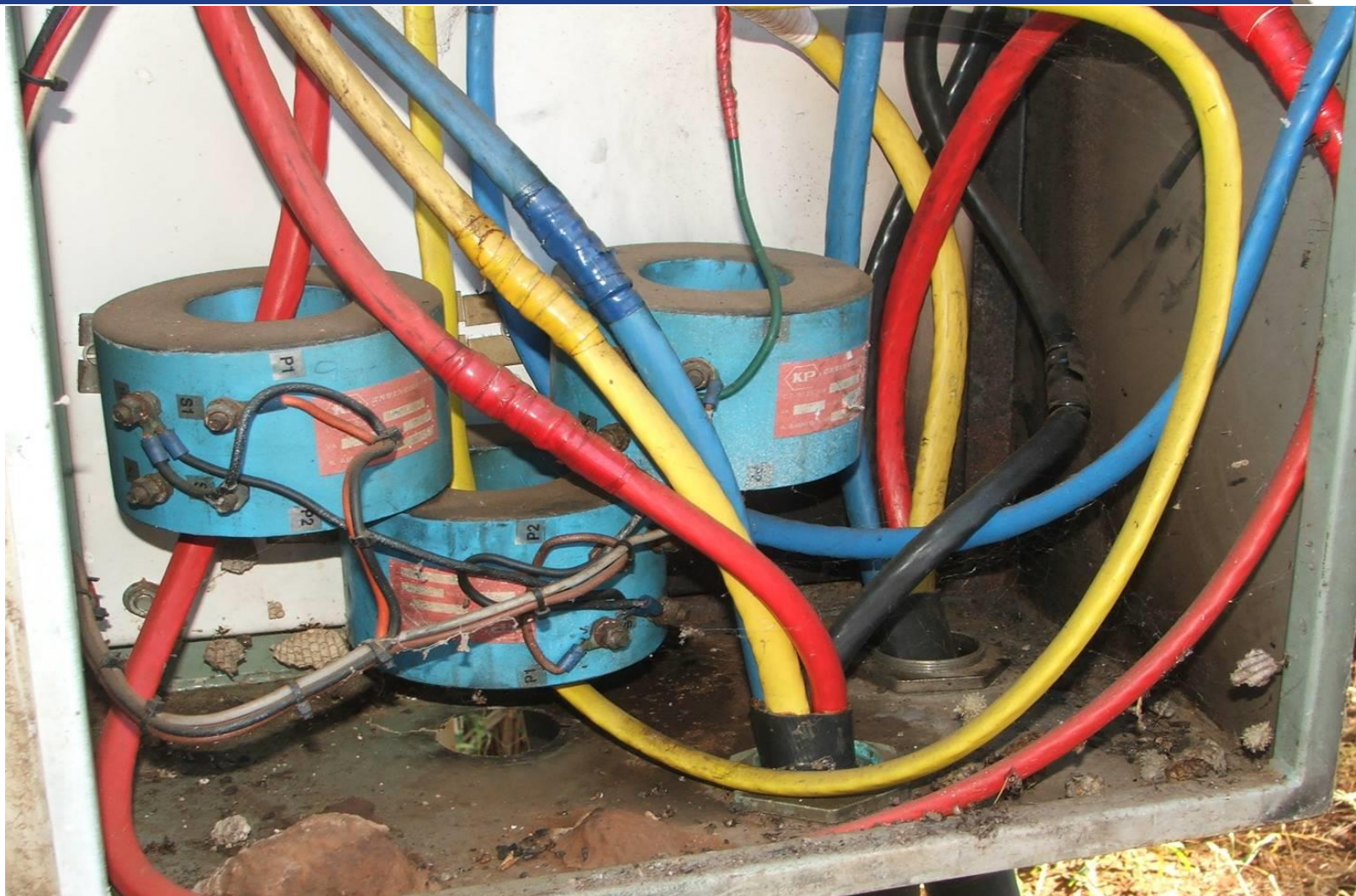


# LPU Installation tampers



Metering circuit breaker switched off

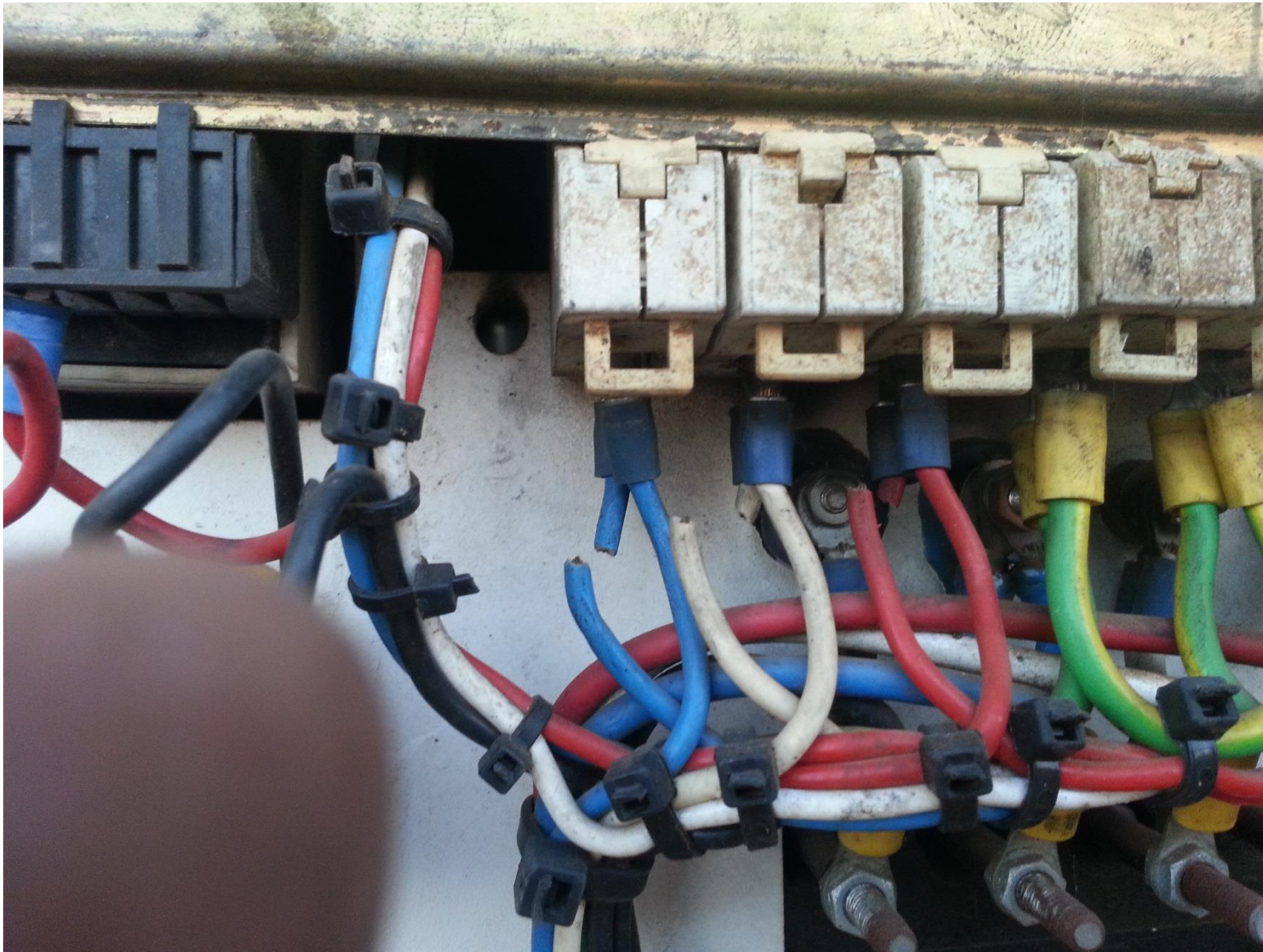
# LPU Installation tamperers



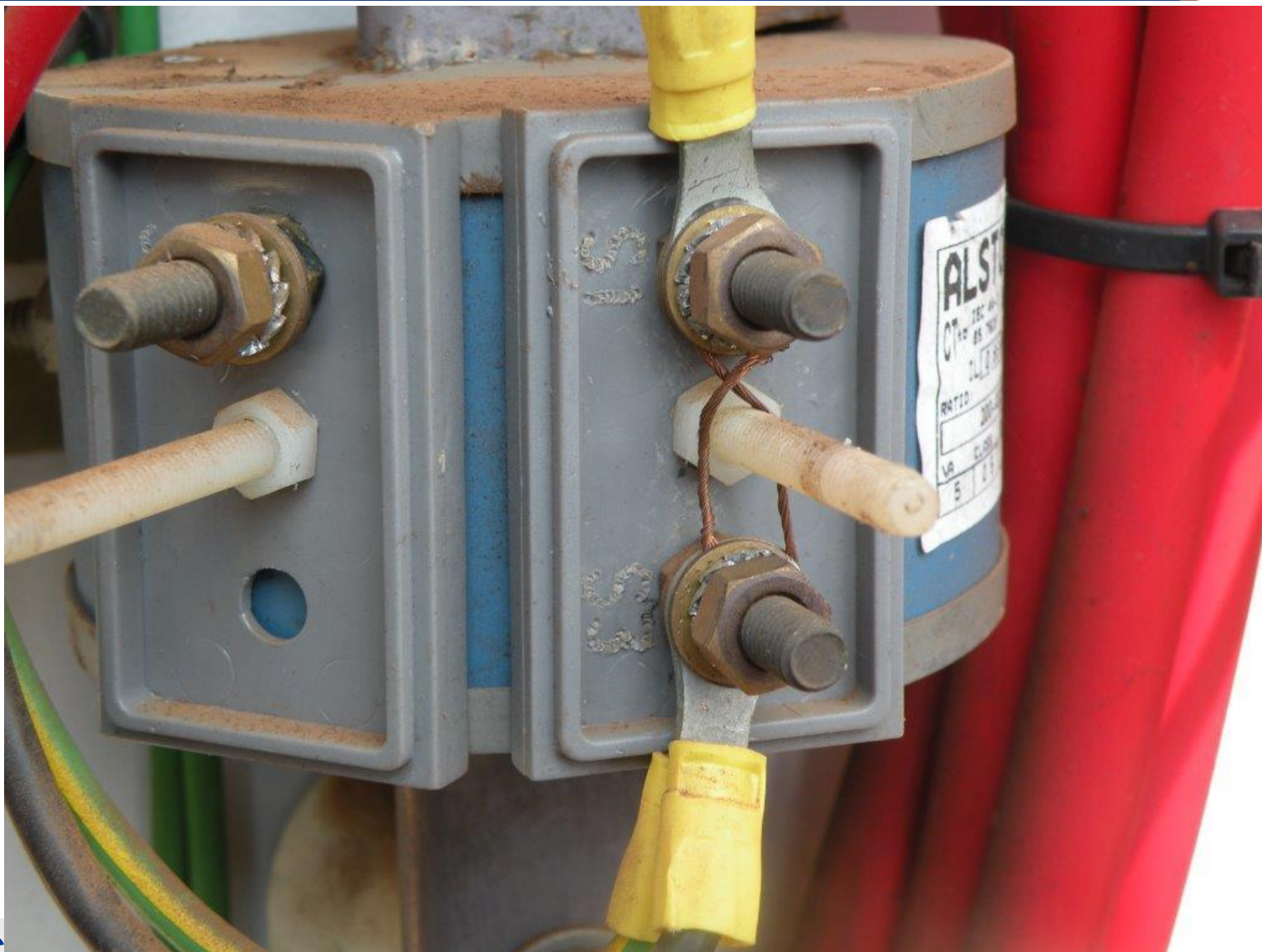
CT tamper



# LPU Installation tamperers

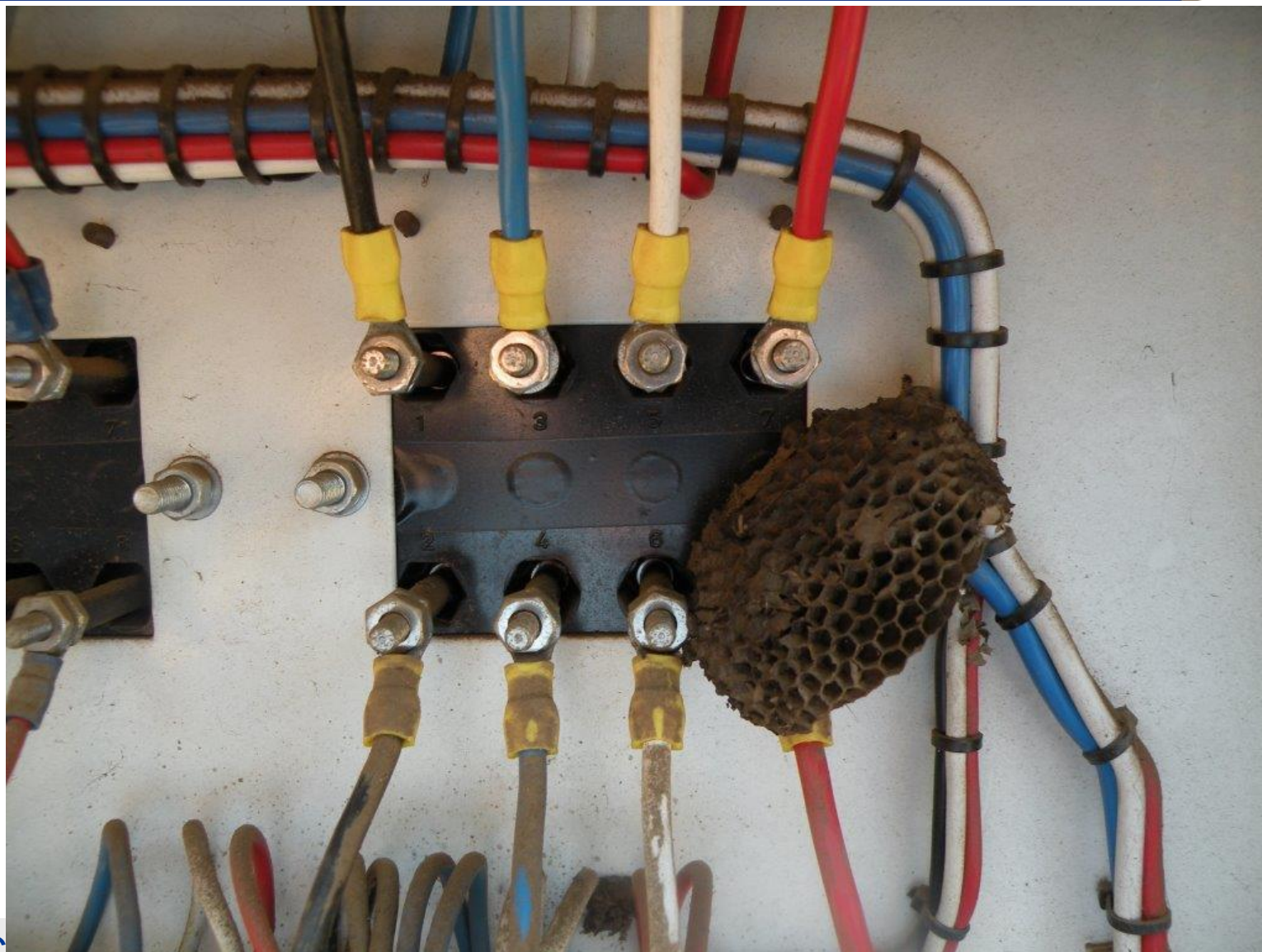


# LPU Installation tamper

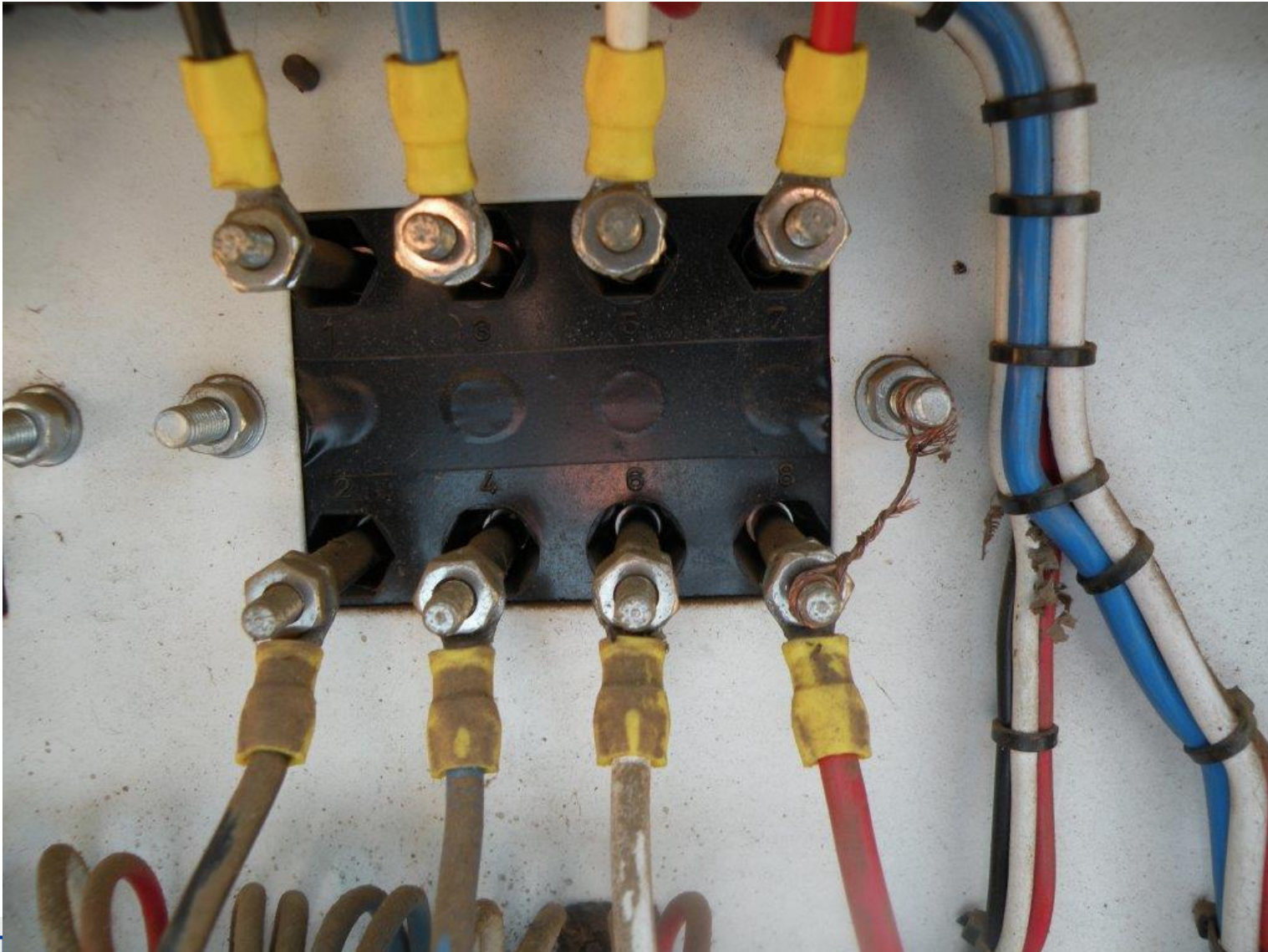




# LPU Installation tamper

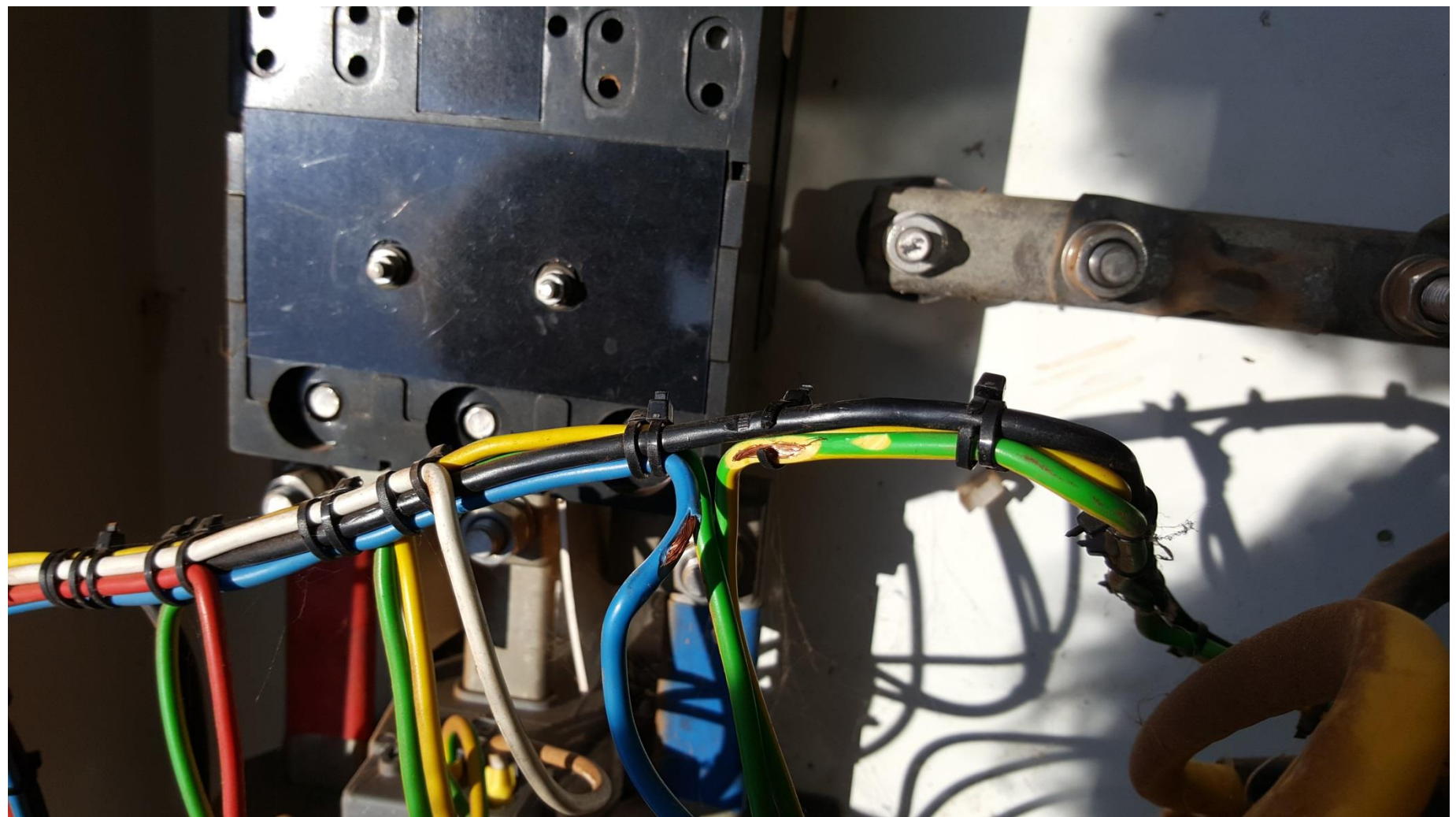


# LPU Installation tamperers

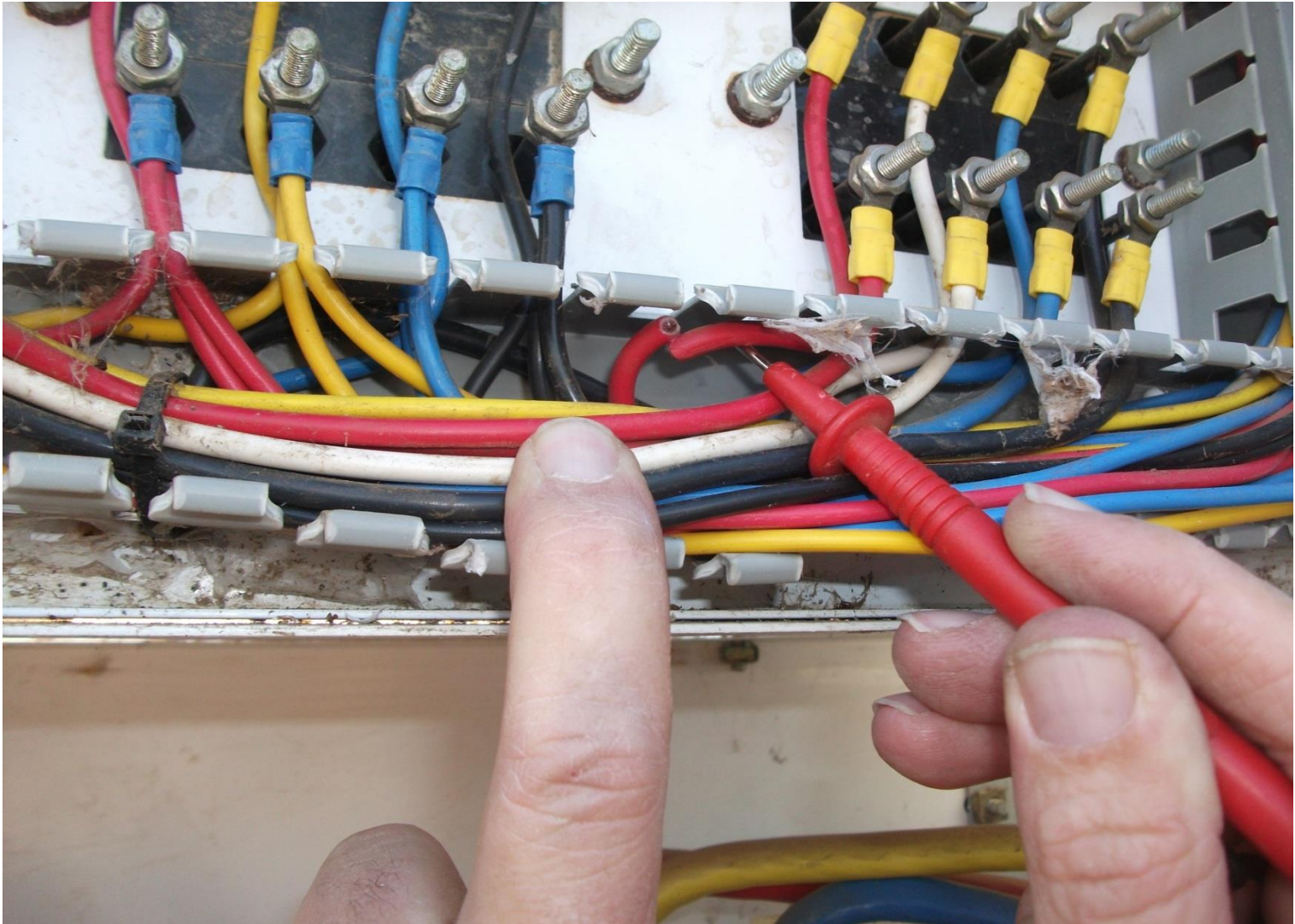


CT tamper





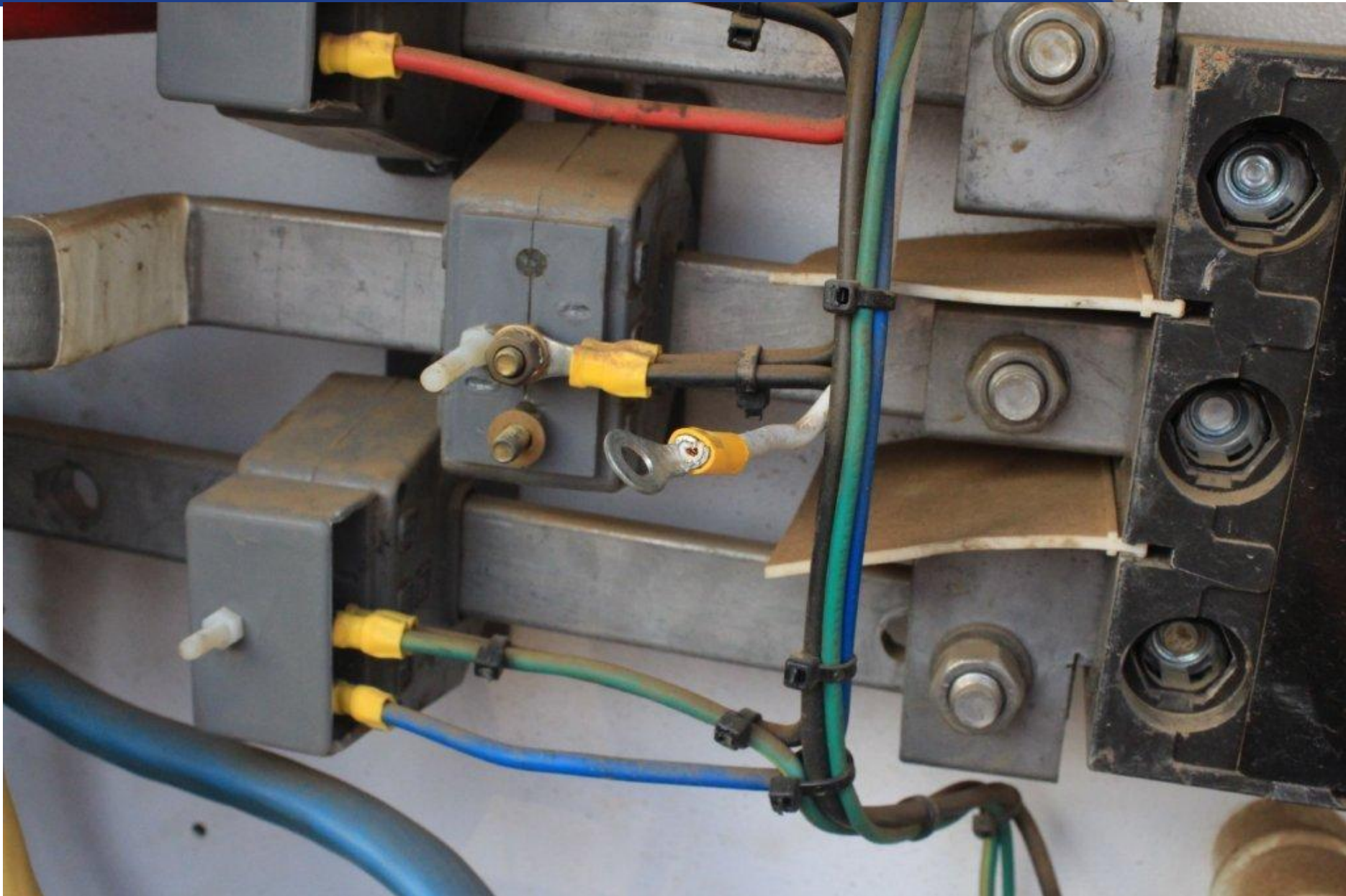
# Meter tamperers



Red phase current wire cut



# LPU Tamper

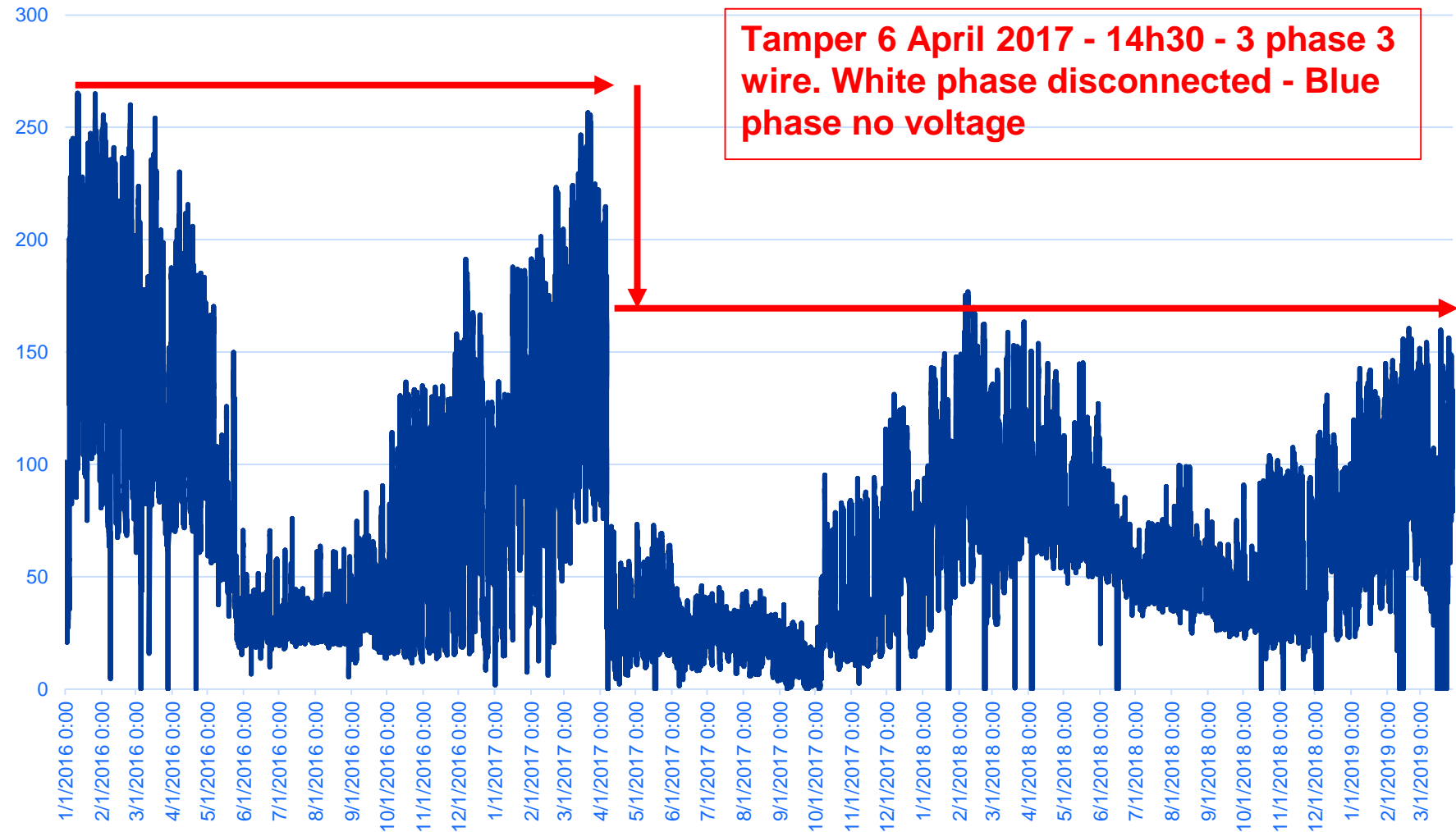




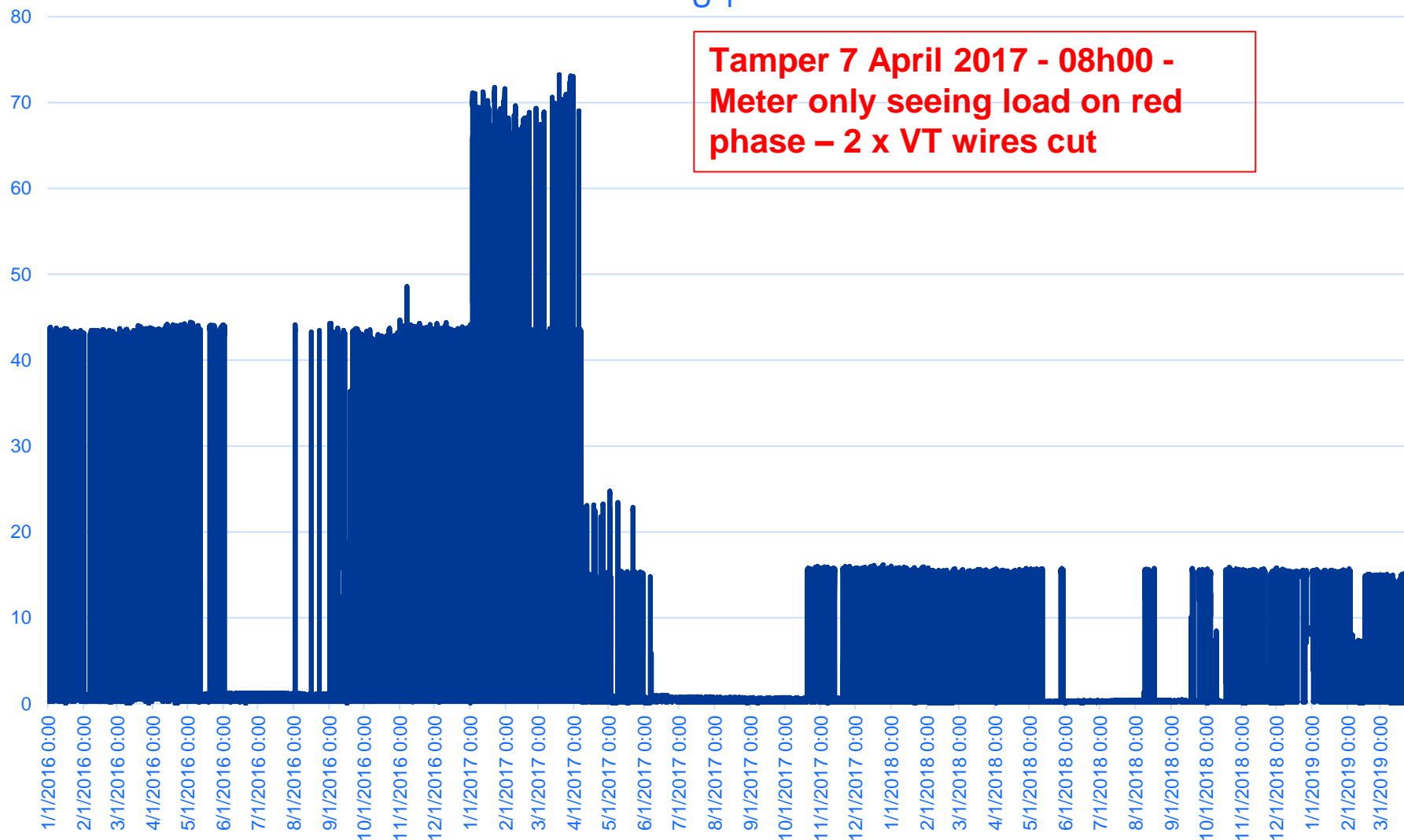
- Multiple syndicates operating in Eastern Cape region and across the country
  - Bridging induction coils
  - Cutting wires inside meter and resealing
  - Includes Large Powers
  - Also tampering new meters with tamper alarms
  - Contact list of 9952 numbers
- Criminal case in progress
  - 123 meters removed
  - 1 x S204 statement
  - Estimated Loss R10m

U 1

**Tamper 6 April 2017 - 14h30 - 3 phase 3 wire. White phase disconnected - Blue phase no voltage**

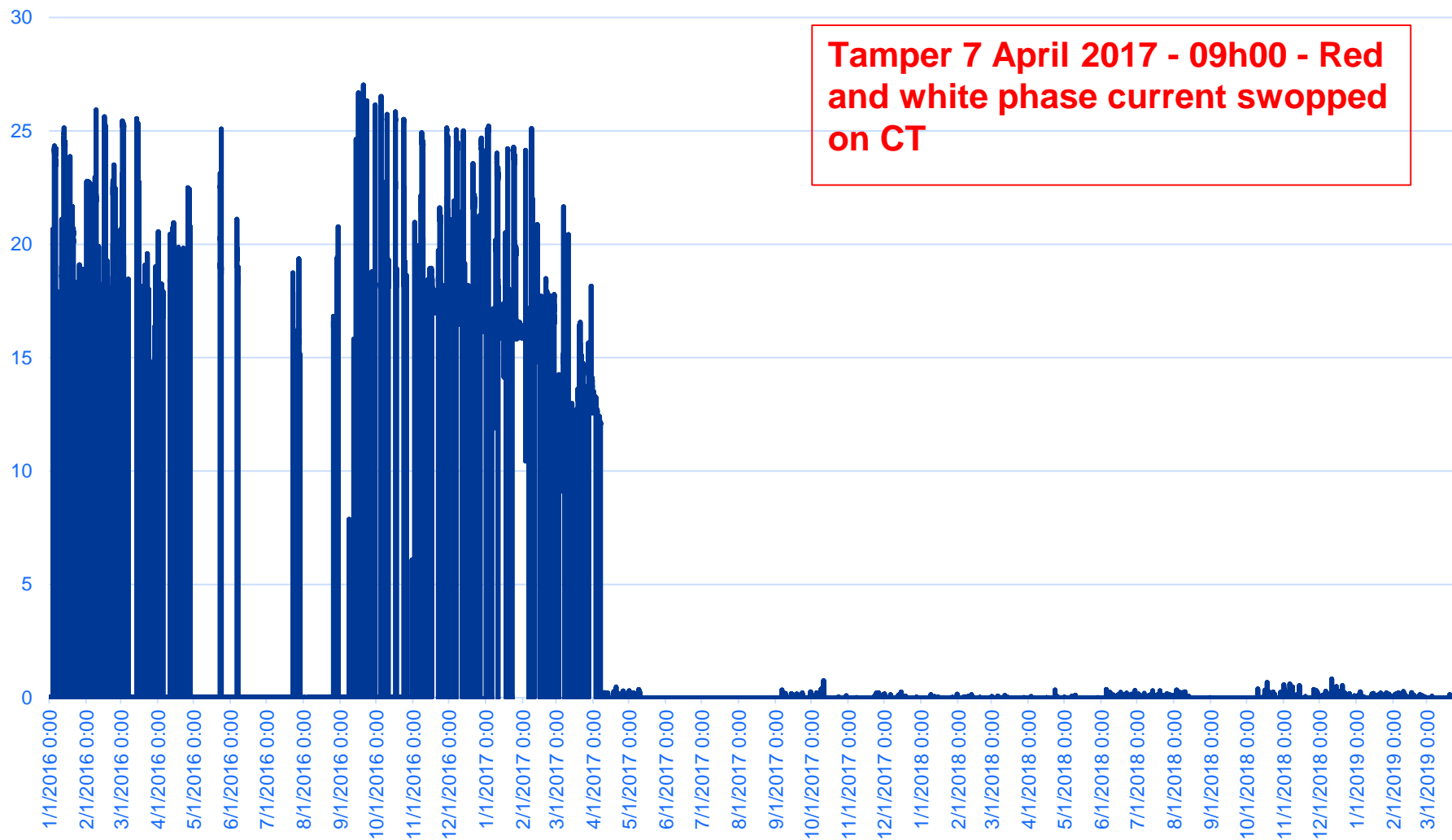


U 1





U 1



- Significant tamper activity in NW - farmers
  - Bridging induction coils
  - Dropping disc onto magnets
  - Cutting wires inside meter and resealing
- No Criminal case in progress
  - Disconnect customer
  - Remove meter and send to independent test lab
  - Raise remedial charges
  - Customer only reconnected after payment of remedial charges and agreement to settle lost revenue
  - Request full disclosure
  - Estimated Loss R30m

- **The new law came into effect in December 2015. According to the new law persons convicted of cable and/or theft as well as meter tempering will now receive harsher sentences.**
- **Offenders convicted of copper or cable theft under the Criminal Matters Amendment Act will receive minimum sentences of up to three years for first-time offenders and a maximum 30 years for those involved in instigating or causing damage to infrastructure.**
- **Furthermore the law makes specific reference to meter tampering and makes provision for people to be charged with tampering of "basic service" infrastructure. A conviction for tampering (or colluding to tamper) will now be subject to a imprisonment not exceeding 30 years or a fine not exceeding R100 million in certain circumstances.**



- **If you tamper with your meter or someone tampers with your meter for you – what are the consequences?**
  - **You will be charged a remedial charge/ tamper fee up to a maximum of R100 000 for a first offence.**
  - **Eskom will recover lost (unbilled as a result of tamper) revenue from you**
  - **You can be charged criminally and received a be found guilty of a crime (conviction)**
  - **You can receive a jail sentence or hefty fine**
  - **Your deposit will be increased**

- At the outset of the identification of a meter/ installation tamper a decision needs to be made on whether a criminal process will be followed as this has additional specific requirements from a SAPS and primarily an evidence perspective

- Identify meter tamper from Pre-audit
  - Document/ Record
  - Collect evidence
  - Analyze account and document all aspects of installation
- Meet with prosecution authorities and provide details
- NPA/ SAPS issues search and seizure order
- Joint operation implemented



## Evidence collection and protection of meter:

- Eskom requests assistance from SAPS and undertakes a joint search and seizure operation

### SPU:

- Meter removal and replacement and collection of all relevant evidence (SAPS presence and participation to undertake photographs, finger prints, DNA, documentation of findings etc.)
- At the same time when the old meter is removed, Eskom will install a new meter
- As part of the chain of evidence the old meter is then placed into a sealed evidence bag by the SAPS official immediately after removal, meter, pole and customer details recorded on the evidence bag and this is then taken to the relevant police station to be recorded into the SAP13 for safekeeping.

- SAPS requests, and personally takes, these meters to a South African National Accreditation System (SANAS) approved independent calibration laboratory for testing.
- Never change a meters status if in criminal process
- When the new meter is installed it will require testing to indicate that it is functioning and measuring correctly

## LPU:

- Collection of evidence is even more critical for LPU's as the meter is seldom removed
- Saps will take detailed photographs under the direction of an Eskom official, a detailed assessment and recording the nature and impact of the tamper must also be completed

- Disconnect installation
- Raise tamper fee/ remedial charge
  - Prepaid :- R6000 incl. lost revenue
  - SPU :- R15 000 – R30 000 depending on size of supply
  - LPU :- R60 000 – R100 000 depending on size of supply
  - Double for second tamper, 3<sup>rd</sup> tamper – remove supply
- Request disclosure – “spill the beans”
- Increase securities/ sign new contract etc..
- Calculate and recover lost revenue



- Develop a profile of suspect/ syndicate
- Modus Operandi
- What method/s used
- Unique seals
- Customers/ area targeted
- Information from informant
- Information from customers
- Liaise with SAPS
- Develop strategies to arrest and convict

## Challenges you will experience

- Justice process can be extremely slow
- Difficulty in getting police involvement for investigations
- Time delays at Prosecuting Authority in finalising cases
- Willingness to Prosecute
- Court Role – delays
- Preparation work

- Structured and well defined process – use new technology
- Ongoing data analysis – exception reports
- Effective early identification of leakage
- Timeous correction - Stop leakage
- End to end tracking and management of issue to resolution
- Timeous Recovery of lost Revenue (tamper & failure)
- Remedial charges
- Identification of perpetrators
- Criminal action where possible and customers and perpetrators
- Effective KPI's – DON'T WINDOWDRESS





- **Lock all meter boxes – restrict access**
- Timeous actioning of exception reports
- Effective Management and timeous resolution of issues
- Effective Energy feeder balancing to Identify hotspots
- Utilise “tamper proof” meters – internals cannot be accessed from outside
- Ensure meters and MCB are sealed – Use hi-tech meter seals
- Ensure there is consequence of action
  - Penalties and remedial charges
  - Recovery of unbilled Revenue
  - Criminal process
- Identification of tamper syndicates and appropriate strategies to deal with them
- Pro-active meter m
- error Exception reports – current and voltage (LPU dial in to ID phases out)
- Customer data and profile analysis – trend and graphical analysis

- **Regular actioning of No and Low consumption reports**
  - **Continuous Meter read analysis**
  - **Comparison of actual demand profile to NMD**
  - **More comprehensive meter read process and actioning of exceptions**
  - **Hold staff accountable**
  - **Implementation of meter read and billing quality review process**
  - **Reduction in process delays (log all problems ID and track fix and recovery – escalation)**
  - **Phased meter replacement strategy**
- 
- **Ensure you have the RIGHT people to do the job**



# Rouge Meters – Illegal Vending

- How do you eat an elephant?
- **Bit by Bit!**
- **Soccer Field**
  - Need to bend and pick up the money
- **Orchard of Fruit**
  - We are not building the ladders to harvest the ripening fruit let alone picking the low hanging fruit that is ripening and falling to the ground
- Only **YOU** can make it happen!

Thank you

