

RAPIER RX Range up to 36kV

with automation and remote control options

ENGINEERING BRILLIANT SOLUTIONS



Lucy Switchgear has over 100 years of experience within the power distribution industry. Today the Company is at the cutting edge of Air Break Switch design and innovation, engineering flexible solutions for the most diverse requirements to customers throughout the world.

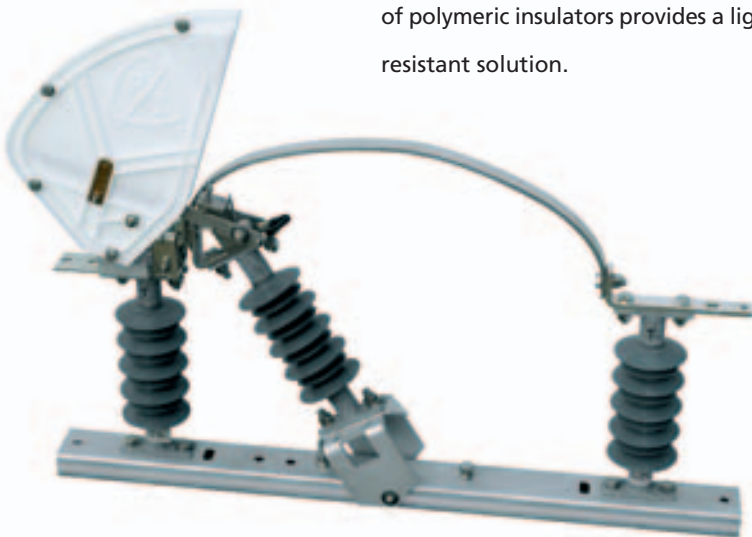
Rapier RX Product Range

Our Rapier RX range incorporates a modular design switch that can be configured to suit a variety of applications. Combining high performance and reliability, the Rapier RX rocking type switch can be a key element in rural distribution networks. They can be installed at cable termination poles, as a simple isolator right through to a fully automated load break switch.

The standard RX contacts and connector pads have been tested up to 630A, 25kA/3secs. The RX switch can be easily fitted with Fault Make Tips, Load Break Heads or Earth Blades, ensuring correct positioning and accurate alignment without the need for any specific setting. The folded universal support steelwork allows the standard switch to be mounted horizontally or vertically on most structures. A wide range of ceramic or polymeric insulators are available including Silicone or EPDM. The advent of polymeric insulators provides a lightweight, durable and vandal resistant solution.

Design Philosophy

Lucy Switchgear has invested heavily in our new design for the Rapier RX, air break switch disconnecter, to improve the performance and longevity of this core product when installed on the network.





Robustness and Reliability

- A high proportion of RX switch components are manufactured from stainless steel for maximum protection against corrosion.
- The contacts have been enhanced to enable them to withstand short time currents of up to 25kA for 3 secs. Unlike traditional air break switches, our RX range can be supplied with Tungsten Fault Make tips, ensuring that switches can withstand high fault making currents up to 31.5kA.
- Laminated flexible connections, supported by spring steel strips, have a life span far in excess of the standard 1,000 cycle test.
- The Arc Chute design has been improved for rapid arc extinction when load breaking up to 24kV.
- As an additional assurance of reliability, our Load Break Heads are fully tested to IEC 60265-1 by the KEMA laboratory in the Netherlands and have passed temperature rise and ice tests to IEC 62271-102, which makes the RX suitable for the most extreme climates and conditions (coastal areas, high pollution and humidity).
- High reliability and low friction bearings ensure consistent performance even after long periods without operation.

Our Rapier RX air break switch disconnecter is available in three options. The RX-M is a manual down pole or hook-stick operated air break switch. The RX-RC can be operated locally or remotely via a Gemini-Remote Terminal Unit (RTU) and finally the RX-FS is a fuse switch combination.

Simplicity

- Significant customer cost savings have been achieved through the simplified design of the Load Break Heads and commonality of main RX components. One standard contact system is now available across our full range, independent of the voltage and current ratings. This enables our customers to minimise stock holdings of spares.
- The retrofitability of the main RX components is also of prime importance. Both male and female contacts can be easily replaced on site without affecting the setting of the switch, which is achieved by means of accurate locating pins. The same applies to the Arc Chute and Fault Make Tips.
- Working in partnership with our customers, Lucy Switchgear has been able to produce simplified, universal steelwork to suit all mounting configurations for 12, 24 and 36kV switches. As a consequence, ease of installation has been greatly improved along with faster lead-times and better economies for stock holding requirements and materials management.

Rapier RX-M

The Rapier RX-M is a manual down pole or hook-stick operated air break switch disconnecter.

Added Safety

Network operators are no longer faced with the option of dependent manual (DM) air break switch disconnectors, but can now select an independent manual (IM) device incorporating our double acting spring mechanism (DASM). This high level hookstick ABSD also eliminates the cost of installing an earth mat at the base of the pole, as is the case for the down pole version.

The DASM also allows the addition of up to three stages of operation before opening or closing the Rapier RX-M.

Two stages of operation are achieved with the introduction of a shootbolt and the third stage by adding a Safety Lock cover. A "Safety Lock" label is also visible from ground level.

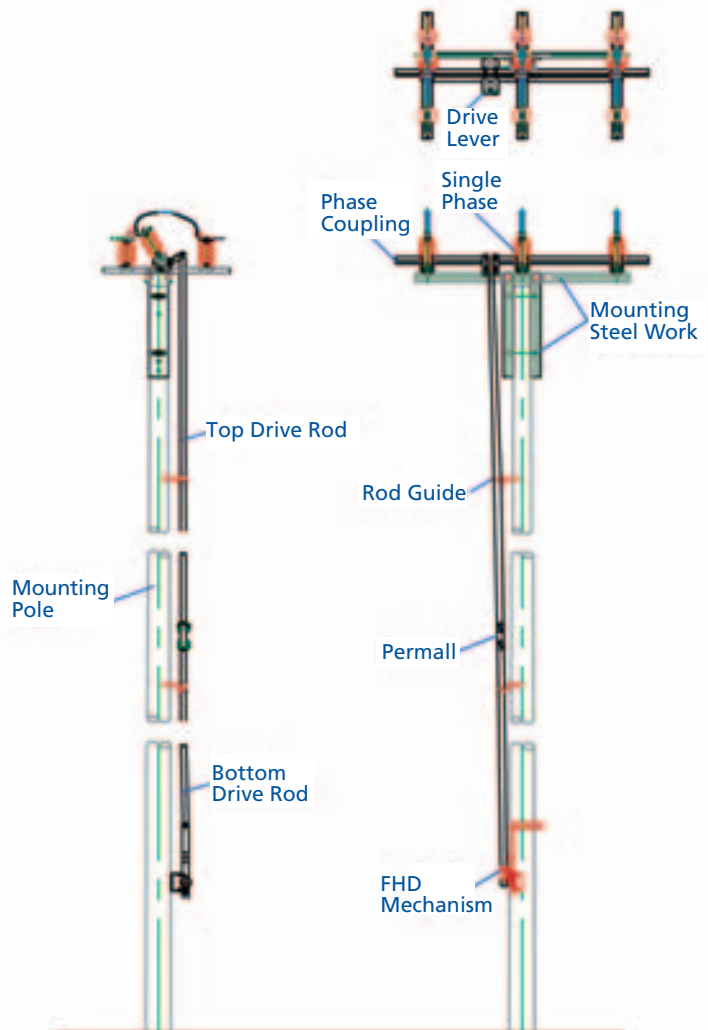
Future Automation

It is possible to install a population of Rapier RX-M's (with or without DASM) on your network, with the future assurance that you have the upgrade path to an automated air break switch (Rapier RX-RC).

Product Designation	Description	Mode	Options
RX-M 12, 24, 36	Manually operated air break switch disconnecter	Dependent Manual Independent Manual	Ground level handle or high level hookstick DASM or DASM & ground level handle



Rapier RX-M



Schematic - RX-M

Rapier RX-RC

By combining our experience in air break technology and system automation, Lucy Switchgear can now offer customers a low cost, highly reliable, remotely controlled air break switch disconnecter in the form of the Rapier type RX-RC.

Application

It is possible to install the Rapier RX-RC at a system open point in the main overhead lines (in addition to spur lines) and be in a position to remotely control and monitor such a device.

The Rapier RX-RC is a fully integrated product, comprising key features such as –

- Rapier RX switch (equipped with Load Breaking Arc Chutes and FM tips)
- Double acting spring mechanism (DASM)
- Our Gemini-RTU with built-in actuator
- Mounting steelwork to ENA standards

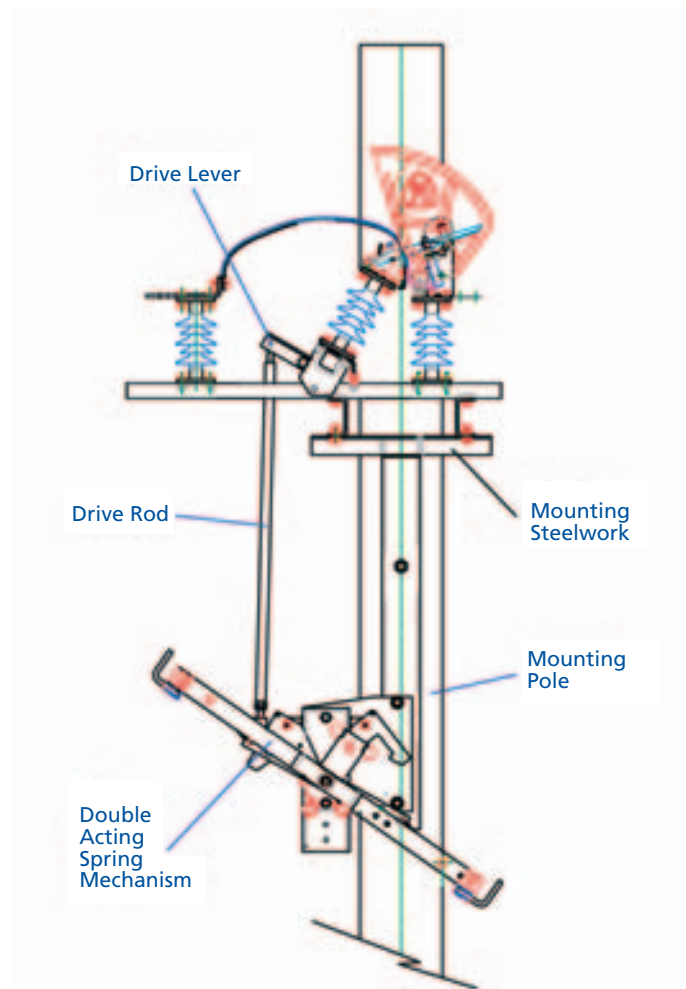
The standard installation is underslung beneath the overhead conductors, which in turn assists in the ease of disconnecting and reconnecting the RX switch.

Fault Passage Indicator/Current Monitor

To enhance the functionality of the RX-RC, our patented FPI/ current sensor can be fitted to provide remote indication of phase-phase, earth and sensitive earth faults to your Control Centre. In addition, the load current in the line can be monitored, giving valuable information to your network operators and assisting with fault diagnosis of load current.

Optional accessories are available to meet the total package requirement:-

- Patented fault passage indicator/current monitor
- Pole mounted voltage transformer (VT)
- Communications modem (to customer's preference)
- Silicone insulators
- Surge arrestor brackets
- Control cabinet mounting brackets
- Cable protection cover

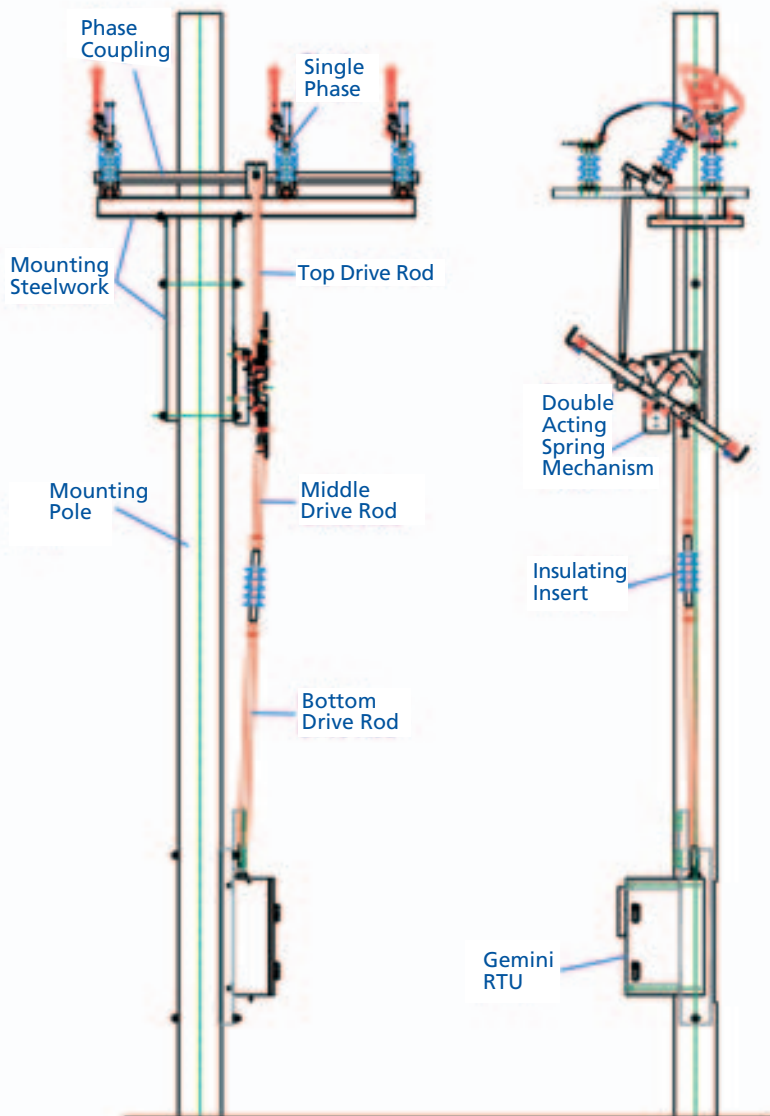
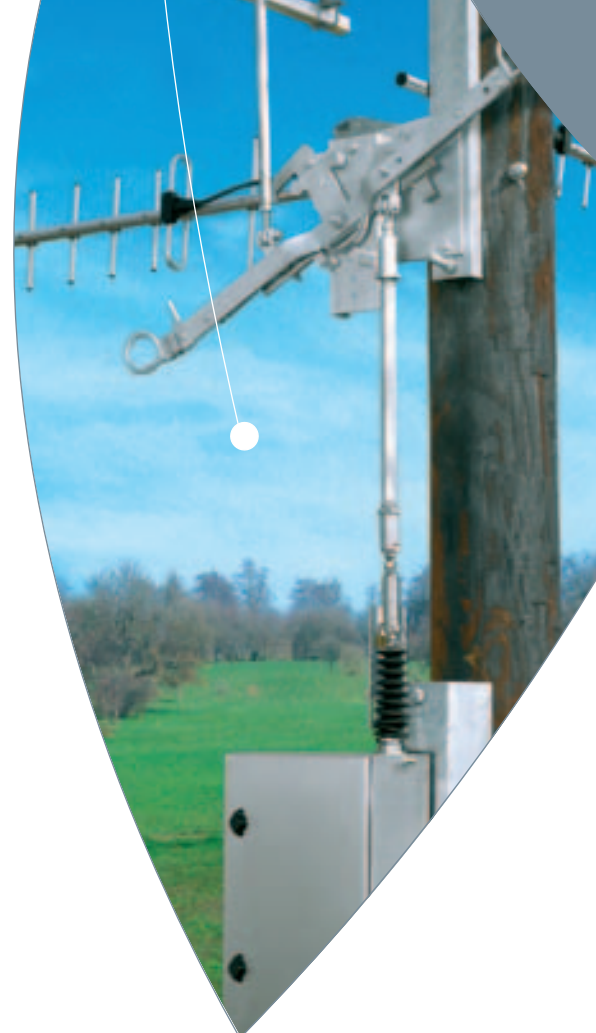


Schematic - RX-M12 with ARC Chute & DASM



Gemini RTU Controller

This Remote Terminal Unit (RTU) has been specifically designed for secondary automation applications. As well as being suitable for ring main unit applications, the Gemini-RTU forms a key component of the Rapier RX-RC.



Schematic - RX-RC

Key features include:

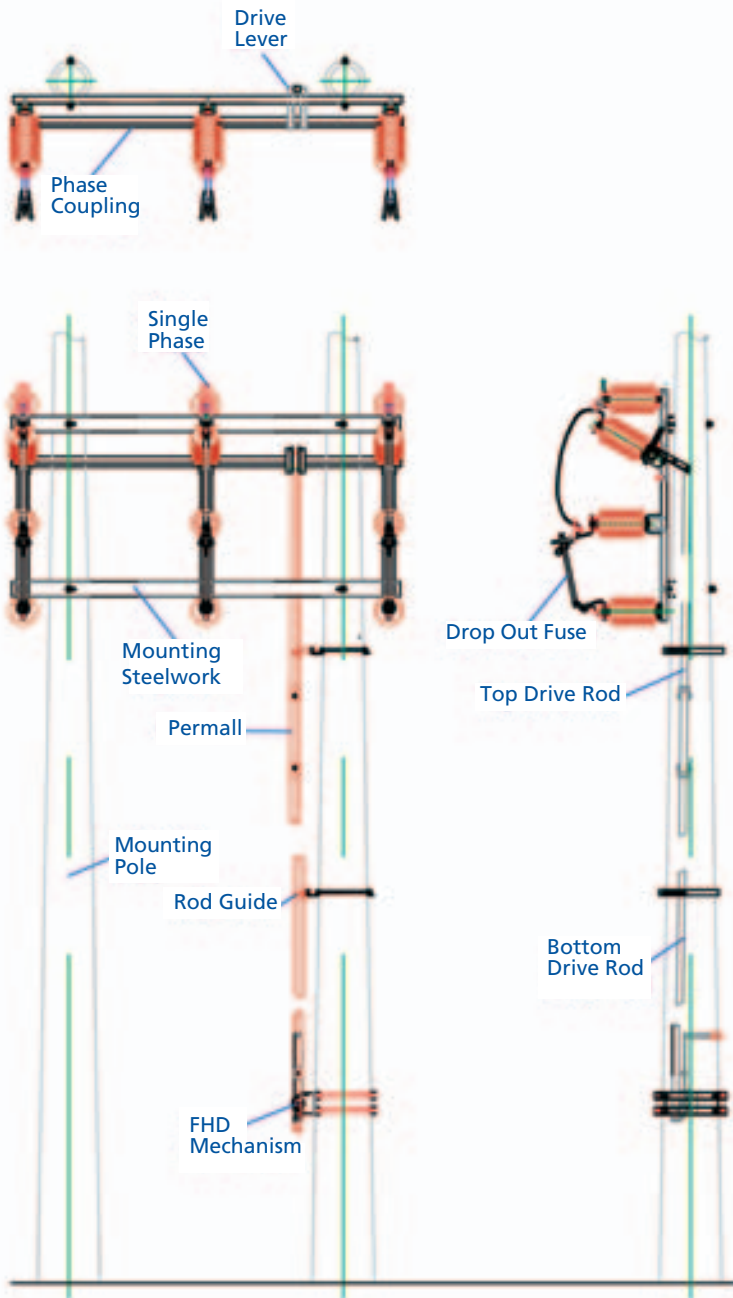
- Local / remote operation of the RX switch
- Flexible communications interfaces include radio (high/ low power), GSM, GPRS, Packet Data and many more
- DNP3 & IEC 60870-5-101 are de-facto standard communication protocols available – others on request
- Remote open/ closed indications
- Continued operation under power failure conditions, typically up to 24 hours
- Comprehensive battery back-up system and condition monitoring
- Patented FPI/ current sensor module (if requested)
- Double skinned, IP54 stainless enclosure

Product Designation	Mode	Description
RX-RC 12, 24, 36	Remote Control	Remotely controlled/monitored air break switch equipped with Gemini-RTU controller. Optional accessories include voltage sensing and patented fault passage indicator.

RX-FS

The Rapier RX-FS is a combination of a rocking isolator with a rewirable dropout expulsion fuse mounted in a series on each phase unit. This arrangement provides single phase fused protection of overhead lines and transformers, together with a facility for synchronized three phase isolation.

Each single phase fuse unit can be attended from ground level with a hookstick operating pole and the isolator is gang operated by a manual mechanism at ground level, with padlocking facility.



Schematic – RX-FS

RX-FS Features

- Fuse assembly with rewirable fuselink: ratings available up to 100 amps
- Laminated flexible tinned copper strips
- Maintenance free main bearing
- Galvanised steel phase channel bases
- Tinned copper single or two hole terminal pads
- Moving contacts of HD.HC electroplated copper, with stainless steel contact spring
- Fixed contact of HD.HC copper, incorporating a single or two hole terminal pad
- Padlock facility

Options

- Arc Chutes or Load Break Heads
- Auxiliary Contacts
- Hook stick operating mechanism
- Electrically interlocked manual mechanism
- Optional higher insulation creepage

Product Designation	Mode	Description
RX-FS	Fuse Switch	Fuse switch consisting of an in-series manually operated air break switch disconnecter with expulsion type fuses.

RAPIER RX Electrical Performance

Product Range	Rapier RX			
	12kV	15.5kV	24kV	36kV
Rated Voltage	12kV	15.5kV	24kV	36kV
Rated Continuous Current	up to 630A	up to 630A	up to 630A	up to 630A
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Short Time Current	25kA/3s	25kA/3s	25kA/3s	25kA/3s
Current Breaking Capacity	up to 630A	up to 630A	up to 630A	up to 630A
Fault Make Capacity	up to 31.5kAp	up to 25kAp	up to 25kAp	up to 25kAp
Impulse Withstand Voltage	85kV	110kV	145kV	195kV
Insulator Creepage	To 560mm	To 560mm	To 1000mm	To 1320mm
Options				
Earth Blades	25kA/3s	25kA/3s	25kA/3s	25kA/3s
Environmental				
Ambient Temperature	-25°C + 55°C			
Humidity	0 – 100%			
Altitude	The insulation ratings above are valid up to 1000m above sea level. As per IEC requirements, an altitude correction factor must be applied for installations above this level.			

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A global network

In association with industrial partners and contractors, Lucy Switchgear has established a global network operating in over 50 countries. Currently its 50 agents, joint venture associates and trading partners represent Lucy Switchgear products all over the world from Europe, the Middle East, the Far East, Africa, Australasia, Central America, the Caribbean to South America thus strengthening the Lucy presence globally.

With headquarters in Oxfordshire, UK, and a main regional office in Dubai, servicing the Middle East, the Lucy group is constantly looking to develop further partnerships.

