

ELECTRICAL INDUSTRIAL COMPANY (EICO)

LUCY SWITCHGEAR

Non-Extensible UNIT - **VRN2a**

(Sabre)



Electrical Industrial Company (EiCo)

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Non-Extensible Unit VRN2a Front Panel:



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NON-EXTENSIBLE UNIT VRN2a:

General

The Sabre VRN2a is a non extensible RMU comprising of a tee-off vacuum circuit breaker and two fault-make load break ring switches contained within a common SF6 gas insulated stainless steel enclosure. The unit is suitable for both indoor and outdoor applications and can be used either as a freestanding unit, or for mounting to a transformer .

1- Stainless Steel Gas Enclosure

The gas enclosure is manufactured from stainless steel and fabricated utilizing automatic 'robot welding' techniques to produce consistent leak- free equipment.

2- Housing

The housing of the Sabre VRN2a is fully treated; using zinc coated steel and electro statically applied oven cured paint, to resist weather and pollution attacks. All units are provided with a hinged, weatherproof and lockable door. The external support legs can provide a Tee-Off bushing height of 1402, 1320mm or 1100mm.

3-Tee-Off Circuit Breaker

The tee-off circuit breaker comprises of three vacuum interrupters, which have a fault-make, fault-break rating. Opening of the circuit breaker is achieved by manually operating the handle as standard .Earthing of the outgoing cable, from the tee-off circuit breaker, is achieved by the use of the circuit breaker in series with the off-load disconnect or / selector switch.

4-Ring Switches

The two ring switches are of the single break, fault-make / load- break 3 position types, 'ON', 'OFF' and 'EARTH'.

5- Operation

All operating positions and instructions are indicated on the main panel at the front of the unit. Operation is by means of manually independent mechanisms, which are mounted externally to the gas enclosure The tee-off vacuum circuit breaker has two operating positions, 'ON' or 'OFF', with an off-load, interlocked selector allowing

isolation & earthing of the tee-off circuit A single, "Y"-bar type operating handle is stored at the front door. Symbols located on the end of the operating handle indicate direction of operation.

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6-Test Facilities

The Sabre VRN2a has fully interlocked integrated ring switch cable test facilities in accordance with ENATS 41-36 requirements. Access to the test terminals is achieved by pulling a lever located on the front fascia inside the front door. This will allow the cover underneath the unit to drop down. Where cable test facilities are required on the T-off, an alternative interlocked system, using plug-in connectors, is available.

7- Interlocks

Positive safety interlocks are incorporated on all switch positions.

8- Padlocks

The door has a quarter-turn lock that can be padlocked. The handle has a padlock hasp hole size 8mm diameter.

All switch and selector positions can be padlocked. The padlock hasp hole size is 8.5mm diameter.

9- Transformer Protection

The circuit breaker enables the VRN to protect transformers with ratings well in excess of those of a comparable HV fused unit. Protection is achieved by the use of ring core current transformers in combination with Time Limit Fuse links or a protection relay. The ring core current transformers are mounted around the rear tee-off bushings, external to the SF6 chamber, but within the cladding of the unit. The Time Limit Fuses, or the protection relay, are mounted behind a cover at the front of the unit.

10- Time Limit Fuse Protection (TLF)

Dual ratio CT's are provided as standard transformer protection. Access for CT ratio change is provided by means of a cover plate on the front panel of the unit.

11- Cable Termination

The bushings for each ring switch are located either side of the unit. Both sets of bushings are type 'C' with in-line bolted connections M16 threaded in accordance with EN50181. The tee-off bushings are located at the rear of the unit and are in-line bolted connections M12 threaded. All tee-off bushings are fitted with white stress relief collars and **MUST NOT** be removed unless a taper kit is being fitted (see next page). If cabling boxes are fitted, then the bushings are accessible by removing the cabling box side cover.

The maximum cable size that can be used is:

- 300mm² 3 - core
- 500mm² single - core.

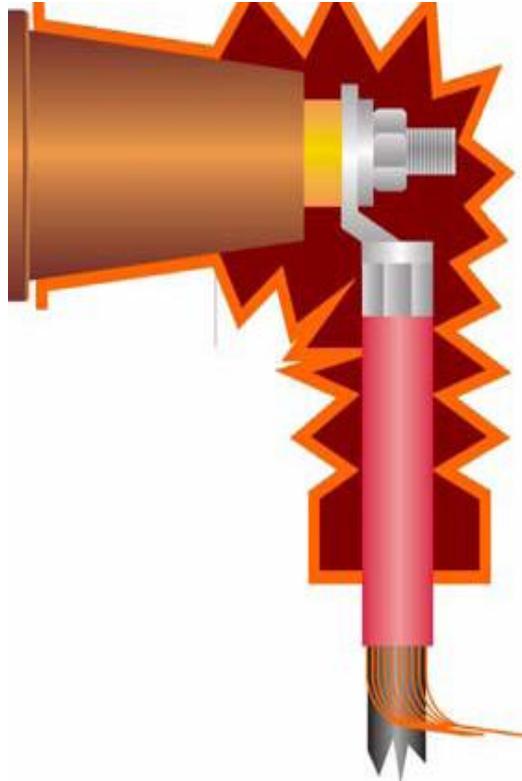
Torque Settings On Cable Bushings

M16 into copper - 75Nm

M12 copper thread or into copper - 35Nm

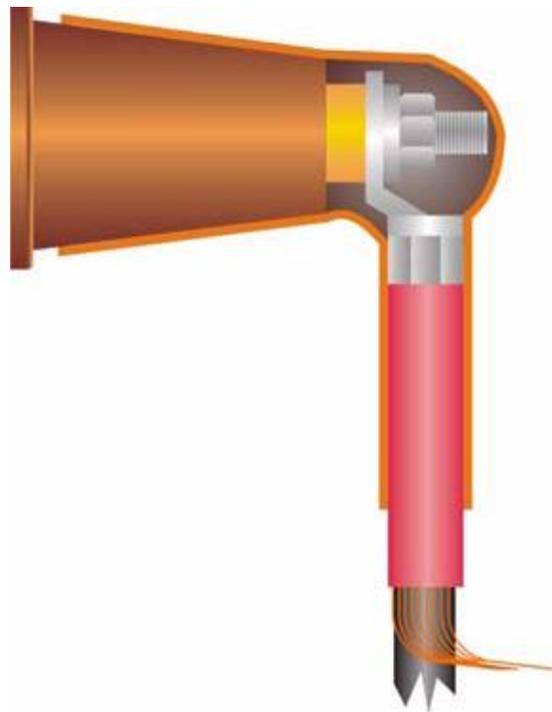
The following types of terminations can be used with the Sabre VRN2a

RING SWITCH BUSHINGS



Insulating Bushing Boot

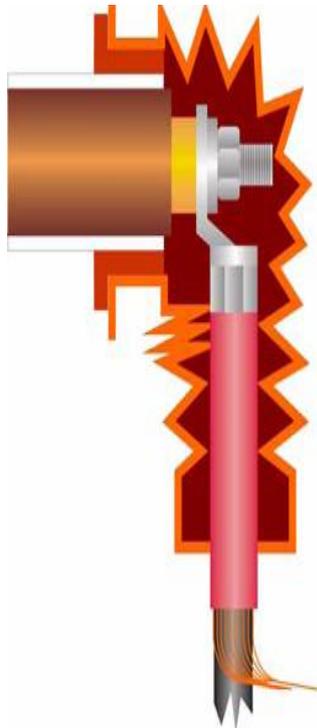
PROFILE C



Bolted Separable



Tee-off taper kit



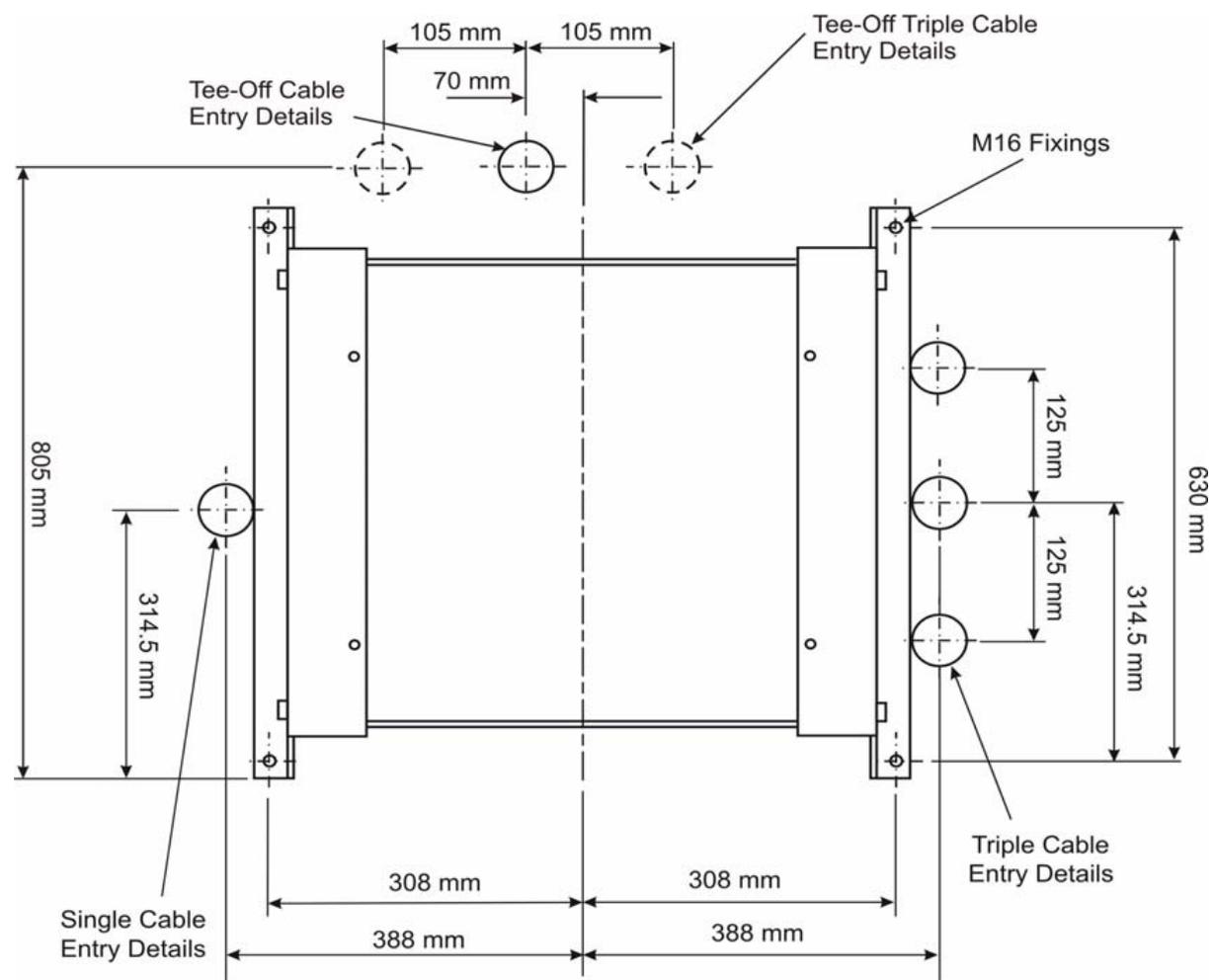
Tee- off Bushing Insulating Bushing_Boot

12- Marshalling Box

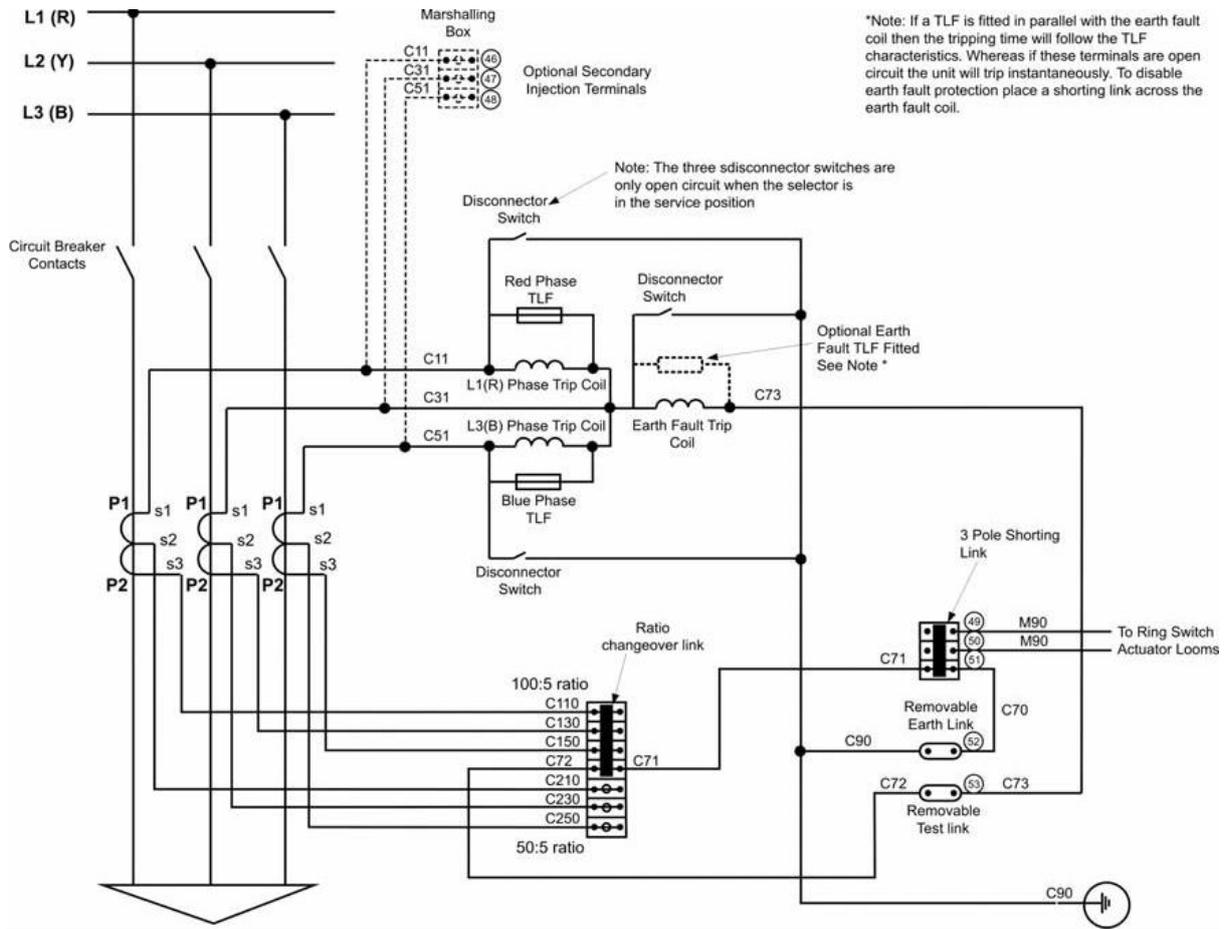
The marshalling box located on the left hand side of the unit and houses the terminals for all customer options including ring switch actuators, pressure switch and EFI CT's

13- VRN2a Unit Floor Mounting Dimensions

The units are designed for bolting down onto a concrete plinth using 4 - M16 bolts



TLF TRIP PROTECTION SYSTEM DIAGRAM:



14- Earthing

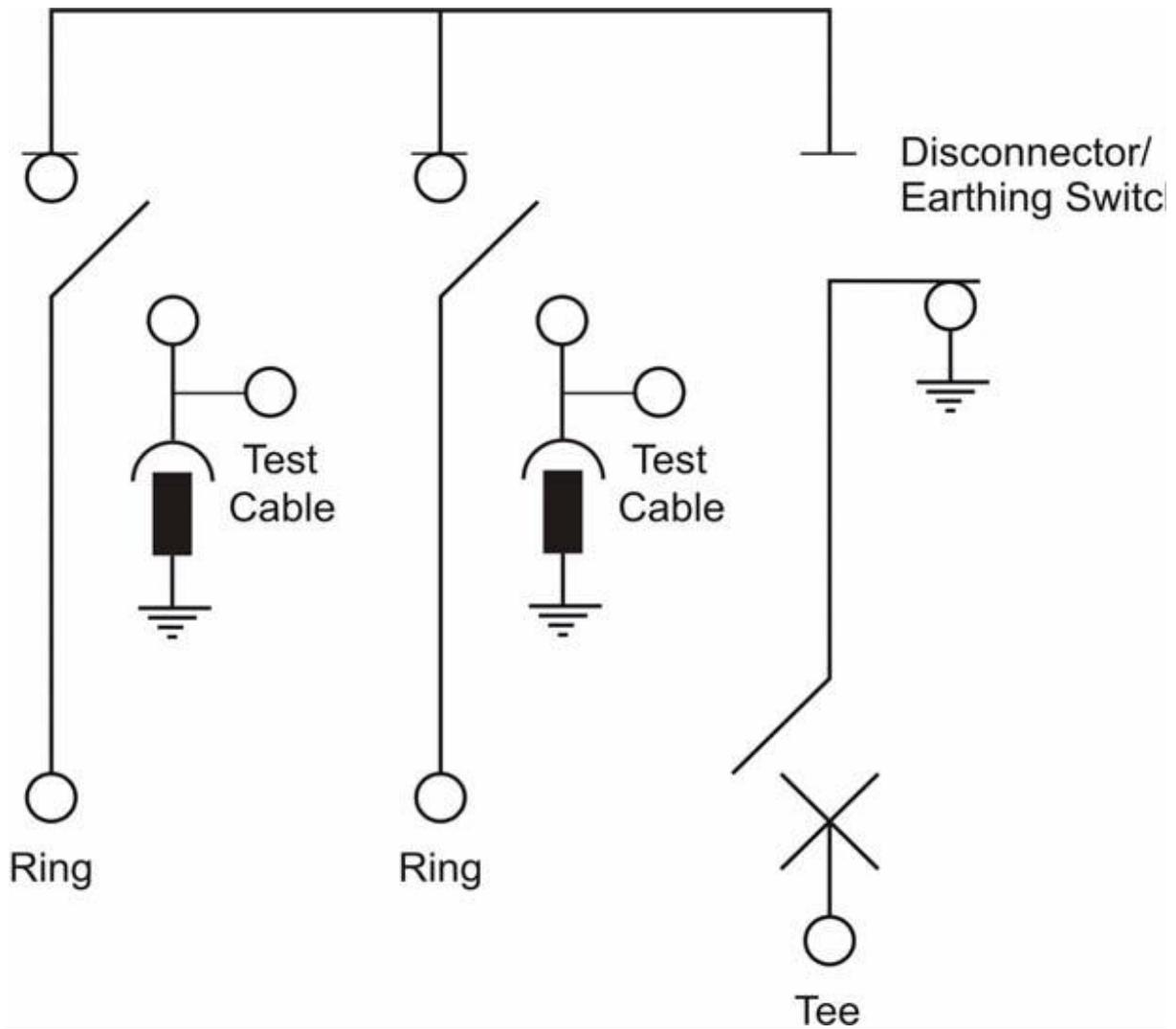
The Sabre VRN2a unit should be earthed at either of the primary earth points. These earth points are located at the rear of the unit, either side of the Cable Test Access Cover as shown.



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Non Extensible Unit VRN2a schematic line diagram:



Technical data

Non Extensible Unit VRN2a	
1- Rated Voltage	12KV (15.5KV)
2- Impulse Withstand Voltage	75KV (95KV)
3- Normal Current	
- Ring Switches	630Amp
- Tee- Off Circuit Breaker	250Amp
4- Short Circuit Peak Making current	
- Ring Switches	50KA
- Tee-Off Circuit Breaker	50KA
5- Short Circuit Breaking Current	
- Tee-Off Circuit Breaker	20KA RMS
6- 3 Second Short Time Current	
- Ring Switches	20KA
- Tee- Off Circuit Breaker	20KA
7- Earth Switch Peak Making Current	
- Ring Switches	20KA
- Tee-Off Circuit Breaker	7.9 KA
8- Internal Arc Rating	
- Freestanding	20KA 1 sec
- Transformer Mounted	20KA 1 sec
9- Gas pressure	
- Min Operating Pressure	0 Bar G

10- IP Rating

up to IP54W

11- Weight

350kg

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Non Extensible Unit **VRN2a** Dimensions:

