

# W-SLC Medium Voltage fused contactor truck

A safe, reliable and efficient motor starter



**EATON**

*Powering Business Worldwide*



Automotive



Aerospace



Truck



Hydraulics



Electrical

# Powering business worldwide

Eaton delivers the power inside hundreds of products that are answering the demands of today's fast changing world.

We help our customers worldwide manage the power they need for buildings, aircraft, trucks, cars, machinery and entire businesses. And we do it in a way that consumes fewer resources.

## Next generation transportation

Eaton is driving the development of new technologies – from hybrid drivetrains and emission control systems to advanced engine components – that reduce fuel consumption and emissions in trucks and cars.

## Higher expectations

We continue to expand our aerospace solutions and services to meet the needs of new aviation platforms, including the high-flying light jet and very light jet markets.

## Building on our strengths

Our hydraulics business combines localised service and support with an innovative portfolio of fluid power solutions to answer the needs of global infrastructure projects, including locks, canals and dams.

## Powering Greener Buildings and Businesses

Eaton's Electrical Group is a leading provider of power quality, distribution and control solutions that increase energy efficiency and improve power quality, safety and reliability. Our solutions offer a growing portfolio of "green" products and services, such as energy audits and real-time energy consumption monitoring. Eaton's Uninterruptible Power Supplies (UPS), variable-speed drives and lighting controls help conserve energy and increase efficiency.



# MV switchgear technology is in our DNA

Eaton Corporation is a worldwide leader in the design, manufacture, and sale of safe, reliable and high-performance medium voltage power distribution equipment in accordance with IEC, ANSI and GB / DL standards

## **Complete Global Medium Voltage Switchgear Solutions**

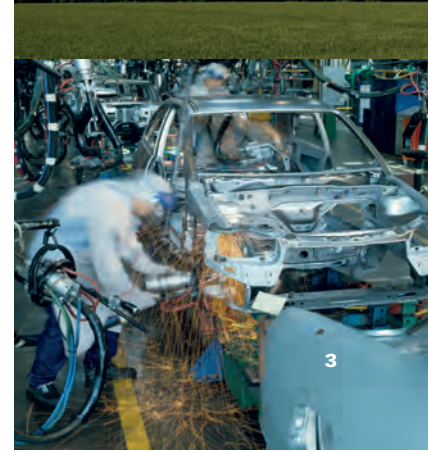
Eaton, a premier leader in designing and manufacturing power distribution and protection equipment in the electrical industry, offers a comprehensive range of medium voltage (MV) solutions to meet the needs of virtually every application. From products that feature cutting-edge design that allow for easy access, maintenance and space savings, to arc-resistant products that enhance safety, Eaton's medium voltage solutions provide a variety of products for every need. Additionally, Eaton's global service network provides maximum customer support in all regions of the world.

As one of the few completely vertically integrated and diversified industrial manufacturers in the world, Eaton designs not only MV assemblies, but also the key components that comprise the MV solutions – from steel housing and circuit breaker compartments to vacuum interrupters, circuit breakers, bus systems and fuses.

Eaton's MV heritage, strengthened by acquisitions such as Westinghouse DCBU, Cutler Hammer, MEM and Holec, has resulted in breakthrough MV technologies and numerous international patents over the years.

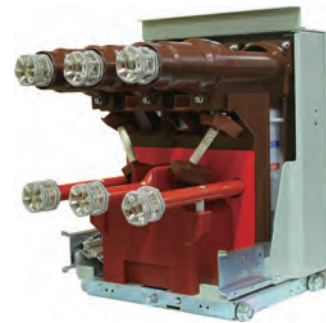
Part of Eaton's complete electrical PowerChain Solutions – which help businesses minimize risks while realizing greater reliability, cost efficiencies, capital utilization and safety – Eaton's medium voltage equipment meets all applicable standards and certifications such as IEC, NEMA / ANSI, GB / DL, UL, IEEE, KEMA and CSA.

When it comes to medium voltage solutions, you can trust the one name with a long history of proven performance: Eaton.



# Introduction

Developed with cutting-edge technologies, Eaton's W-SLC withdrawable type vacuum contactor-fuse combination units are world leading in terms of performance, safety and functionality. The W-SLC vacuum contactor-fuse combination units are available in two versions: electrical and mechanical latch, for applications in AC systems with voltages up to 12kV and 50/60Hz. They are ideally suited for use in applications where frequent operations, heavy loads and harsh environments are the norm.



Optional = On-board CPT with primary fuse protection



## Key technical features\*

### The ratings for new vacuum contactor-fuse combination units:

- Voltage: 7.2kV and 12kV
- Current: Contactor continuous current: 400 A
- Combination Continuous current: 200 A
- Breaking: up to 50 kA with fuse
- 8500 A interrupting rating without fuse at 7.2kV
- 4000 A interrupting rating without fuse at 12kV

### Control voltages:

- 110/220 Vac, 50 Hz
- 120/240 Vac, 60 Hz
- 110/120 Vdc
- 240 Vac, 50Hz
- Optional on-board CPT:
  - 12kV 10/0.11kV or 11/0.11kV - 400VA
  - 12kV 10/0.22kV or 11/0.22kV - 400VA
  - 7.2kV 6/0.11kV or 6.6/0.11kV - 400VA
  - 7.2kV 6/0.22kV or 6.6/0.22kV - 400VA

### Service life:

- 300,000 electrical operations
- 1,000,000 mechanical operations

\* For detailed information, please refer to technical data table

## Applications

### W-SLC vacuum contactor-fuse combination motor starting applications:

- Squirrel-cage induction motors
- Synchronous motors
- Wound-rotor motors

### Suitable for:

- Full voltage starting
- Reduced voltage starting

## The perfect choice for all applications

- Oil&Gas
- HVAC
- Mining
- Automotive
- Petrochemical
- Pulp and Paper
- Pumps, Fans, Conveyors and Crushers





## Design and testing standards

**Eaton's vacuum contactor-fuse combination units are fully in line with IEC standards.**

- IEC 62271-1
- IEC 62271-106

## Utilization conditions

**Eaton's vacuum contactor-fuse combination units are suitable for use in the following conditions:**

- Ambient temperature: -15°C to +40°C
- Relative humidity: max. 95%, non-condensing
- Altitude: up to 1000 m

Please contact Customer service for special requirements

## W-SLC IEC 7.2kV and 12kV

### Medium voltage vacuum contactor

The W-SLC is an IEC medium voltage withdrawable contactor fuse combination switching unit for applications at 7.2kV and 12kV. It works in combination with fuses, for short-circuit protection, to control medium voltage equipment such as 3-phase motors, transformers, capacitor banks and is especially used in applications where frequent operations are required.

The W-SLC is designed to perfectly fit in medium voltage switchgear manufactured by panel builders and OEMs.



## L-Frame

The W-SLC L-Frame is designed for fast installation by panel builders and OEMs. It ensures full alignment of the contactor contacts with the L-Frame primary contacts that allow for busbar or cable connections. The independently operated shutters are automatically aligned within the L-Frame, facilitating the smooth operation of the shutter mechanism. The shutters can be locked in the closed position for additional safety when the contactor is withdrawn from the switchgear.



## Operation principle

### Electrical latch:

Electromagnetic operating mechanism makes the contactor close. The electromagnetic operation is via a single closing coil which when energised holds the contactor closed. The coil is continuously rated and when the coil is de-energised the contactor opens under the control of an opening spring.

### Mechanical latch:

For contactors with mechanical latch, there are two operating coils, one for closing and one for opening the contactor. To close the contactor a pulse signal is sent to the closing coil and to open the contactor a pulse signal is sent to the opening coil.

## Product safety features

**The contactor is prevented from closing and a panel indication is provided when:**

- Fuse is blown or Fuse is not fitted

**Additional interlock options are available to interface with the panel if appropriate panel designs are incorporated such that:**

- The truck is prevented from being racked in if:
  - The front door is open
  - The earth switch is ON
- The earth switch cannot be switched ON if the truck is in the Service Position.
- The panel door cannot be opened if the truck is in the Service Position.

## Motorized Levering in (MLi-W)



The MLI-W system allows the operator to move the W-SLC contactor inside of the panel, between the connected–test–disconnected positions from a remote control station. This remote operation enhances safety by removing the operator from a potential arc flash exposure point. In addition, the MLI-W provides improved control and operational capability of the switchgear. The MLI-W system is installed in the W-SLC cradle, without any dimensional changes to the breaker or the panel/L-Frame system.

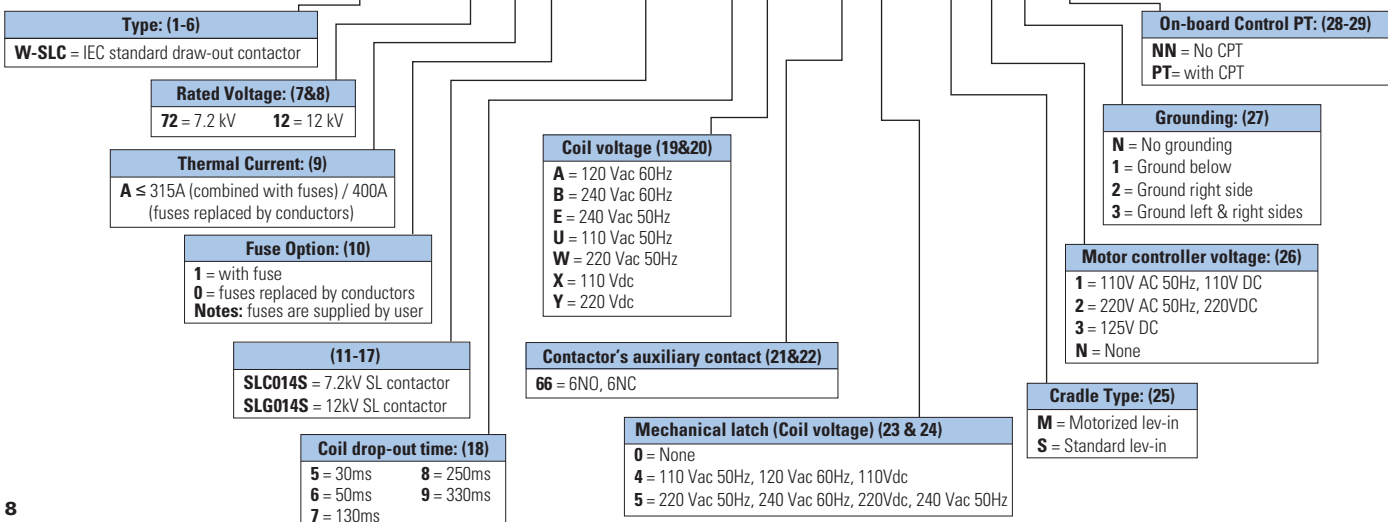
# Specifications and technical data

Key specifications and technical data are shown in below table:

No.	Characteristics	Units	Withdrawable Contactor-7.2	Withdrawable Contactor combined with Fuse-7.2	Withdrawable Contactor-12	Withdrawable Contactor combined with Fuse-12	
1	Rated voltage	kV	7.2	7.2	12	12	
2	Rated frequency	Hz	50-60	50-60	50-60	50-60	
3	Rated insulation level	Power frequency withstand voltage(1min)	kV	20	20	28	28
		Lightning withstand voltage	kV	60	60	75	75
4	Rated current	A	400	Max 200A with 355A fuse	400	Max 200A with 250A fuse	
5	Rated short-time withstand current (1s)	kA	6	6	6	6	
6	Rated short-time withstand current (30s)	kA	2.4	2.4	2.4	2.4	
7	Rated duration of short-circuit	s	1	1	1	1	
8	Maximum breaking capacity	kA	8.5 (3 times)	50	4 (2 times)	50	
9	Rated load and overload characteristics	25 opening operations, Category AC4	A	3200	3200	3200	3200
10	Rated load and overload characteristics	100 closing operations, Category AC4	A	4000	4000	4000	4000
11	Take-over current for release-operated combination	A	—	5000*	—	4000*	
12	Closing time	ms	≤150	≤150	≤150	≤150	
13	Opening time	Mechanical latch	ms	≤70	≤70	≤70	≤70
		Electrical operating	ms	50-330 (selectable)	50-330 (selectable)	50-330 (selectable)	50-330 (selectable)
14	Electrical life (category AC3 and AC4)	operations	300.000	300.000	300.000	300.000	
15	Mechanical life	Mechanical latch	operations	250.000	250.000	250.000	250.000
		Electrical operating	operations	1.000.000	1.000.000	1.000.000	1.000.000
16	Control Power Supply	Rated voltage		110/220 Vac, 50 Hz	110/220 Vac, 50 Hz	110/220 Vac, 50 Hz	110/220 Vac, 50 Hz
				120/240 Vac, 60 Hz	120/240 Vac, 60 Hz	120/240 Vac, 60 Hz	120/240 Vac, 60 Hz
				110/120 Vdc	110/120 Vdc	110/120 Vdc	110/120 Vdc
				240 Vac, 50 Hz	240 Vac, 50 Hz	240 Vac, 50 Hz	240 Vac, 50 Hz
	Mechanical latch	Closing coil power	kVA	1 (110V), 1.8 (220V)	1 (110V), 1.8 (220V)	1 (110V), 1.8 (220V)	1 (110V), 1.8 (220V)
		Opening coil power	VA	550VA	550VA	550VA	550VA
Electrical latch	Closing coil power	kVA	1 (110V), 1.8 (220V)	1 (110V), 1.8 (220V)	1 (110V), 1.8 (220V)	1 (110V), 1.8 (220V)	
	Holding coil power	VA	40 (110V), 50 (220V)	40 (110V), 50 (220V)	40 (110V), 50 (220V)	40 (110V), 50 (220V)	
17	Auxiliary contact ratings	Voltage (max.)	V	600	600	600	600
		Current	A	10	10	10	10
		Making capacity (DC)	VA	125	125	125	125
		Making capacity (AC)	VA	7200	7200	7200	7200
		Breaking capacity (DC)	VA	125	125	125	125
		Breaking capacity (AC)	VA	720	720	720	720
18	Utilization category		AC-3, AC-4	AC-3, AC-4	AC-3, AC-4	AC-3, AC-4	
19	Weight (without fuses)	kg	96	96	96	96	

## Descriptions of style numbers

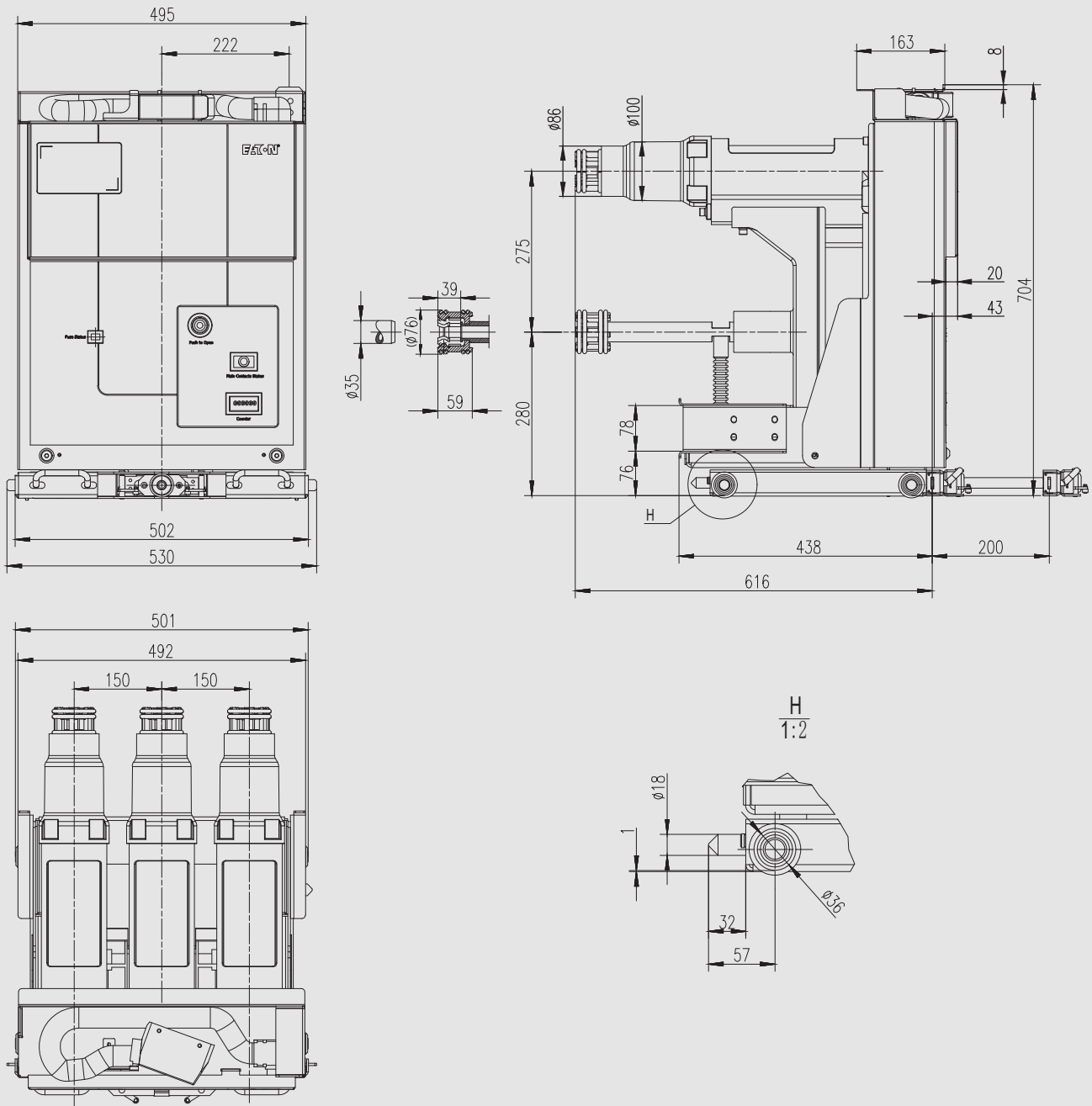
**W-SLC - 12 A 1 SLG014S 5 Y - 66 5 - M 2 1 PT**



# Dimensions

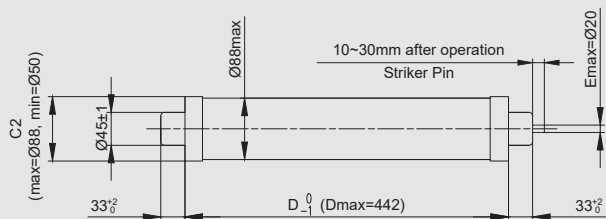
Eaton's mid-mounted type withdrawable vacuum contactor-fuse combination units

## Dimensions W-SLC 7.2kV and 12kV



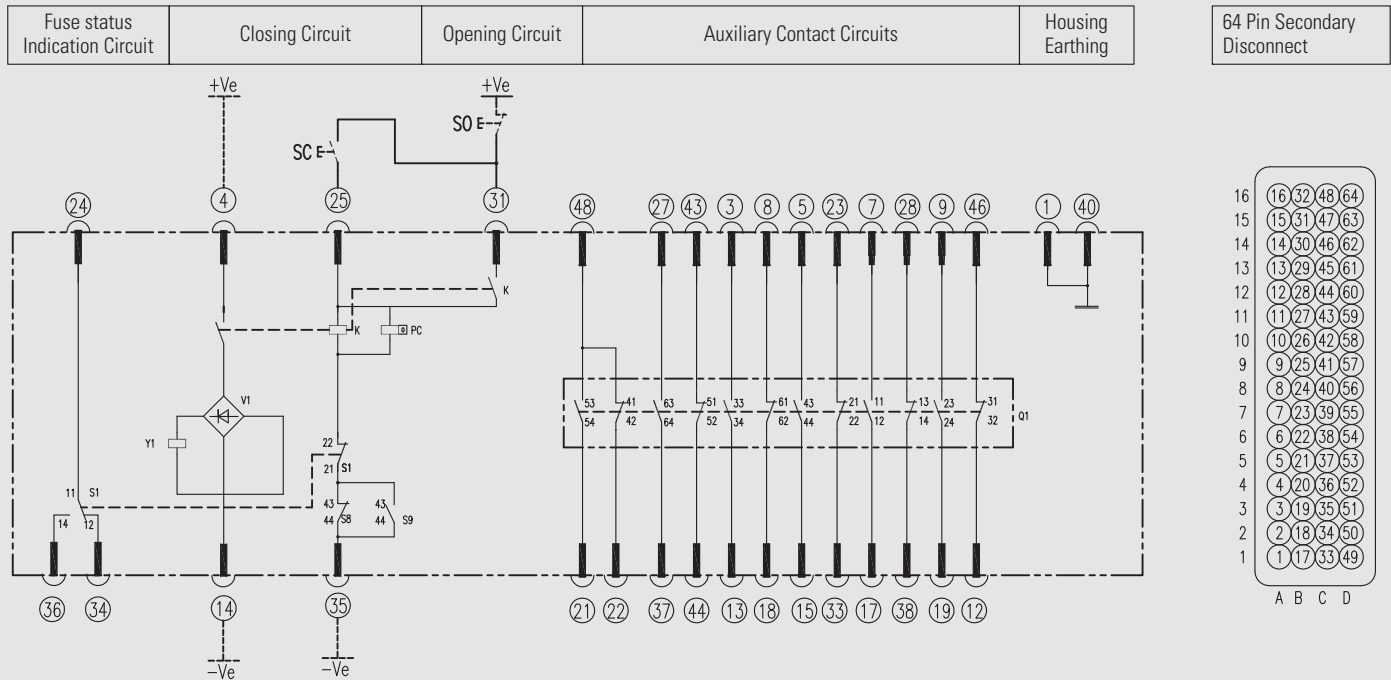
Fuses – The fuse dimension has to be according to the DIN43625 type C standards with maximum cartridge size e=442mm.

Unit: mm

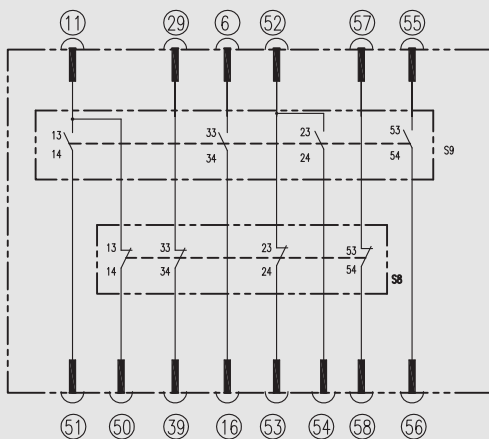


# Electrical operation Wiring Diagram

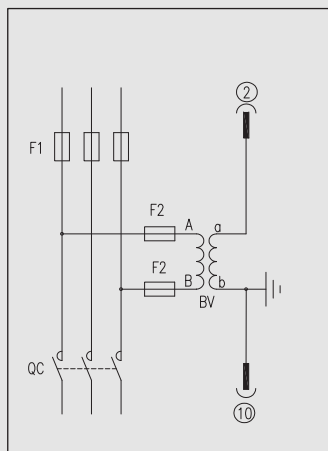
## Electrical Operation Wiring Diagram of W-SLC withdrawable vacuum contactor-fuse combination units



**Note:** This drawing is shown with the Contactor Truck in the withdrawn 'Test' Position, de-energised, with fuses fitted and healthy.



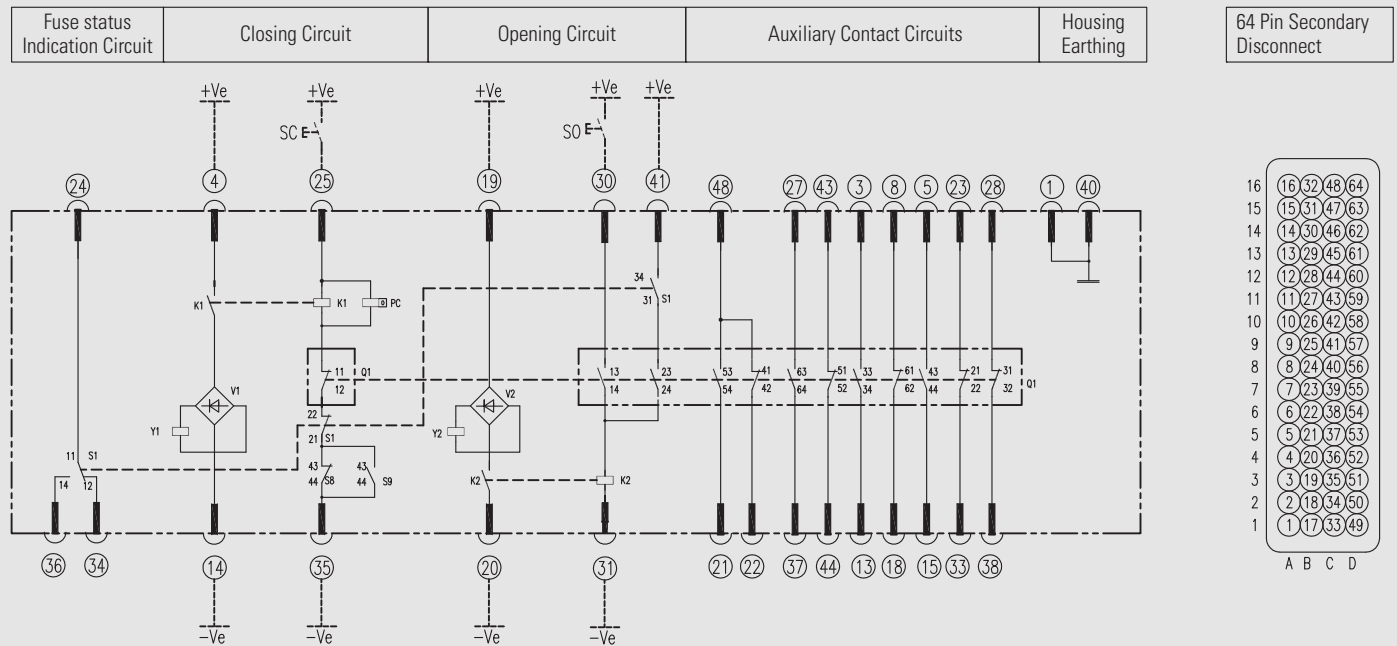
- K1: Closing/Holding Relay
- PC: Operations Counter
- Q1: Auxiliary Contact (Switching when the contactor closes or trips)
- SC: Closing button
- SO: Opening button
- S1: Auxiliary Switch (Switching when fuse is blown or not fitted)
- S8: Auxiliary Contact (Switching when the cradle is on Test Position)
- S9: Auxiliary Contact (Switching when the cradle is on Connected Position)
- Ve: Control Supply
- V1: Bridge rectifier (not included for DC applications)
- Y1: Closing coil



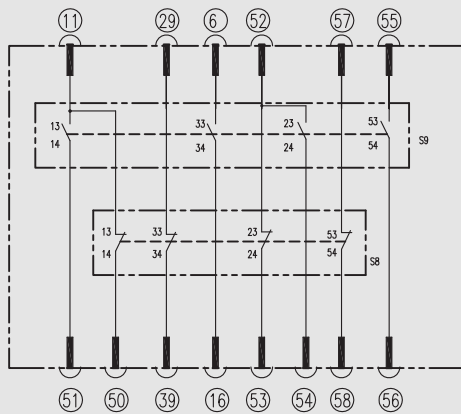
Contactor control voltage power supply with on-board CPT option.

# Mechanical latching option Wiring Diagram

**Mechanical latching Wiring Diagram of W-SLC withdrawable vacuum contactor-fuse combination units**



**Note:** This drawing is shown with the Contactor Truck in the withdrawn 'Test' Position, de-energised, with fuses fitted and healthy.



- K1: Closing Relay
- K2: Trip Relay
- PC: Operations Counter
- Q1: Auxiliary Contact (Switching when the contactor closes or trips)
- SC: Closing button
- SO: Opening button
- S1: Auxiliary Contact (Switching when fuse is blown or not fitted)
- S8: Auxiliary Contact (Switching when the cradle is on Test Position)
- S9: Auxiliary Contact (Switching when the cradle is on Connected Position)
- Ve: Control Supply
- V1: Bridge rectifier (not included for DC applications)
- V2: Bridge rectifier
- Y1: Closing coil
- Y2: Trip coil



# Energizing a world that demands more.

## We deliver:

- **Electrical solutions** that use less energy, improve power reliability and make the places we live and work safer and more comfortable
- **Hydraulic and electrical solutions** that enable machines to deliver more productivity without wasting power
- **Aerospace solutions** that make aircraft lighter, safer and less costly to operate, and help airports operate more efficiently
- **Vehicle drivetrain and powertrain solutions** that deliver more power to cars, trucks and buses, while reducing fuel consumption and emissions

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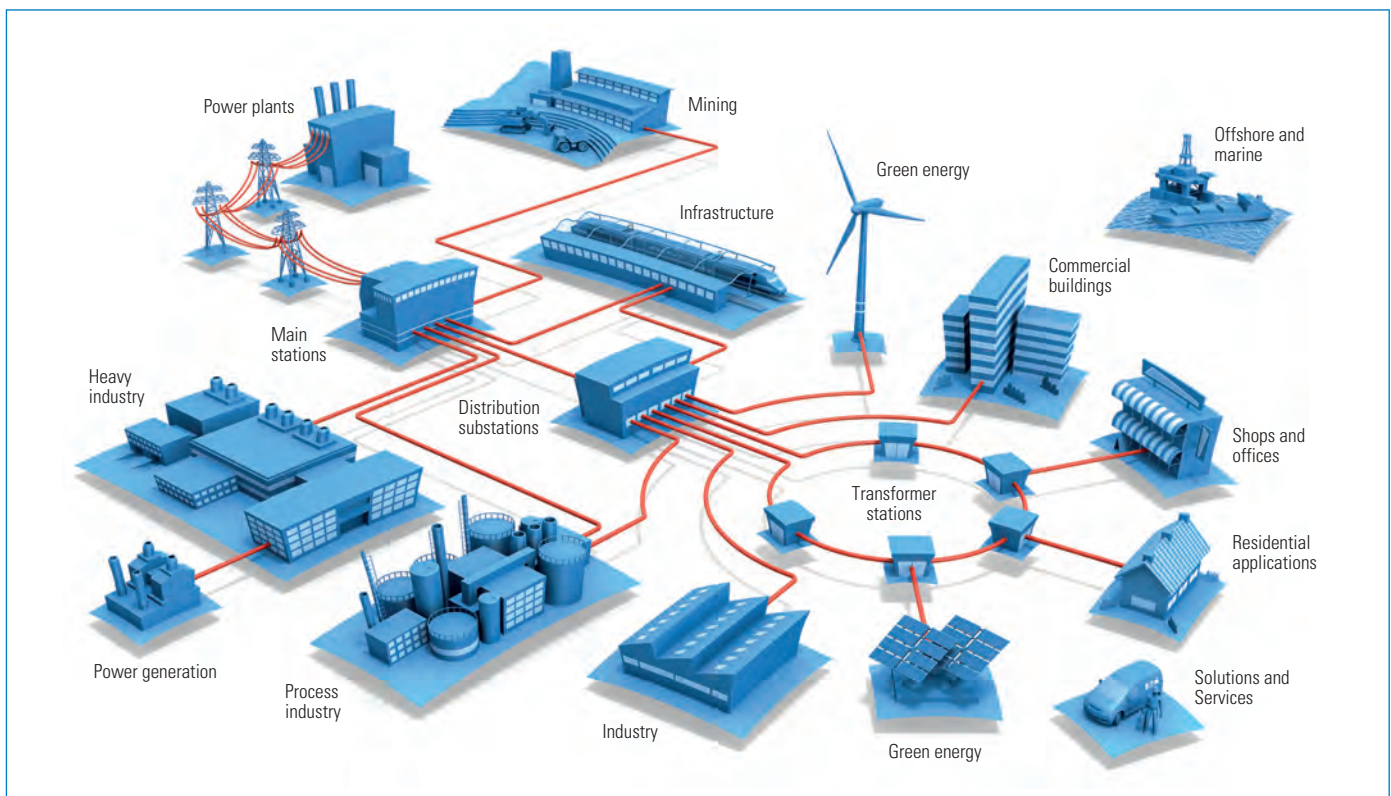
Eaton's mission is to improve the quality of life and the environment through the use of power management technologies and services. We provide sustainable solutions that help our customers effectively manage electrical, hydraulic, and mechanical power – more safely, more efficiently, and more reliably. Eaton's 2019 revenues were \$21.4 billion, and we sell products to customers in more than 175 countries. We have approximately 95,000 employees.

Eaton began operation in China more than 20 years ago. Since entering the Chinese market in 1993, Eaton's presence has grown significantly in the country. In 2004, Eaton moved its Asia Pacific headquarters from Hong Kong to Shanghai.

In the Greater China region, Eaton has nearly 9,800 employees, 29 manufacturing bases and 5 R&D centers. Today, we make most products for all of Eaton's distinct business here.

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## Eaton medium voltage products in the energy chain



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