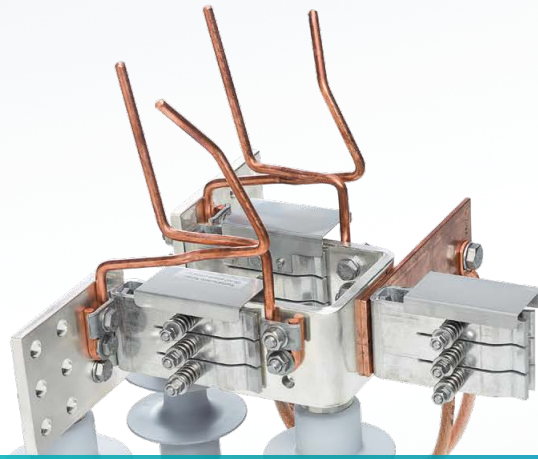
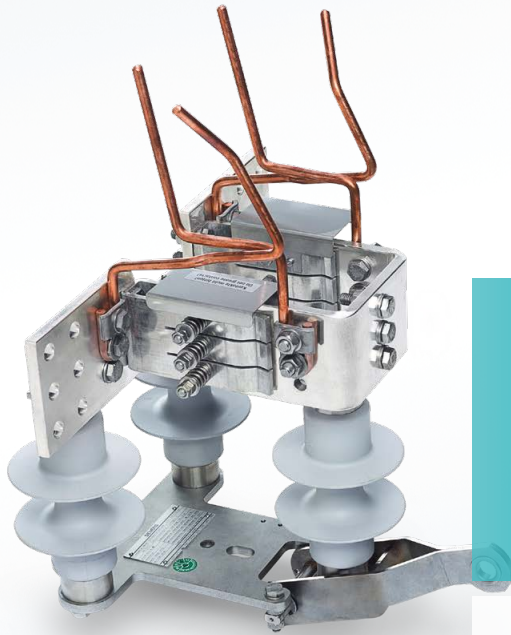


SIEMENS

Ingenuity for life



Disconnectors and switch disconnectors up to 3 kV DC

Sicat 8WL6134 for overhead contact line systems

[siemens.com/rail-electrification](https://www.siemens.com/rail-electrification)

The disconnectors and switch disconnectors of the product line Sicat® 8WL6134 are outdoor switching devices for fixed installations of DC railways. They are used for feeding, connecting or disconnecting track sections and to connect parallel contact lines.

The disconnectors and switch disconnectors meet the requirement of the EN 50123-1 for a visible isolating distance.

Features

- Low-maintenance due to silver-graphite coated contacts with selflubricating characteristics (depending on variant)
- High current load capacity up to 4,000 A (depending on variant)
- High dielectric strength due to large creepage distances and clearances in air
- Long service life due to corrosion resistant materials and dirt- and water-repellent surfaces of the composite insulators
- Easy installation and resistant against vandalism due to shatter-proof composite insulators



Design

The disconnectors and switch disconnectors consist of the following main components:

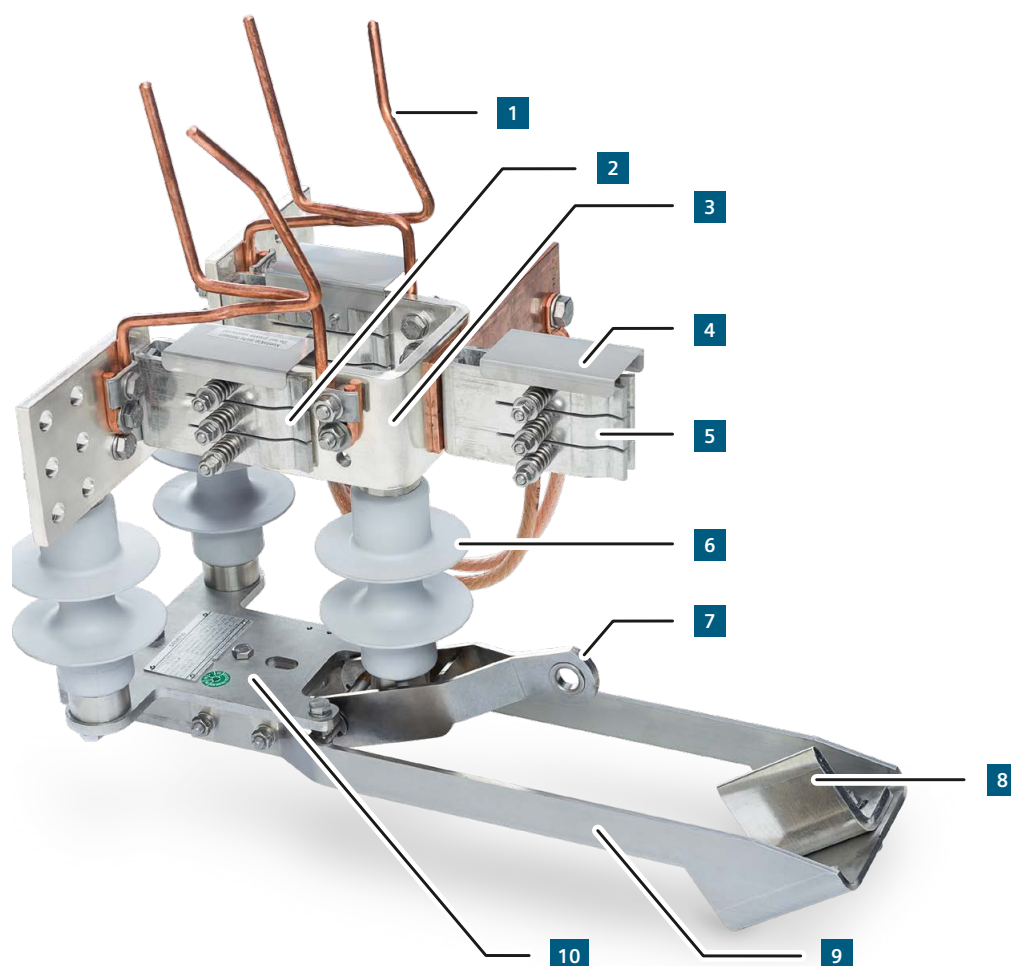
- Arcing horns
- Contact set with protective covers
- Silicone composite insulators
- Baseplate with turning lever

Due to the use of fittings and brackets made of stainless steel a high corrosion resistance is achieved. Therefore the disconnectors and switch disconnectors are also suitable for the use in maritime climates. Protective covers made of stainless steel fitted over the contact sets protect the contact points additionally against direct atmospheric exposures. A higher environmental resistance is achieved by use of a silver-graphite coating on the surfaces of the contact sets.

Disconnector monitoring system option

Optionally, the Sicat 8WL6134 disconnectors and switch disconnectors can be equipped with the Sicat DMS disconnector monitoring system. In combination with the control of the Sicat 8WL6243 and 8WL6244 operating mechanisms with permanent power supply, the position is registered directly on the switching device and is forwarded to the control center.

For further information regarding the disconnector monitoring system Sicat DMS please refer to the corresponding product information: "Sicat DMS – Disconnector monitoring system for overhead contact line systems", document no. A6Z00031617390.



- | | |
|--------------------|-------------------------|
| 1 Arcing horn | 5 Earth contact spring* |
| 2 Contact spring | 6 Composite insulator |
| 3 Contact blade | 7 Turning lever |
| 4 Protective cover | 8 Earth contact blade* |

- | |
|--------------------------|
| 9 Earth contact support* |
| 10 Baseplate |

* only for disconnector with earth contact

Design of the disconnectors exemplarily shown at type Sicat 8WL6134-4A

Minimized maintenance

The maintenance of the Sicat 8WL6134 disconnectors and switch disconnectors typically confines to visual inspection and function control.

For switching device types with silver graphite coating on the contact sets, greasing is superfluous due to the selflubricating characteristics of the graphite portion.

If a replacement of the arcing horns should be necessary, it can be carried out on site while the disconnectors are still mounted and the contact line is deenergized and earthed.

Variants and scope of application

The product line consists of disconnectors and switch disconnectors with different scopes of application and functions.

Utilization categories

In accordance with EN 50123-4 DC switching devices are divided into different utilization categories.

Overview utilization categories

- | | |
|-----|---|
| I | Disconnector
Disconnectors of utilization category I are suitable for no-load operation. Furthermore, disconnectors of this utilization category can carry operating currents in closed state. In addition, they can carry higher currents like short-circuit currents during a specified time. |
| II | Switch disconnector
In addition to disconnectors of utilization category I, switch disconnectors of utilization category II can break operating currents. While opening the disconnector, an arc commutates at the contact sets, which is guided upwards over the arcing horns. Further opening increases the clearance in air; the arc extinguishes. |
| III | Switch disconnector
Switch disconnectors of utilization category III additionally can make and break operating currents. While closing the disconnector, an arc establishes at the arcing horns. |
| IV | Switch disconnector
In addition to switch disconnectors of utilization category III, switch disconnectors of utilization category IV can make and break up to threefold operating currents. Those can arise for a limited period of time in the overhead contact line, e.g. when rail vehicles are starting. |

Switch disconnectors of utilization categories II to IV must be installed with a rapid opener in the upper operating linkage for fast arc extinction. Besides, an installation of the disconnectors with load switch function on the top of poles is recommended. Otherwise enough space to earth must be provided.

The switch disconnectors are suitable for a discrete number of on-load operating cycles in case of emergency. In accordance with EN 50123-4, the disconnectors have been type-tested according to the respective utilization categories for five opening and two closing operations.

System integration

The disconnectors and switch disconnectors are installed at the top of contact line poles. A disconnector bracket is available optionally.

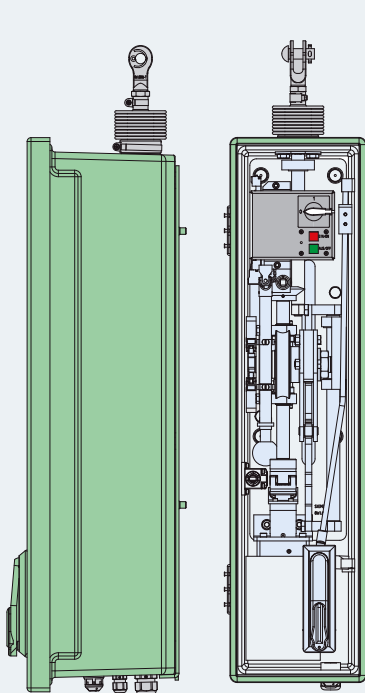
Disconnectors and switch disconnectors are operated via an operating linkage either remote controlled with a motor-operated mechanism or with a manually-operated mechanism (not for switching operations under operating current).

For opening and closing the Sicat 8WL6134 disconnectors, electromechanical operated mechanisms with linear stroke and manual operated mechanisms with a stroke of 200 mm are suitable.

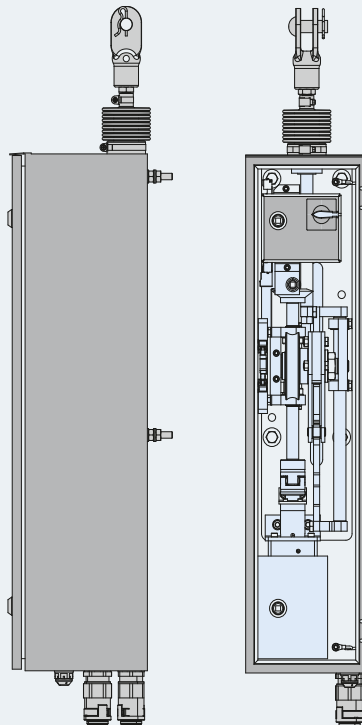
The following types are available:

- Electromechanical operated mechanism in GRP casing, linear stroke
- Electromechanical operated mechanism in stainless steel casing, linear stroke
- Manual operated mechanism

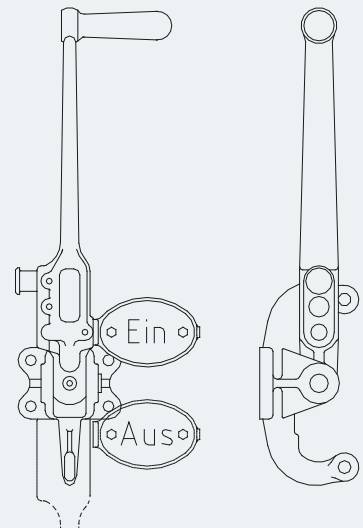
As a matter of course, our portfolio comprises the appropriate operating linkages.



Electromechanic operated mechanism
in GRP casing Sicat 8WL6243



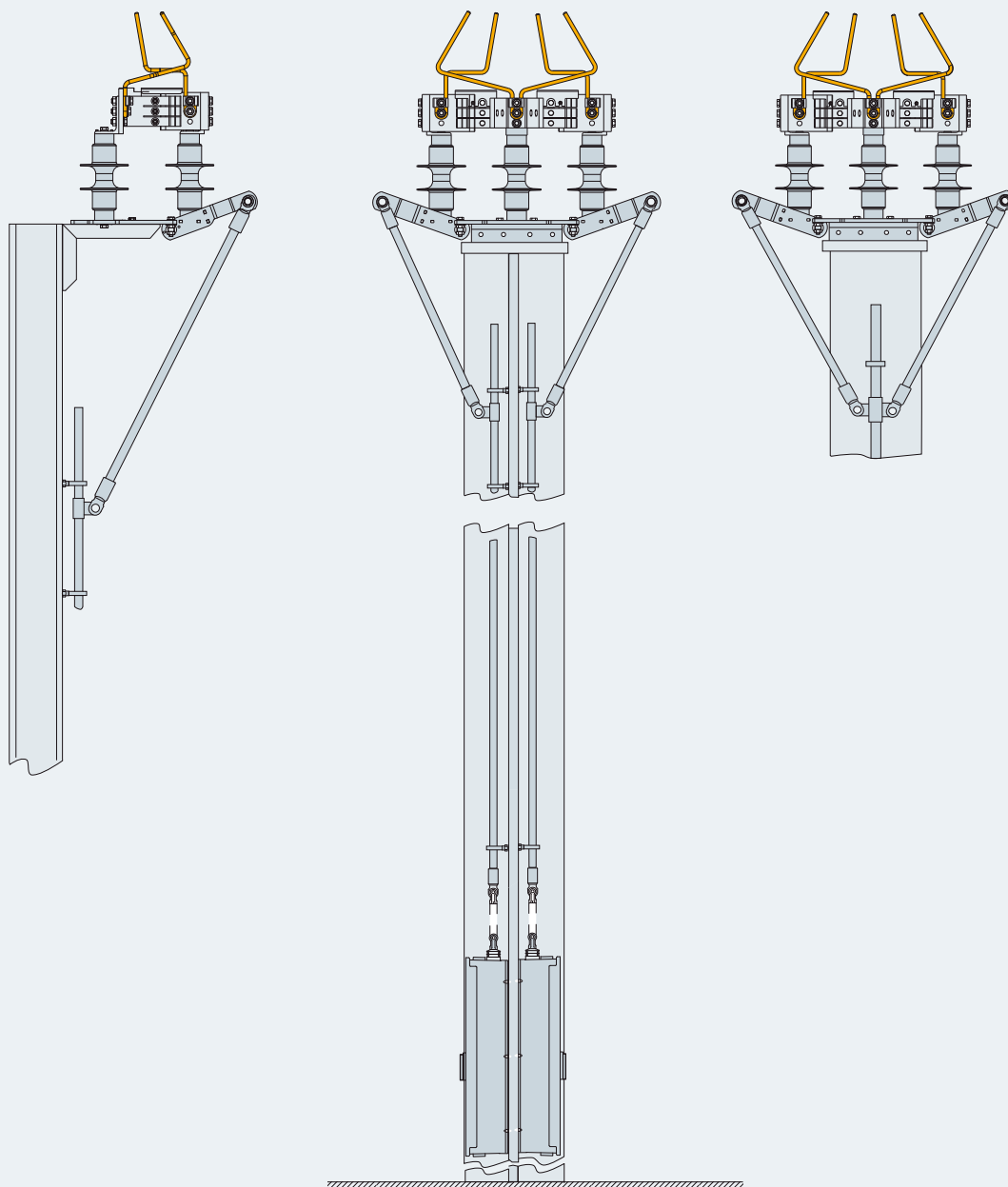
Electromechanic operated mechanism
in stainless steel casing Sicat 8WL6253



Manual operated mechanism Sicat 8WL6214

For further informationen please refer to the corresponding product information „Electromechanical operated mechanisms Sicat 8WL6243, 8WL6244, 8W6253 and 8WL6254 for overhead contact line systems“, document no. A6Z00030709176.

For switching devices with load switching function, the upper operating linkage must be replaced by a variant with integrated rapid opener. Due to the rapid opener, opening of the contact set of the disconnecter is accelerated and the extinction of a potentially occurring arc is supported.



Examples for different system integrations with electromechanic operated mechanism in GRP casing 8WL6134-0B (left), 8WL6134-2 as double feeder disconnector (center) and as coupling switch (right)

Selection criteria and technical data

Variants with connections on flexible contact

Selection criteria	8WL6134-0B	8WL6134-0C	8WL6134-0F	8WL6134-2	8WL6134-2A
Earth contact		■			■
Silver-coated contact sets, silver graphite	■	■	■	■	■
Utilization category ¹⁾	III	I	IV	II ²⁾ , III ³⁾	I

Electrical data		8WL6134-0B	8WL6134-0C	8WL6134-0F	8WL6134-2	8WL6134-2A
Nominal voltage	[V DC]	3,000	3,000	3,000	3,000	3,000
Rated insulation voltage	[V DC]	4,800	4,800	4,800	4,800	4,800
Operating current	[A]	3,000	3,000	3,000	3,000	3,000
Creepage distance	[mm]	300	300	300	300	300
Clearance in air to earth / above isolating distance	[mm]	180 / 200	180 / 200	180 / 200	180 / 200	180 / 200
Rated impulse withstand voltage to earth / above isolating distance	[kV]	40 / 48	40 / 48	40 / 48	40 / 48	40 / 48
Power-frequency withstand voltage, wet to earth / above isolating distance	[kV]	18.5 / 22.2	18.5 / 22.2	18.5 / 22.2	18.5 / 22.2	18.5 / 22.2
Rated short-time current for 250 ms	[kA]	40	40	40	40	40

Mechanical data		8WL6134-0B	8WL6134-0C	8WL6134-0F	8WL6134-2	8WL6134-2A
Weight	[kg]	19.8	26.8	21.0	30.6	37.7
Dimensions						
– Length ⁴⁾	[mm]	502	747	502	763	1,009
– Width	[mm]	293	293	293	293	293
– Height	[mm]	621	621	954	621	621
Stroke	[mm]	200	200	200	200	200
Minimum operating force ⁵⁾	[kN]	0.8	0.8	0.8	0.8 ⁶⁾ / 1.2 ⁷⁾	0.8 ⁶⁾ / 1.2 ⁷⁾
Ice coverage category	[mm]	10	10	10	10	10
Ambient temperature ⁸⁾	[°C]	-40...+40	-40...+40	-40...+40	-40...+40	-40...+40

¹⁾ Load switch function (utilization categories II, III and IV) only in connection with operating linkage with rapid opener 8WL6231-8A

²⁾ Utilization category II in connection with one operating linkage for the operation of both connections and a rapid opener 8WL6231-8A each in the upper operating linkage

³⁾ Utilization category III in connection with two operating linkages with rapid opener for separat operation of the individual connections

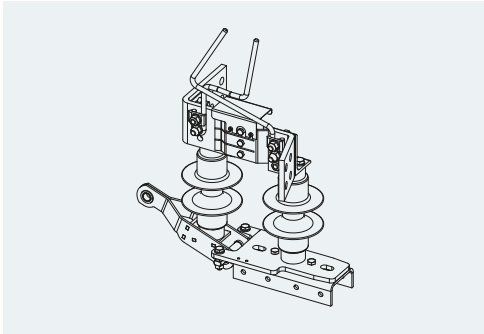
⁴⁾ Disconnecter / switch disconnecter closed

⁵⁾ At ice coating this value can be exceeded

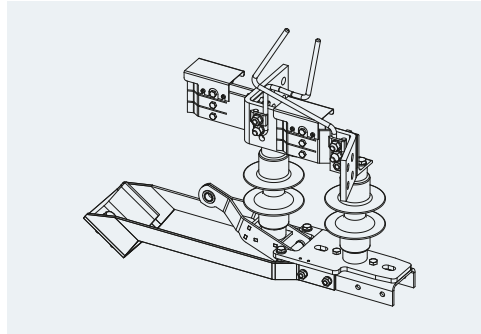
⁶⁾ At separate operation of the individual connections with two operating linkages and by separate operated mechanisms

⁷⁾ At operation of both connections with one operating linkage and by one operated mechanism

⁸⁾ Increase of ambient temperature possible when reducing operating current



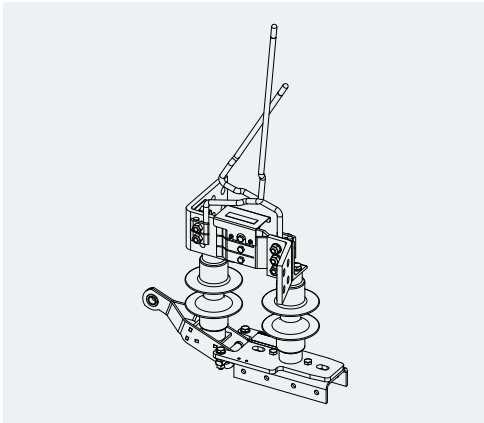
Sicat 8WL6134-0B



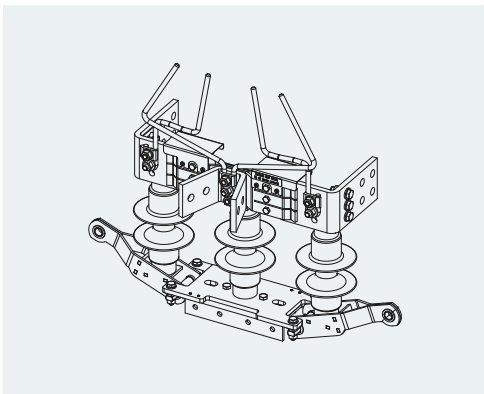
Sicat 8WL6134-0C

Sicat 8WL6134-0B / -0C / -0F

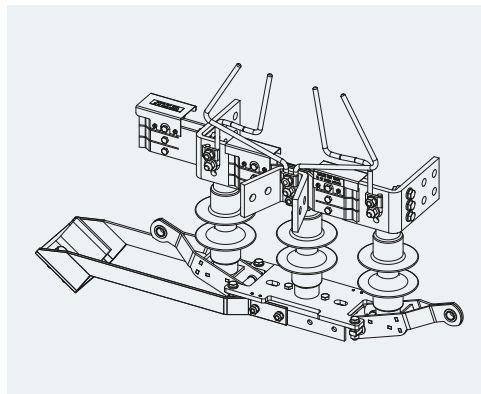
- For feeding and earthing (only for 8WL6134-0A) a track section at limited space
- Higher current load-capacity and environmental resistance due to silver-coated contact sets (selflubricating silver graphite)



Sicat 8WL6134-0F



Sicat 8WL6134-2



Sicat 8WL6134-2A

Sicat 8WL6134-2 / -2A

- For earthing (only for 8WL66134-2A) and double feeding or feeding two track sections
- For dividing or connecting two track sections by feeding a neutral track section in closed condition
- Higher current load-capacity and environmental resistance due to silver-coated contact sets (selflubricating silver graphite)

Variants with connections on rigid contact

Selection criteria	8WL6134-3	8WL6134-3A	8WL6134-4	8WL6134-4A	8WL6134-5	8WL6134-5F
Earth contact		■		■		
Silver-coated contact sets, silver graphite			■	■	■	■
Utilization category ¹⁾	III	I	III	I	I	III

Electrical data		8WL6134-3	8WL6134-3A	8WL6134-4	8WL6134-4A	8WL6134-5	8WL6134-5F
Nominal voltage	[V DC]	3,000	3,000	3,000	3,000	3,000	3,000
Rated insulation voltage	[V DC]	4,800	4,800	4,800	4,800	4,800	4,800
Operating current	[A]	2,000	2,000	3,000	3,000	4,000	4,000
Creepage distance	[mm]	300	300	300	300	300	300
Clearance in air to earth / above isolating distance	[mm]	180 / 90	180 / 90	180 / 90	180 / 90	180 / 90	180 / 90
Rated impulse withstand voltage to earth / above isolating distance	[kV]	40 / 48	40 / 48	40 / 48	40 / 48	40 / 48	40 / 48
Power-frequency withstand voltage, wet to earth / above isolating distance	[kV]	18.5 / 22.2	18.5 / 22.2	18.5 / 22.2	18.5 / 22.2	18.5 / 22.2	18.5 / 22.2
Rated short-time current for 250 ms	[kA]	40	40	40	40	50	50
for 1 s	[kA]	–	–	–	–	40	40

Mechanical data		8WL6134-3	8WL6134-3A	8WL6134-4	8WL6134-4A	8WL6134-5	8WL6134-5F
Weight	[kg]	28	38	28	38	38.5	39
Dimensions							
– Length ⁴⁾	[mm]	502	747	502	747	502	502
– Width	[mm]	460	460	460	460	560	560
– Height	[mm]	562 ³⁾	612	562 ³⁾	612	562 ³⁾	863 ³⁾
Stroke	[mm]	200	200	200	200	200	200
Minimum operating force ⁴⁾	[kN]	1.2	1.2	1.2	1.2	1.8	1.8
Ice coverage category	[mm]	10	10	10	10	5 ⁵⁾ / 10 ⁶⁾	5 ⁵⁾ / 10 ⁶⁾
Ambient temperature ⁷⁾	[°C]	-40...+40	-40...+40	-40...+40	-40...+40	-40...+40	-40...+40

¹⁾ Load switch function (utilization categories II, III and IV) only in connection with operating linkage with rapid opener 8WL6231-8A

²⁾ Disconnecter / switch disconnecter closed

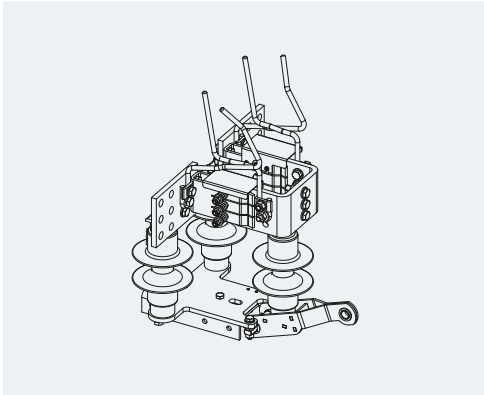
³⁾ Height from bottom edge of baseplate

⁴⁾ At ice coating this value can be exceeded

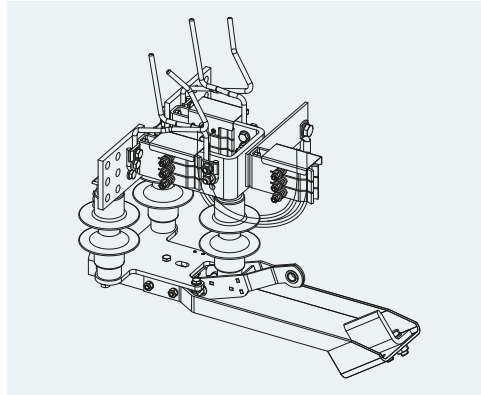
⁵⁾ When closing

⁶⁾ When opening

⁷⁾ Increase of ambient temperature possible when reducing operating current



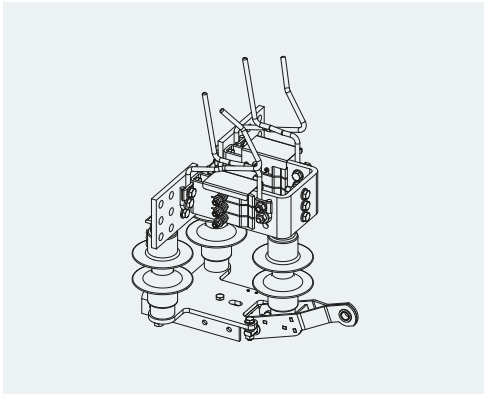
Sicat 8WL6134-3



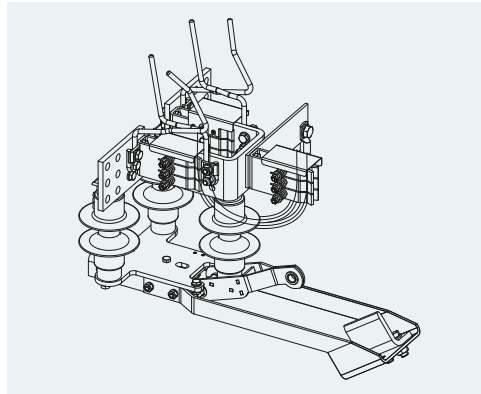
Sicat 8WL6134-3A

Sicat 8WL6134-3 / -3A

- Standard type with connections on rigid contact
- For feeding and earthing (only for 8WL6134-3A) a track section
- For disconnecting or connecting track sections



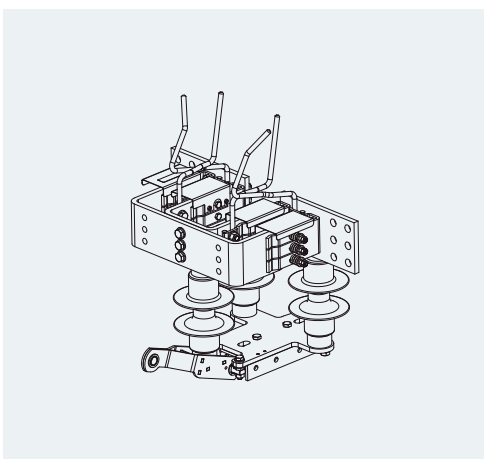
Sicat 8WL6134-4



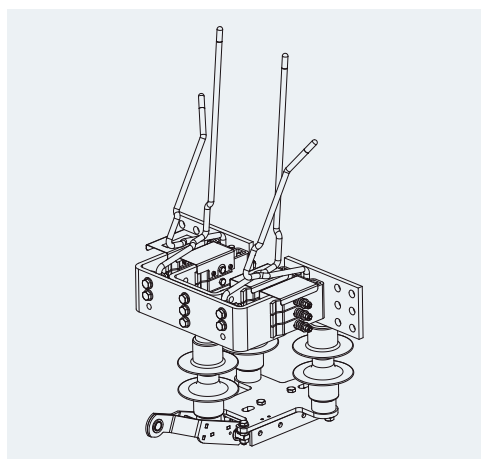
Sicat 8WL6134-4A

Sicat 8WL6134-4 / -4A

- Connections on rigid contact
- For feeding and earthing (only for 8WL6134-4A) a track section
- For disconnecting or connecting track sections
- Higher current load-capacity and environmentally resistance due to silvercoated contact sets (self-lubricating silver graphite)



Sicat 8WL6134-5



Sicat 8WL6134-5F

Sicat 8WL6134-5 / -5F

- Connections on rigid contact
- For feeding a track section
- For disconnecting or connecting track sections
- For very high operating currents
- Higher environmentally resistance due to silver-coated contact sets (selflubricating silver graphite)

Materials and accessories

Materials

Materials	
Arcing horns*	electrolytic copper partly with tips of copper alloy
Composite insulators	glass-fiber reinforced plastic, silicone with fittings made of stainless steel
Contact set (contact blade, contact spring)*	electrolytic copper electrolytic copper, silver-coated, silver graphite
Baseplate, turning lever, protective cover, earth contact support, insulator fittings standard parts	stainless steel
* depending on type	

Accessories

Type		Order number
Disconnecter bracket	for disconnectors with rigid connections 8WL6134-3 / -4 / -5 / -5F	8WL6135-2A
Operated mechanism	– electromechanical operated mechanism in GRP casing – electromechanical operated mechanism in stainless steel casing – manual operated mechanism	8WL6243, 8WL6244 8WL6253, 8WL6254 8WL6214
Operating linkage	– electromechanical operated mechanism in GRP casing – electromechanical operated mechanism in stainless steel casing – manual operated mechanism	on request on request on request
Upper operating linkage with rapid opening		8WL6231-8A

Option	Order number
Rotation angle sensor unit for disconnector monitoring system Sicat DMS in combination with disconnectors 8WL6243 and 8WL6244 with permanent power supply	8WL6136-0
Rotation angle sensor unit for hand operated disconnector monitoring system Sicat DMS	8WL6136-0A

Tests and standards

The Sicat 8WL6134 disconnectors and switch disonnectors are designed in line with the utilization categories for switching devices in accordance with EN 50123-4: 2003.

Type tests carried out acc. to EN 50123-1: 2003 and EN 50123-4: 2003:

- Dielectric tests
- Temperature rise test
- Short-time current test
- Resistance measurement of the main circuit
- Mechanical endurance test with minimum 3,000 operating cycles, individual contact sets and disconnectors up to 50,000 operating cycles
- Ice conditions test

For all switching devices with load switch function of utilization categories II, III and IV:

- Verification of rated making and breaking capacity

To assure a constantly high quality, sampling tests and the following routine tests are passed in series manufacturing:

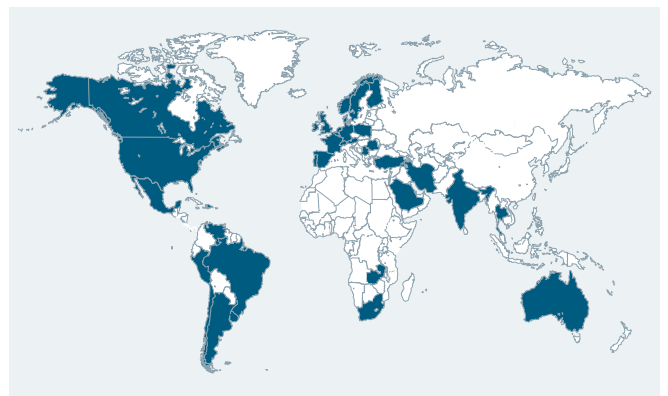
- Visual and tolerance tests
- Test of the mechanical connections
- Resistance measurement of the main circuit
- Mechanical function test
- Measurement of required clearances in air to ensure the power-frequency withstand voltage acc. to EN 62271-1, section 7.1 achieved in type test



Ice conditions test

References

Since market introduction in 2005 more than 4,800 disconnectors of type Sicat 8WL6134 have been delivered worldwide (status as of September 2017).



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Sicat 8WL6134 / Product information
No. A6Z08110389012 / Version 2.7.1

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