Exalto
WIPER TECHNOLOGIES

CASE STUDY

Project DOSTO MÄLARTÄG ab transitio

Stadler, Stockholm, Sweden

Rolling stock operator AB Transitio has acquired on behalf of MÄLAB 33 four-car, double-decker electrical multiple units of the DOSTO model from Stadler. In Sweden, the trains have been given the type designation ER1 and will be delivered in 2019 and 2020.

The trains will service the lines Stockholm – Eskilstuna – Örebro, Stockholm – Katrineholm – Hallsberg, Stockholm – Nyköping – Norrköping and Sala – Västerås – Eskilstuna – Norrköping. Boasting a top speed of 200 km/h, the trains have been specially adapted for operation in Swedish winters.

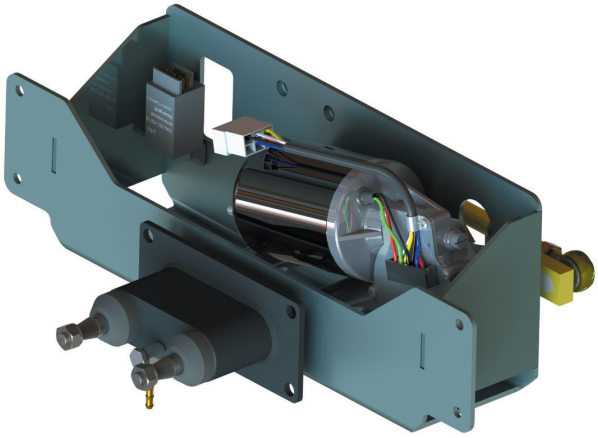
They are designed to run at minus 40 degrees and a depth of 80 cm snow on the track. Some examples of the design solutions incorporated to handle this are inter-carriage connections with twin bellows, large snow ploughs, efficient floor and wall heating systems and specially adapted insulation. The underframes of the trains have been designed to minimize freezing.

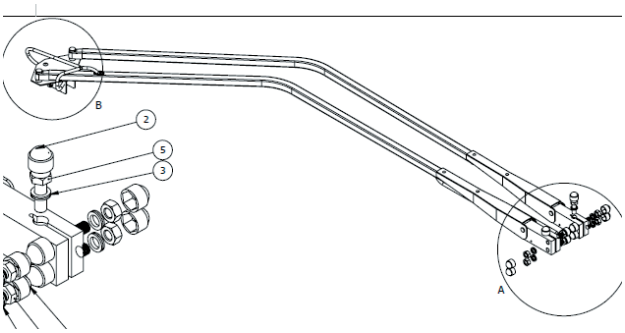
Each train can accommodate 333 passengers, who can sit comfortably in adjustable seats fitted with individual reading lights and dual power outlets. There is storage space to suit normal sized trolley suitcases under the seats. To increase com- fort, the new trains have been built 12 cm wider and 10 cm higher than the DOSTO trains that were previously delivered.

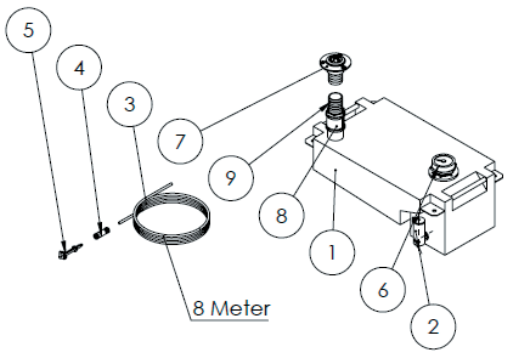
Wiper system characteristics:
Because of the train speed and the snow on the track, the wiper system has been executed with extra strong clamping wiper arm heads configuration. Together with strong 16 mm square wiper arm legs and a 120 Nm/24VDC electric motor the system will fulfill the customers and local climate requirements.

Standards:
- All welding to the system components are in accordance with EN 15085 CL-2
- Fire safety in accordance to EN 45545-2
- Electromagnetic compatibility 94/54/EC

Environmental testing:
- Vibration: broadband random guidance IEC 60068-2-64:2008
- Shock: guidance IEC 60068-2-27:2008
- Test spec: IEC 61373-2010 Railway applications – rolling stock-shock and vibration tests







Technical Description

Wiper Drive Unit:

The WDU consists of a electric motor (120 Nm/24VDC/ IP65) built in a mild steel frame (corrosion protected by galvanization) to drive a linkage system with shafts for a pantograph wiper arm(1160 mm) and a 1200 mm wiper blade. The wiping pattern will be achieved with a multi spindle system. All components of the spindle sets are 304 Stainless Steel.

The system contains of durable components to reduce maintenance activities to a minimum.

Wiper arms and blades

The stainless steel (304), 16 mm box section, wiper arms is cranked to obtain the requested wiping area. The arms are fitted with Zinc clamped heads to provide a maximum fitting onto the spine shaft of the WDU. The wiper arm is treated and coating is standard black matt powder coating. The material base is SS 304. With special surface treatment procedure the paint is resistant to weather end mechanical impact to ensure a long life. The end of the wiper arm is equipped with multiple spray jets.
The Exalto wiper blades have proven a durable life and high perfor- mance under a variety of circumstances. The base backing of the blade is of 316 stainless steel.

Wash system

Exalto will provide a 304 stainless steel liquid tank (15 liter) with a mechanical level indicator and a 24VDC pump. The liquid detergent replenishment shall be made easily feasible fromthe cab interior or from the outside. Hoses will be provided to connect the liquid tank with the spray jets on the wiper arms. All return valves and bulkhead fittings are included. Water tanks can be designed for the perfect fit in the train.

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