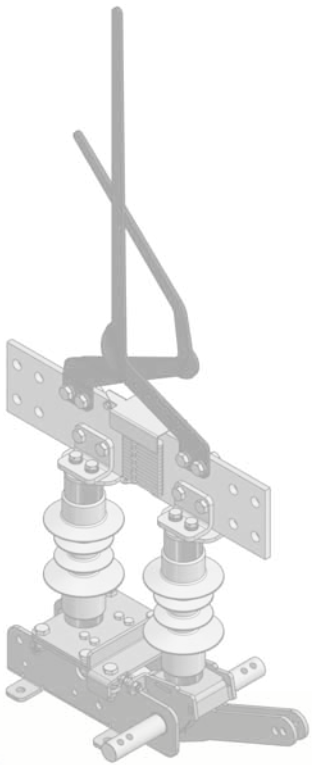




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DRIESCHER
DC switch disconnectors and
DC disconnectors for outdoor
overhead line railway applications
OL-DC 3-3150-40 LBS and ARC

- Nominal voltage 3 kV DC
- Rated current 3150 A

DRIESCHER
Moosburg • Eisleben



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DRIESCHER – Know-how puts on track for success

DRIESCHER can look back proudly on over 80 years of tradition in manufacture of switchgear and switching devices. Our railway switches solutions have been used across the world for decades. They deliver impressive performance in all kinds of climatic zones and in the toughest applications thanks to their robust construction and extreme durability.

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General description

The Overhead Line DC (OL-DC) product line is Driescher's range of products for all DC railways up to 3 kV. The OL-DC line is specially designed to supply electric railways and is used to connect or disconnect overhead contact line sections and for direct supply from the substation. The 2-pole design can also operate parallel overhead contact wire sections. The disconnectors and switch disconnectors are developed to comply with international standards as set out in DIN EN 50123 Part 1 and Part 4 and meet the most stringent requirements.

Both the disconnectors and switch disconnectors have a standardised visible isolating distance and are designed for an operating current of 3150 A @ 3.6 kV and a short-time withstand current of 40 kA.

Thanks to its advanced design, the OL-DC 3-3150-40-LBS switch disconnector meets the requirements for utilization category III at full rated voltage and nominal current. The switch disconnector is able to switch ON and OFF at least 50 switching cycles at these conditions.

OL-DC 3-3150-40

- Disconnector utilization category I fully typtested in accordance with DIN EN 50123-1 and 4
- Switch disconnector utilization category III fully typtestd in accordance with DIN EN 50123-1 and 4
- Space-saving centre drive or optional side drive¹⁾
- Optional drive extensions
- Optional auxiliary switch up to 8 contacts in IP65 sealed aluminium housing
- Drive via rod or Flexball
- Optional 2-pole design with adaptation

The use of exceptionally durable materials and advanced coating systems means that the switchgear from the OL-DC product line are ideally suited for use in all common outdoor conditions, including heavy icing (see Fig.1) up to 10 mm (in accordance with DIN EN 62271 Part 102 Class 10). All live parts are made up high-grade exceptionally low resistance ETP copper. In addition, all contact parts are silver coated, reducing contact resistance to a minimum. This contributes to incredibly efficient and low-loss power transmission and thus to a reduction in carbon footprint. The OL-DC line is designed for decades of use on the line.²⁾

With its consistent modular construction, a OL-DC switchgear can be adapted for almost all usage conditions.



Fig. 1: Ice test on OL-DC

¹⁾ Optional, not included in standard product

²⁾ As long as electrical service life is not reached

Construction

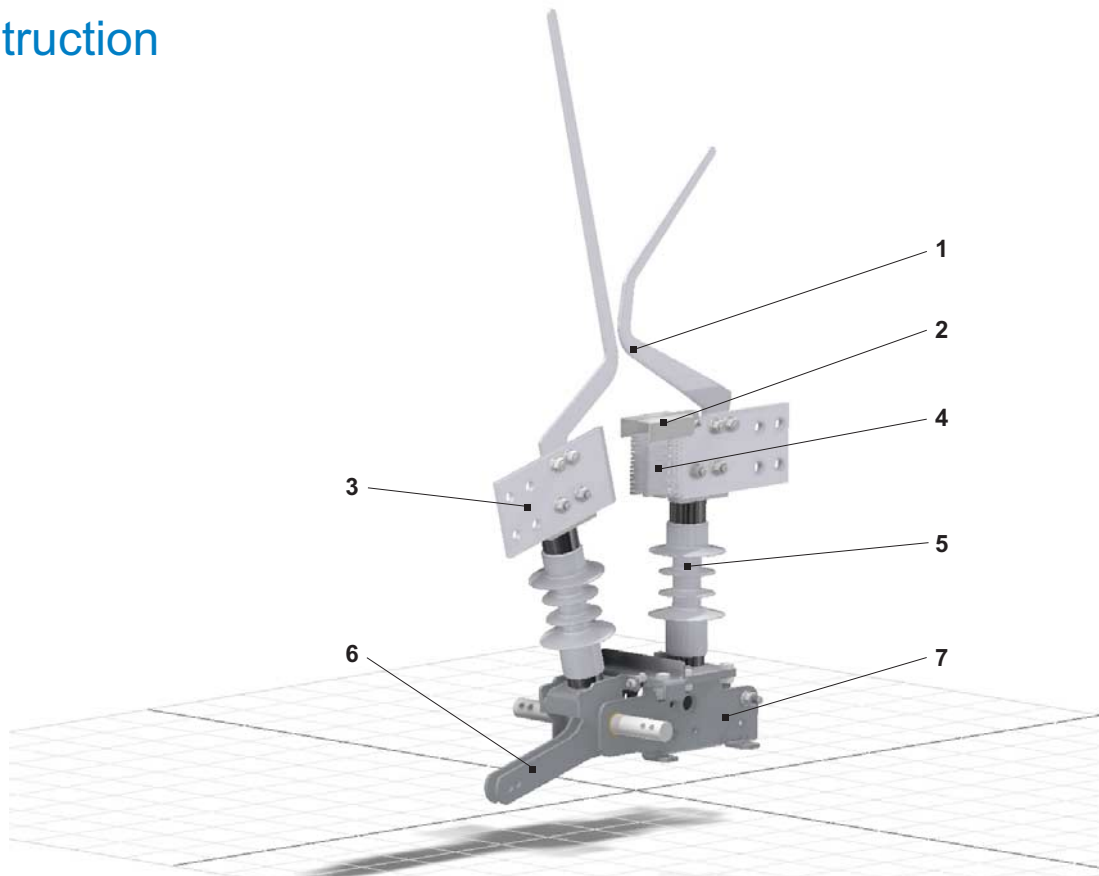


Fig. 2: OL-DC - LBS

1 Arc quenches

for switch disconnectors, for disconnectors either in or without conventional shorter design

2 Screening

against snow, ice and to reduce ingress of dirt from the surroundings

3 Main circuit 3150 A

with connections for up to eight cables on both sides. The moving side must be designed with a high flexibility connecting cable.

4 ELR (extra low resistance) contact system

- (1) Exceptionally low contact resistance due to large number of individual contacts
- (2) Ideal current distribution thanks to high contact forces and optimised contact geometry
- (3) Extremely wear resistant with maximum mechanical service life
- (4) Flexible individual contact fingers can be adapted to any angular position
- (5) Self-cleaning effect due to advanced design
- (6) Tried and tested for decades for FLA, FTR and MCS
- (7) Optimum heat dissipation (air gap between individual plates results in excellent cooling)

5 Durable composite isolators

With exceptionally high arcing distance and high creepage distance, insensitive to external mechanical influences

6 Hinge for switch operation

Switch disconnector shown. Different for disconnector

7 Space-saving base frame

For easy installation on mast heads. Switch disconnectors include a quick-switching mechanism with the same dimensions.

Technical data

OL-DC 3-3150-40-...		Disconnecter -ARC	Switch disconnecter -LBS
Electrical specifications			
Nominal voltage [kV DC]	U_n	3	3
Rated voltage [kV DC]	U_{Ne}	3.6	3.6
Rated insulation voltage [kV DC]	U_{Nm}	4.8	4.8
Overtoltage level	OV	4	4
Rated impulse withstand voltage [kV]	U_{Ni}		
- Phase - phase / Phase - earth		40	40
- across the isolating distance		48	48
Power frequency withstand voltage level [kV]	U_a		
- Phase - phase / Phase - earth		18.5	18.5
- across the isolating distance		22,2	22,2
Rated continuous current [A]	I_{Ne}	3150	3150
Rated short-time withstand current [kA]	I_{Ncw}	40@ ¼ s	40@ ¼ s
Short-circuit current [kA]	I_{ss}	40	40
Rated short-circuit current [kA]	I_{Nss}	57	57
Breaking capacity [A]		-	3150
Making capacity [A]		-	3150
Rated short-circuit making capacity [kA]		40	40
Utilization category		I	III
Isolator specifications			
Minimum gap phase - earth [mm]		251	251
Minimum gap over isolating distance [mm]		270	270
Creepage distance length, approx. [mm]		394	394
Degree of pollution		PD4A	PD4A
Mechanical specifications			
Dimensions			
- Height, approx. [mm]		764	1193
- Width [mm]		300	300
- Depth [mm]		530	530
Weight, approx. ³⁾ [kg]		27	28
Switching parameter			
- Throw ⁴⁾ [mm]		180 / 200	180 / 200
- Recommended drive torque, approx. ⁵⁾ [Nm]		250	250
- Switching force, approx. ^{6, 7)} [N]		450 / 500	450 / 500
Number of poles		1	1
Ice category		Class 10	Class 10
Corrosion class DIN EN ISO 14713		C3 high	C3 high
Temperature [°C]		-25 to +40	-25 to +40
Max. wind speed [m/s]		34	34

³⁾ without add-on modules

⁴⁾ Multiple throw system for Driescher UM90, UMPlus and drives from other manufacturer

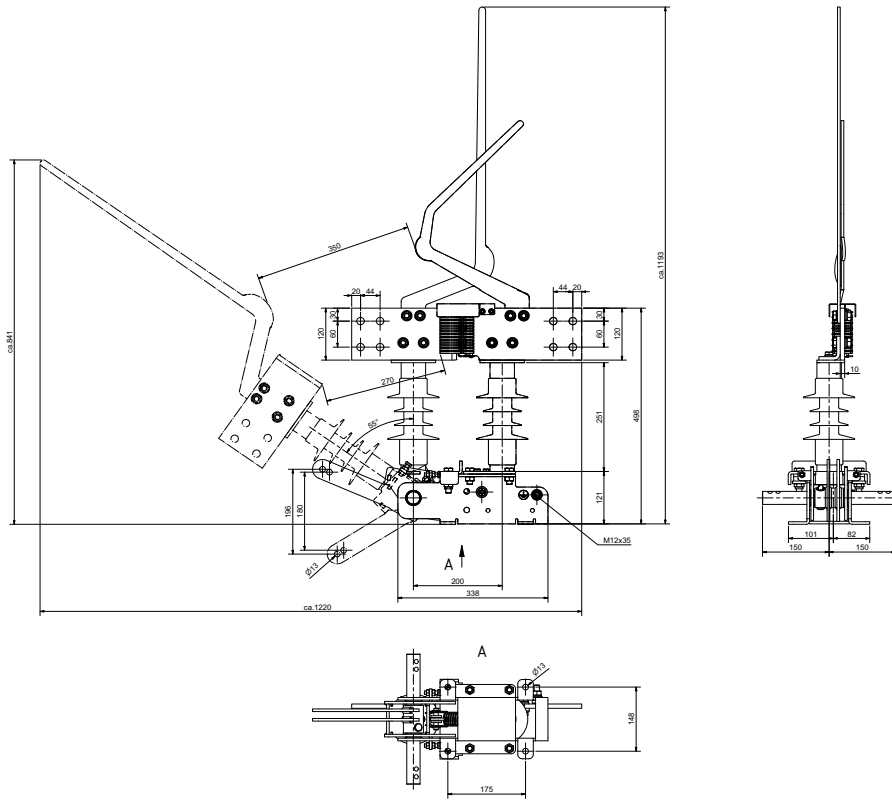
⁵⁾ When used with Driescher UM90, UMPlus

⁶⁾ Under normal conditions. The switching force may differ under icy conditions (serviceability verified up to 10 mm ice layer)

⁷⁾ Lower value applies to 200 mm distance, higher value to 180 mm distance

Front and side view

OL-DC 3-3150-40-LBS



OL-DC 3-3150-40-ARC

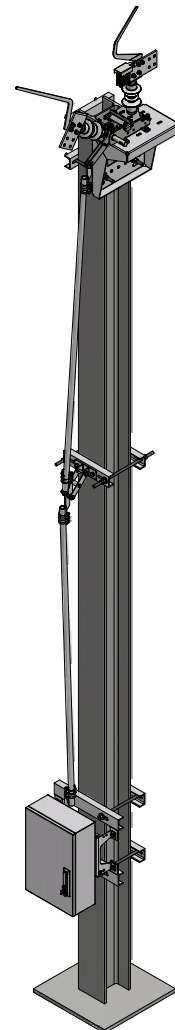
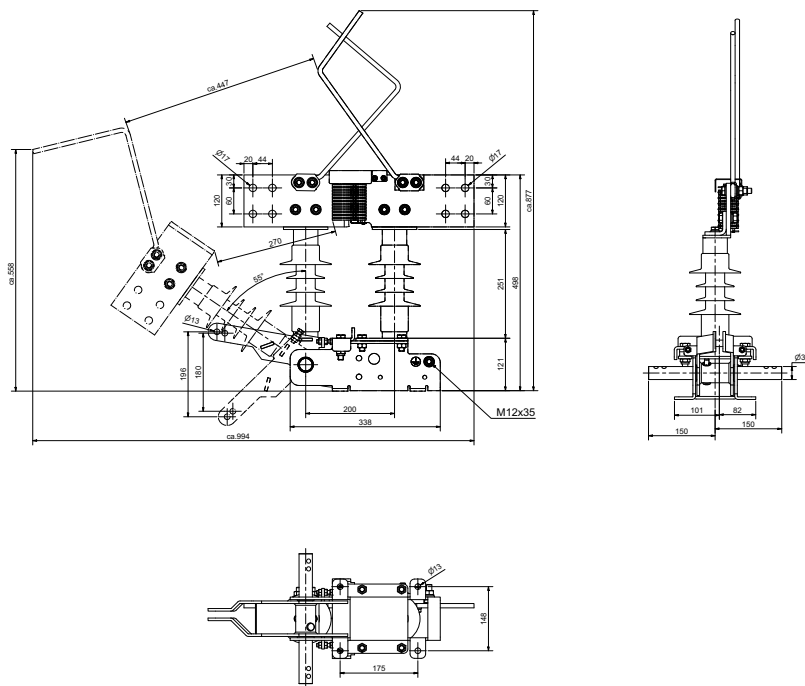


Fig. 3: OL-DC mast mounting

Connection recommendation

The switches in the OL-DC product line have been tested under the toughest conditions with hours under a constant load of 3150 A and more.

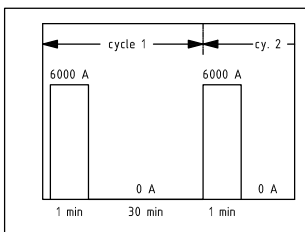
However, as real-world usage conditions on the line involve significantly shorter current flow times and longer pauses, the switches units can be connected much more economically with a considerably reduced cross-section.⁸⁾

The following connection recommendations from table⁹⁾ can be used.

Current	Cycle	Cross-section	Example
2000 A	Continuous	600 mm ²	4 x 150 mm ² 6 x 90 mm ²
2500 A	Continuous	900 mm ²	6 x 150 mm ²
3150 A	Continuous	1.200 mm ²	8 x 150 mm ²
1 min @ 6000 A 30 min pause	Cycle A	600 mm ²	4 x 150 mm ² 6 x 90 mm ²
2 h @ 3000 A 3 h @ 2000 A	Cycle B	600 mm ²	4 x 150 mm ² 6 x 90 mm ²
2 min @ 3150A 5 min pause	Cycle C	300 mm ²	2 x 150 mm ²

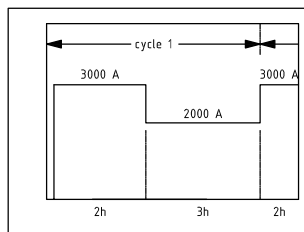
Cycle A

Starting current / short-term overload



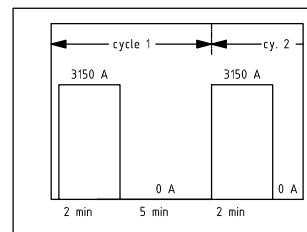
Cycle B

High load e.g. in stations



Cycle C

High frequency overhead contact line



Cycle A and B in accordance with DIN EN 50329 load class VI for mainline railways

⁸⁾ The connections on the switchgear are not part of it. The line operator is responsible for correct configuration of the connections.

⁹⁾ All figures determined under laboratory conditions. Sunlight, wind, snow, ice and rain can have a significant influence.



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Dimensions, weights, illustrations and descriptions in this brochure are non-binding. We reserve the right to make changes at any time.



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