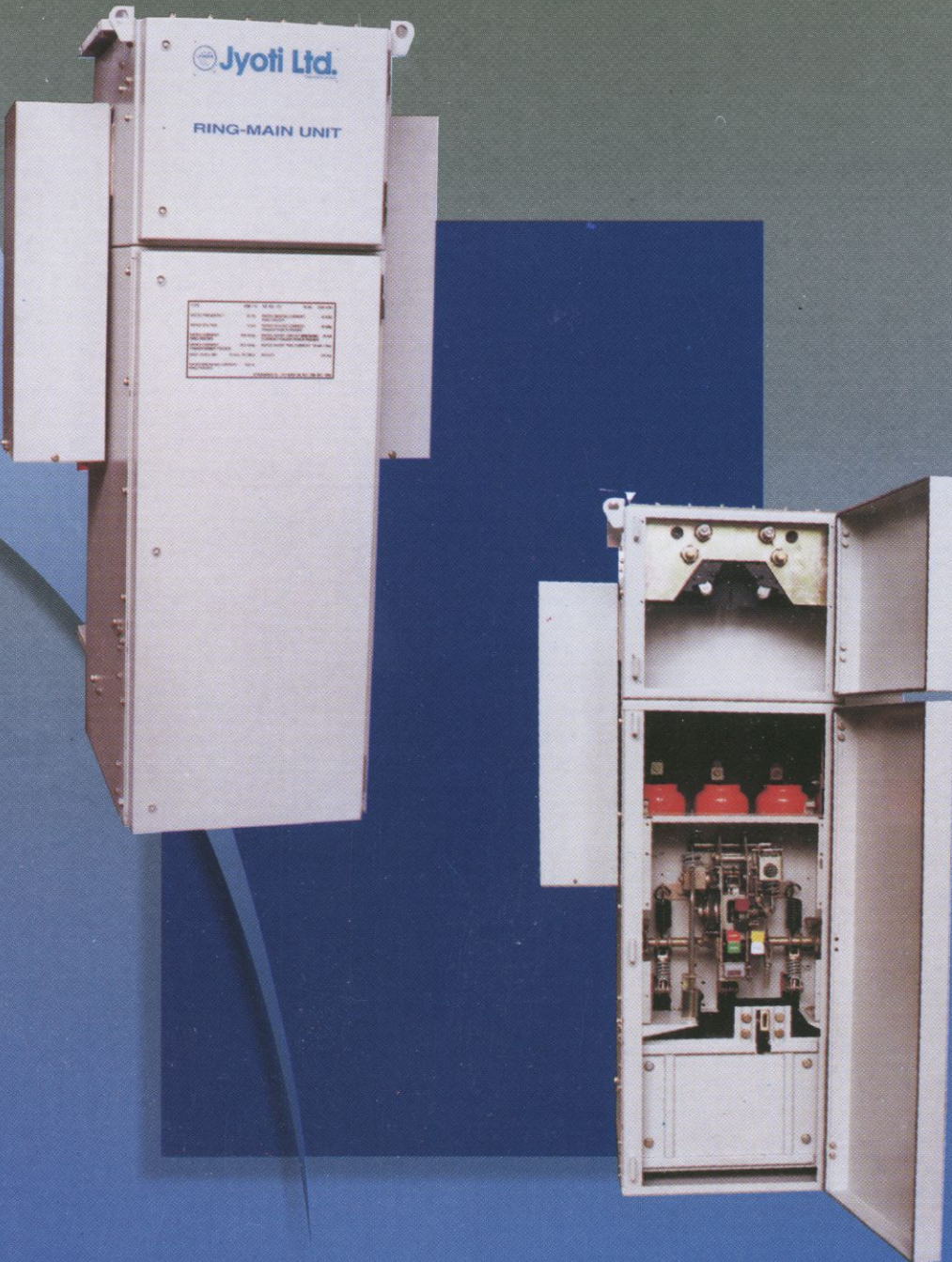




'Jyoti'
Ring Main Unit
(JRM Series) Fully Extensible

12 kV, 630 Amp.
Suitable for Indoor and
Outdoor Applications



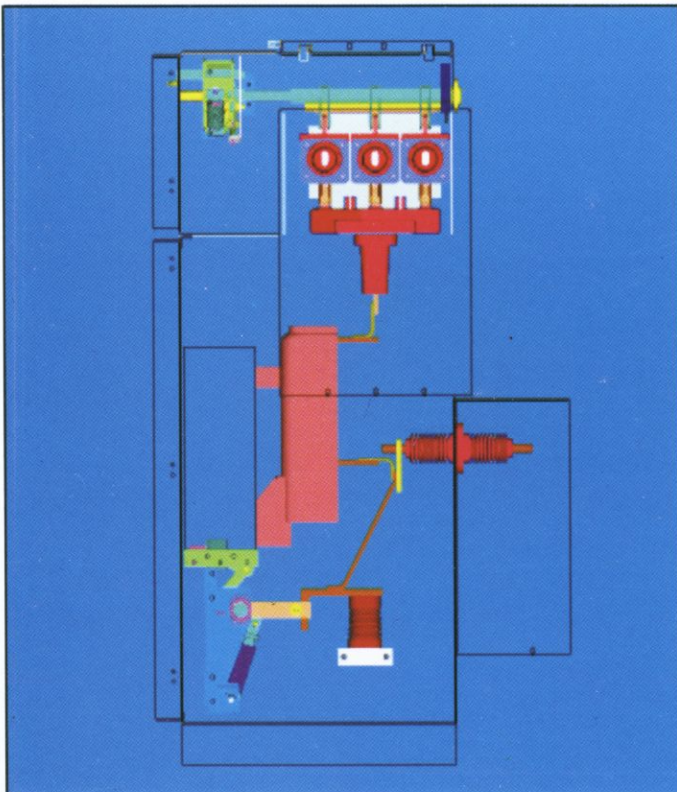
INTRODUCTION

Jyoti Ltd. has been in the forefront of switchgear technology for over four decades. It has a well established R&D Centre, and full-fledged manufacturing facilities which provide a wide range of quality products and services conforming to Indian and International standards. Jyoti now introduces yet another state-of-the-art-product-**RING MAIN UNIT (RMU)**.

RMU is an answer to the need arising out of space limitation for compact switchgear. It ensures continuous power supply. Ring bus configuration provides greater flexibility in distribution. Supply can be restored from any adjacent section. Faulty section can be easily isolated, leaving the healthy sections continue to operate. This allows maintenance to be carried out in faulty section without disturbing other sections.

UNIQUE FEATURES OF 'JYOTI' RING MAIN UNIT

- Suitable for both Indoor and Outdoor applications.
- Three-position, load-break, fault-make switch immersed in oil is easily accessible for maintenance.
- Drive mechanism of load-break, fault-make switch located outside oil tank. Hence, any problem in mechanism can be attended, without opening the oil tank.



'Jyoti' Ring Main Unit-Side View

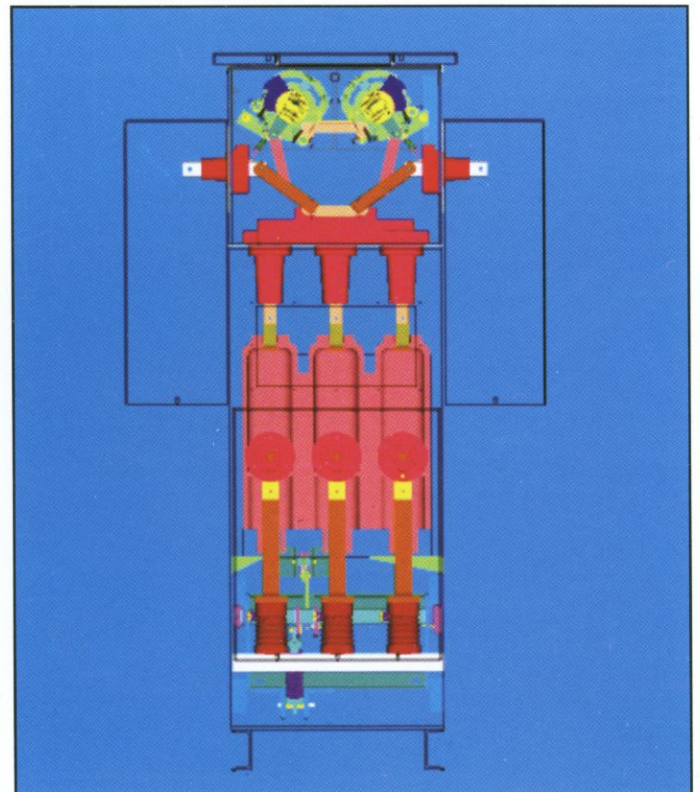
- Transformer feeder is provided with Vacuum Circuit Breaker (VCB) instead of fuse-switch combination.
- Integral earth switch with suitable interlock is also provided.

Advantages of using VCB

- Less maintenance.
- Greater safety of personnel, as changing of fuse in liquid insulating medium in conventional system is prone to accidents.
- Recurring cost of replacing the fuse eliminated.
- In case of fault, breaker trips and power supply is restored by just pressing a button. This reduces downtime and reduces the customer minutes loss.
- Very high mechanical and electrical life as compared to fuse-switch.

CONSTRUCTION

'JRM' Series of RMU is versatile and easy to operate. Structure is powder-coated and weather-proof. It is fix-mounted, metal-enclosed and Oil/Air insulated. Construction of RMU is bolted/welded using steel sheets. Provision for mimic diagram on front cover.



'Jyoti' Ring Main Unit-Rear View

There are four main sections in RMU

1. Drive Mechanism
2. Three-Position, Oil-Immersed, Load-Break, Fault-Make switch.
3. Transformer Feeder (VCB and Earth Switch compartment)
4. Cable compartments.

1. Drive Mechanism

It operates the three-position switch of the ring feeder. This mechanism is operated manually by a detachable handle. Mechanism is spring-operated; hence, does not depend on operator's speed.

2. Three-Position, Oil-Immersed, Load-Break, Fault-Make Switch

The ring-feeder compartment contains two 3-phase, three-position, load-break, fault-make switches in a totally leak-proof metal enclosure filled with oil. The Load-break switch comprises fixed and moving contact blades, operated by a mechanism to achieve ON, OFF and EARTHED conditions.

Epoxy bushings are provided for mounting the fixed and moving contacts. These bushings are used to connect the ring cables and to segregate ring feeder compartment from transformer feeder compartment. Each switch and its phases are segregated by insulated partition sheet.

3. Transformer Feeder

Transformer feeder compartment is located below the ring feeder compartment. It houses 'Jyoti' "VK" series VCB, mounted on a fixed base. For Tee-off cable earthing, a separate spring operated earthing switch is provided. There is provision for mounting Protection CT on Tee-off bushing.

4. Cable Compartments

Ring feeder cable compartments are located on the upper left and right sides of the Ring Main Unit. Transformer feeder cable compartment is located at lower rear side of the Ring Main Unit. Adequate space and height available for easy cable insertion.

INTERLOCKS

Padlocking facility and interlocks are provided conforming to relevant standards for safety of personnel and to prevent malfunctioning of the Unit.

TESTING OF RING CABLES

Suitable arrangement is available with required interlocks for cable testing.

PROTECTION DEVICES - OPTIONS

There are numerous forms of protection available for circuit breakers depending on their application and duty. Options detailed below assume that the units will be used in a Ring Main, teeing-off to protect a step-down transformer.

● Time Limit Fuses

(No auxiliary power supply required)

Time Limit Fuses (TLFs) are available to allow the circuit breaker to trip in the event of a fault.

TLFs are low voltage fuses, connected in the secondary circuit of the protection CTs. TLFs are designed to closely follow the characteristics of medium voltage HRC fuses, normally associated with transformer protection characteristics.

TLFs are used to activate the circuit breaker tripping system. Under fault conditions, current flowing through fuse exceeds permissible limits. The fuse operates allowing current to reach the circuit breaker trip coil, which in turn opens interrupting the fault.

Combination of CT ratios and fuse ratings enable a wide range of transformer capacities to be protected. Jyoti will select appropriate CT and fuse-link based on operating voltage, transformer capacity and overload rating.

● Overcurrent Relay

(No auxiliary power supply required)

Inverse time overcurrent relay can be provided for circuit breaker. Relay requires no additional supply. It draws power from the CT secondary circuit which is also used to provide the tripping supply.

APPLICATIONS

'JRM' series Ring Main Units are designed for medium voltage ring network such as :

- Public and industrial distribution network upto 12 kV.
- Protection of transformers 25 to 2000 kVA and higher ratings.
- Power distribution for both indoor and outdoor installations from transformer sub-stations.

RMU - THE OPTIONS

Different versions of RMU are available depending on their applications.

- One transformer feeder with two ring feeders, non-extensible.
- One transformer feeder with two ring feeders, extensible.
- Two transformer feeders with two ring feeders, non-extensible.
- Two transformer feeders with two ring feeders, extensible.

APPLICABLE STANDARDS

IEC : 60056, 60129, 60265, 60298 & 60694

TECHNICAL SPECIFICATIONS

	Units	Ring Circuit	Tee-Off Circuit Breaker
Rated Voltage	kV	12	12
Rated Current	A	630	200
Breaking Current	A	630	20,000
Short Time Withstand Current (1sec)	kA	20	20
Peak Making Current	kAp	50	50
Rated Frequency	Hz	50	50
Closed Loop Breaking Current	A	630	630
Cable Charging Current	A	25	25
Lightning Impulse Withstand :			
1. To earth and between poles	kVp	75	75
2. Across isolation	kVp	85	85
Power Frequency Withstand Voltage :			
1. To earth and between poles	kV/min	28	28
2. Across isolation	kV/min	32	32

ACCESSORIES (Optional)

Earth Fault Indicators

Earth fault passage indicators show through-fault current in a radial open ring main cable distribution system; earth faults can be quickly located and isolated. Main supply can then be restored to healthy sections of the network with minimum delay.

There are two types of Fault Indicators available :

- Manual Reset
- Auto Reset

Indication

Fault is indicated by a drop-down mask, which uncovers a bold red cross in two stages 'FAULT ON' and 'FAULT CLEARED' after which the relay must be reset manually/automatically.

Motor Pack Unit

To operate RMU remotely, motor pack and remote control cabinet can be attached. This enables supply to be restored to a large number of customers within minutes of fault occurrence. This improves time taken to identify and isolate the faulty network section.

Directional Earth Fault Indicator

It can be attached on RMU. This will accelerate identification of faulty location.

Short Circuit Indicators

Short circuit indicators are used to indicate which cable section is faulty. They are normally installed around the individual cables, one each per phase.

OTHER ACCESSORIES (Optional)

- Busbar joints kit
- Busbar end-cap kit
- Cable termination kit
- Plug-in cable adapters



Jyoti Ltd. VADODARA (INDIA)
50 Years of Engineering Excellence

FOR FURTHER ENQUIRIES
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