



## RETRACTABLE CATENARY SYSTEM (RCS)



Elektroline





## RETRACTABLE CATENARY SYSTEM FUNCTION

RETRACTABLE CATENARY SYSTEM (RCS) IS A SAFE, FAST AND COMFORTABLE WAY FOR SHIFTING CONTACT WIRE OUT OF THE VEHICLE AXIS IN THE MAINTENANCE AND SERVICE AREA

The RCS is intended for changing position of the contact wire (CW) from passable to non-passable in order to enable free movement of the service staff and mechanics on the roof of the vehicle. It also enables free movement of the auxiliary hoist machinery such as a crane and loads above the top part of the vehicle.

## TECHNICAL SPECIFICATIONS

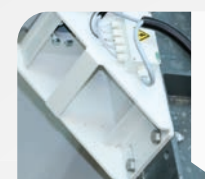
Drive voltage	400 V AC/50 Hz
Max. drive current	1,24 - 2 A
Drive power output	0,37 - 0,75 kW
Driving time	cca 24 s
Cover	IP 55
Ambient temperature	-10 up to +40 °C
Operating voltage of CW	max 0,75 - 3 kV DC
Protection against accidental contact voltage from CW	Double insulation
CW insulation against earth	Double insulation
Max. arm length	up to 6 m
Max. arm span	up to 12 m
Length of 1 section	up to 60 m

Exact specification is to be defined according to the dimensions of a particular space of installation and the client's requirements.

The RCS was designed as a system of simple driven and tow arms with a rotation point at the wall and a suspension for rigid catenary (RC) located at the ends of arms above the rails. The rotation is ensured by a driven turntable which is connected to an electric gearbox with an asynchronous motor. Tow arms rotate on a bearing turntable.



# RCS SYSTEM FUNCTION AND ITS PARTS



**Pole/wall bracket**  
The arms can be fixed to the wall or pole using the bracket with openings for screws

2

**Arms**  
The arms can be either straight or custom-shaped for local conditions



1



**Rigid catenary (RC)**  
Solid aluminium profile holds the CW itself

6

1b

Tow arm

Driven arm

1a

9

Insulation (cylindrical insulators)

Regulation of profile holders is in perpendicular direction to the (CW) profile axis

8a



**Slide holder**  
It is used to attach the RC profile and enables to compensate thermal dilatation of the profile

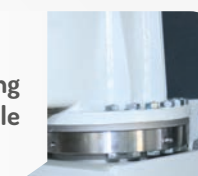
**Rigid holder**

It is used to attach the RC profile and create a fixed point in the section of retractable catenary

8b

**Bearing turntable**

3



5



Correct final position is checked by a pair of terminal switches

**Driven turntable**

4

7

Actuating arm device (electric gearbox)

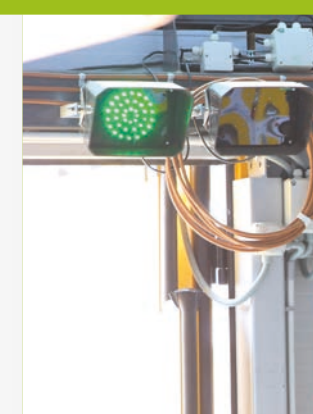


## RCS system control

The RCS system is controlled by a control panel. Retraction is only possible without voltage in CW and the non-voltage status indication is on. The retraction of arms takes ca. 25 seconds.



Indication of non-voltage status. It is only possible to control the CW retraction when the lamp indicates green light (the CW is disconnected).





## MECHANICAL PART

### Arms (1)

The RCS basis consists of the system of driven (1a) and tow (1b) arms which hold the rigid catenary (RC) through holders (6). The arms are attached to the wall or pole with screws. Rotation of the arms is enabled by the bearing turntable which makes part of every beam.

### Driven beams

The turntable of the driven arms is actuated by the electric gearbox. The final arm position is checked by a pair of terminal switches (5) – a working contactless switch and a safety mechanical switch. At the same time, the turns of the drive shaft are being counted to determine potential differences in angles of the swivelling arms.

CW is installed into the RC and suspended under the beams. The ends of RC are in passable position with overlap to facilitate smooth passage of the pantograph. The RC in non-passable position is almost under the axis of the rotation arm points.

### Tow arms

The arms are made of a simple beam. The RC support is attached to the arms on their ends with screws through cylindrical insulators (9). On the opposite side, the arms are fixed to the bearing turntable by a welded collar. The turntable is screwed to the supporting bracket which is attached to the pole. The arms are not driven, their aim is to carry the weight of the RC.

CW is installed into the RC and suspended under the beams. The ends of RC are in passable position with overlap to facilitate smooth passage of the pantograph. The RC holders enable height adjustment in order to ensure smooth passage of the pantograph. The RC in non-passable position is almost under the axis of the rotation arm points.

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## CONTROL



The RCS system is commanded by PLC automatic machine which controls multiple independent retractable catenary sections. The main control panel (master) is equipped with a LCD display with further control and signalling elements (slave). Retractable catenary can be controlled with the use of buttons on the LCD display. The display can be also used for system setting, its diagnostics and potential failure solving. The system enables remote monitoring and diagnostics.





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