

Construction and mode of operation of SION cassette

Switching medium

The vacuum switching technology, proven and fully developed for more than 30 years, serves as arc-quenching principle by using vacuum interrupters.

Phase assemblies

The phase assemblies consist of the vacuum interrupters and the phase shrouds. The vacuum interrupters are air-insulated and freely accessible. The phase assemblies are fixed on the mounting plate of the operating mechanism and supported by means of the phase shroud. The vacuum interrupter (3) is mounted rigidly to the upper interrupter support. The lower part of the interrupter is guided in the lower interrupter support, allowing axial movement. The phase shroud (4) absorbs the external forces resulting from switching operations and the contact pressure.

Operating mechanism

The whole operating mechanism is mounted on its mounting plate, including the motor, releases, indicators and actuating devices. Stored-energy operating mechanism
The operating mechanism is a stored-energy spring mechanism.

The force is transmitted from the operating mechanism to the phase assemblies via operating levers. The closing spring can be charged either electrically or manually and latches automatically in when charging is complete. The closing spring acts as a stored-energy mechanism.

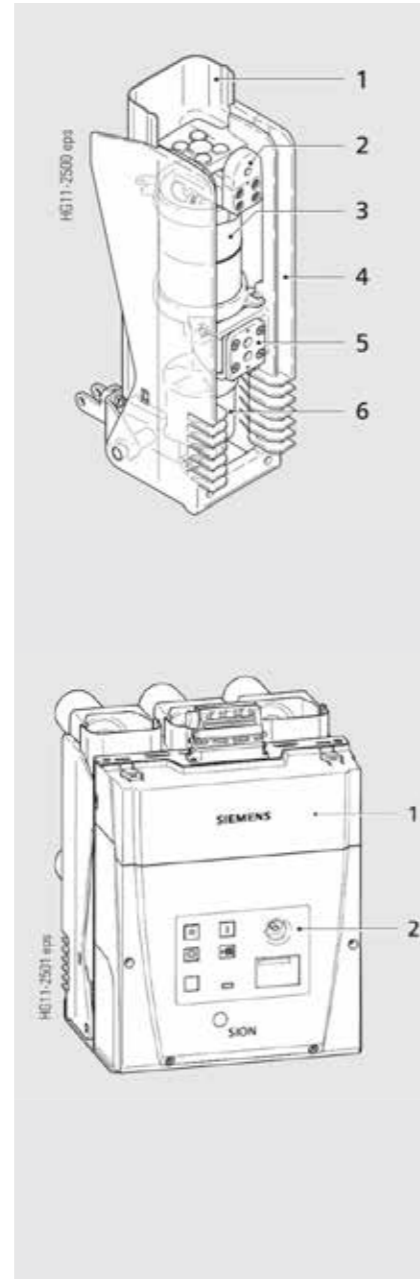
To close the breaker, the closing spring can be unlatched either mechanically by means of the local "ON" pushbutton or electrically by remote control. The closing spring charges the contact-pressure / opening springs as the breaker closes. The now discharged closing spring will be charged again automatically by the mechanism motor.

The breaker is now capable of performing the OPEN – CLOSE – OPEN operating sequence that is required for an unsuccessful auto-reclosing operation on the system side. All stored energy mechanisms perform the switching duties of synchronizing and rapid load transfer as well as auto-reclosing.

Trip-free mechanism

SION vacuum circuit-breakers have a trip-free mechanism according to IEC 62271-100. In the event of an opening command being given after a closing operation has been initiated, the moving contacts return to the open position and remain there even if the closing command is sustained. This means that the contacts of the vacuum circuit-breakers are momentarily in the closed position, which is permissible according to IEC 62271-100.

The motors for charging the closing spring operate in short-time duty. Therefore the voltage and power consumption might differ from the data of the rating plate.



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The information in this document contains general descriptions of the technical options available, which may not apply in all cases. The required technical options should therefore be specified in the contract.

SIEMENS



Technical data

Rated Normal Current	I _r	630 A	1250 A	2000 A
Rated Voltage	U _r	12 kV		
Rated Lightning Impulse Voltage	U _p	75 kV		
Rated Power Frequency Withstand Voltage	U _d	28 kV		
Rated Short Circuit Breaking Current	I _{sc}	20 kA	31.5 kA	25 kA
Rated Short Circuit Making Current	I _{ma}	50 kA	80 kA	63 kA
Rated Short Time Current		20 kA for 3 s	31.5 kA for 1 s	25 kA for 3 s

Reyrolle LMT Retrofit Solution

Reyrolle LMT Retrofit Solution



As the original equipment manufacturer (OEM), we offer the most comprehensive range of spare and replacement parts for all Reyrolle equipment. Reyrolle supply spare parts which uniquely match the original design and material specifications thus ensuring the safe guarantee of rated performances.

Siemens has a strong heritage of expertise across transmission and distribution and with the latest LMT retrofit circuit breaker; you can be sure of the highest quality solution and service.

The LMT retrofit has been specifically designed for customers to seamlessly interface with their existing Reyrolle panels replacing outdated oil or SF₆ circuit breaker units with a modern vacuum circuit breaker. This can be a simple retrofit to extend life and minimise maintenance requirements or as part of a comprehensive upgrade to enhance the ratings of installed equipment.

The retrofit solution has been developed using all of the Reyrolle application engineering knowledge acquired since the first development of LM23T in 1963. We are able to understand the particular application requirements of each customer installation to ensure a seamless and reliable retrofit solution.

As the OEM, we can also certify all ratings and performance documentation such that risks and uncertainty are avoided.

In our purpose built UK production facility, each LMT retrofit unit is guaranteed to interface with installed panels using the same jigs and fixtures as used for the production of the original equipment.



Reyrolle LMT Retrofit ready for despatch

Type test

The LMT retrofit circuit breaker has been type tested at independently accredited test laboratories and fully complies with all mandatory tests in IEC 62271-200 and other relevant IEC and national standards.

Tests have been completed with panels of different types so that we can provide test evidence to cover your specific needs and ensure the total solution is effective.

Serving the market

Reyrolle installed 66,000 LMT units worldwide and it is estimated that 40,000 are still in service. In support of this, the LMT retrofit can be applied to the complete installed base of LMT, LSR, LMV, LMVP, and LMR equipment types.



Your benefits at a glance:

Reduced cost of ownership

Siemens SION vacuum devices require minimal maintenance, very high switching durability of vacuum, no oil or gas to handle.

Optimised life extension of existing switchgear

Extending the life of switchgear up to 25 years.

Minimal plant outage costs

Minimum disruption and site works required, no modifications necessary to shutters or cable boxes.

Low cost compared to renewal

Total cost and time evaluation shows considerable advantages over replacement in many high density distribution applications and also critical industrial applications.

Type tested and guaranteed

Type tested in actual panel types in accordance with IEC 62271-200.

Fast site delivery

In most cases equipment available six weeks following order receipt.

Upgrades

Short circuit ratings up to 31.5kA can be achieved. Additional extension panels and / or protection and control upgrades if required.

Added value services

A key part of any retrofit project is the added value services that we can provide. We are pleased to offer the following directly from the Siemens Service Centre, UK, Reyrolle Works:

Condition assessment

Evaluation of equipment condition by using condition monitoring techniques to assess existing condition, including full switchboard partial discharge monitoring, substation surveys, oil sampling and thermal imaging.

Spares and replacement parts

As the OEM, we offer the most comprehensive range of spare and replacement parts for all Reyrolle equipment. Reyrolle supplied spare parts uniquely match the original design and material specifications thus ensuring the safe guarantee of rated performances.

Upgrading

The application of retrofit circuit breakers may allow the equipment ratings to be enhanced by reviewing design, condition and possible modifications, i.e. uprating from 13.1kA to 20kA.

Protection and control

Automation, control and protection schemes can be upgraded at the same time as retrofitting to make use of enhanced functionality.

Environmental

Approved certification and evaluation body for SF₆ gas handling and training (according "The F Gas Regulations"), SF₆ decontamination and disposal services and expertise available.

The SION cassette is supplied complete from the advanced Siemens factory in Berlin and is fitted to the purpose designed truck and tested at the Reyrolle works, Hebburn, UK.

LMT retrofit can expand the life of existing switchgear up to 25 years.

