ZOOM

CURRENT COLLECTOR DEVICE (CCD) SHOES

CURRENT COLLECTION BY 3RD AND 4TH RAIL

Mersen offers a large range of CCD shoes for electrical current collection in urban networks. The diversity of products allows to find the most suitable solutions for each metro system. The use of carbon allows to reduce friction, and therefore protects the power rail and improves its lifetime.

CHARACTERISTICS OF MERSEN CCD SHOES

LINKED TO THE APPLICATION CHARACTERISTICS…

- ✓ Frequent stops
- ✓ Frequent acceleration and deceleration
- ✓ Multiple regenerative braking
- ✓ High dust exposure

… MERSEN CCD SHOES SATISFY 4 MAJOR CRITERIA:

- ✓ Resistance to mechanical impact
- ✓ Ability to withstand high starting and stopping current loads
- ✓ Excellent sliding properties
- ✓ Non-destructive to the power rail

MERSEN PROPERTY

DISCOVER OUR SOLUTIONS FOR SUSTAINABLE MOBILITY

CCD SHOE DESIGNS

A CCD shoe consists of a carbon part mounted on a supporting carrier. The carrier's role is to protect the carbon collector from impacts, to resist deflection and to conduct the current.

DESIGN WITH METAL END PIECES

✓ Assembly: metal end pieces
✓ Application: fitted to a new system to create a film, or to a rail in bad condition to clean its surface with the bronze contact

DESIGN AS SOLDERED VERSION

✓ Assembly: clamped, soldered
✓ Application: all networks with or without ramps
✓ Available in different carbon widths and heights

DESIGN AS CAST VERSION

✓ Assembly: carbon inserts cast in place
✓ Application: new rail in order to create a patina, or rail in sub-standard condition to clean its surface with bronze

ECODESIGN

✓ Assembly: securely clipped
✓ Application: all networks
✓ After use, replacement of just the carbon wear strip and reuse of carrier and screws after cleaning
✓ Elimination of lead in the soldering
✓ No more risk of corrosion of carrier and bolts
✓ Longer lifetime towards shocks, vibrations and mechanical stresses

Our designs are available in various shapes and dimensions, contact your local representatives to evaluate your need. Our technical expert will assist you in building the best solution enhancing the operations of your fleet.

MERSEN GRADES FOR CCD SHOES

GRADE	Description	Bulk density	Electrical resistivity µΩ.m	Flexural strength MPa	Charpy resilience kJ/m²
		According to IEC60413:1972			
AR129	Plain carbon	1.70	30.0	30	0.8
P6252	Metal-impregnated	2.2	6.0	70	1.2
933	Metal graphite	7.3	0.05	178	-

Indicative values

Contact us to request our complete technical data sheets as well as our safety data sheets.

METAL vs. CARBON SHOES

Steel, cast-iron, copper or bronze shoes on third rail collection systems mechanically damage the rail due to their relatively large mass and high friction coefficient.

Carbon has many advantages over metallic materials, and the benefits to user systems are numerous. As a consequence, more and more railway, 3rd and 4th rail, tramway and trolleybus systems have switched to carbon throughout the world.

THE ADVANTAGES OF CARBON FOR 3RD & 4TH RAIL CCD SYSTEMS:

FRICTION BEHAVIOR AND SELF-LUBRICATION

- Elimination or reduction of greasing
- Longer rail lifetime thanks to proper patina creation
- Optimized friction once patina is created
- Maintenance cost reduction

VERY LOW SPARKING

- Arcing reduction
- Reduced burn or spark damage
- Prevention of radio interference

WEIGHT REDUCTION

- Stable contact
- Better current collection

RESISTANCE

- To high temperatures: no tendency to weld, even after long periods of static current loading
- To thermal shocks
- To chemical attacks

OTHER ADVANTAGES

- Good electrical and thermal conductivity
- Low electrical losses
- Negligible audible noise between rubbing surfaces
- Recognized corrosion-proof characteristics

MERSEN PROPERTY

WE GUARANTEE OUR CUSTOMERS:

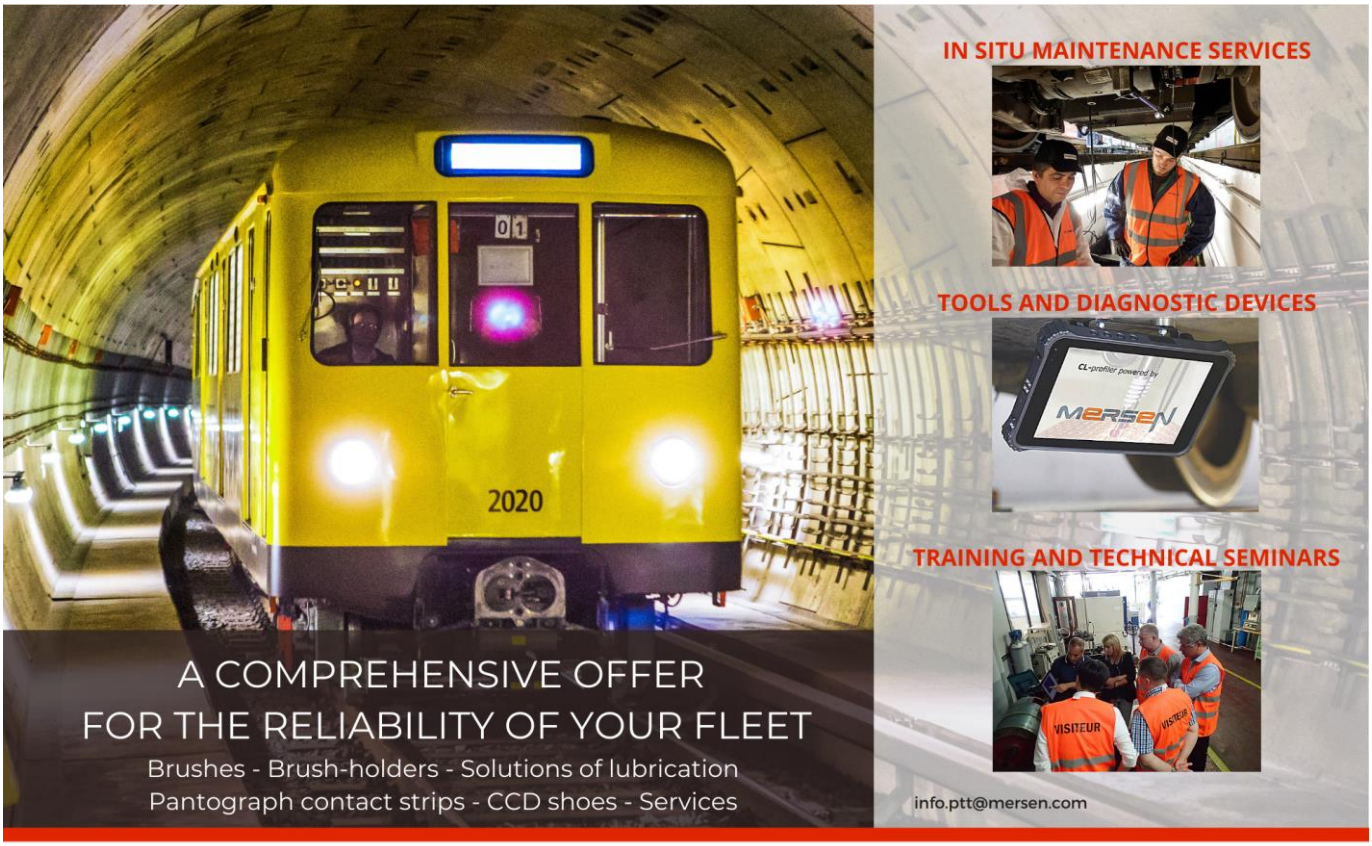
RELIABILITY
- Mechanical stability
- Corrosion resistance
- Safe current collection

ELECTRICAL LOAD CAPACITY
- Excellent current distribution
- Low electrical losses

EASY TO MAINTAIN SOLUTIONS

LONGER LIFETIME OF THE CCD SHOE AND POWER RAIL
- Low weight
- Low friction coefficient
- High combustion resistance

ENVIRONMENTALLY FRIENDLY SOLUTIONS
- EcoDesign solutions
- Lead free grades



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