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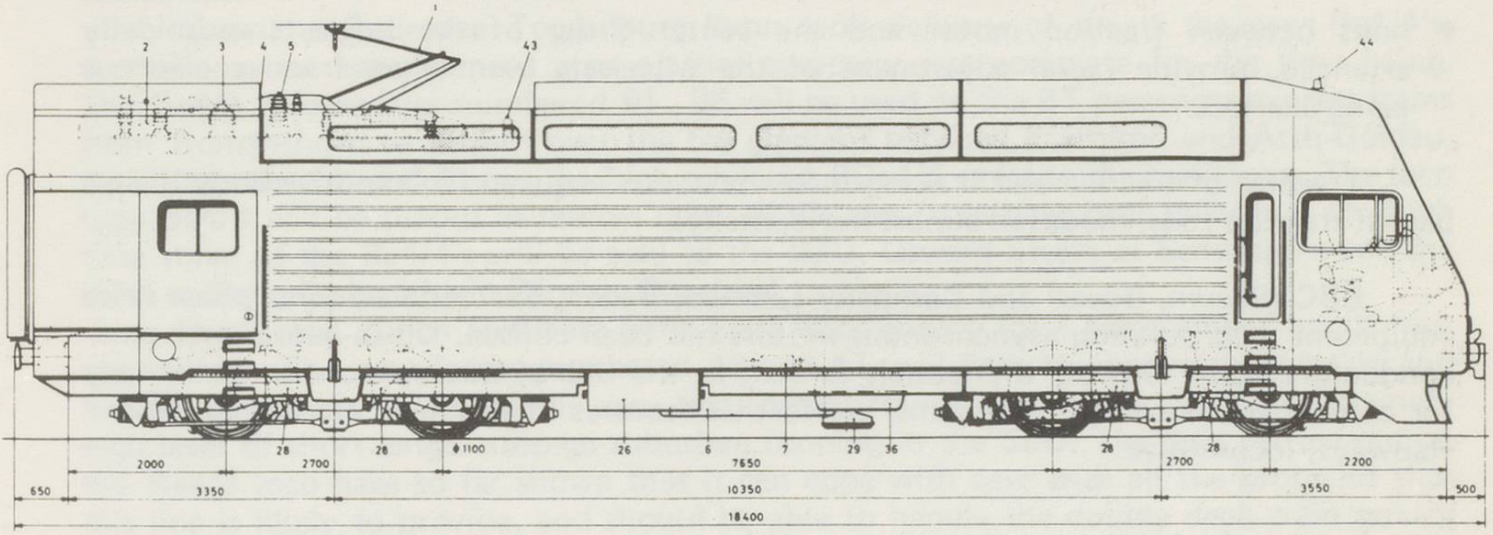
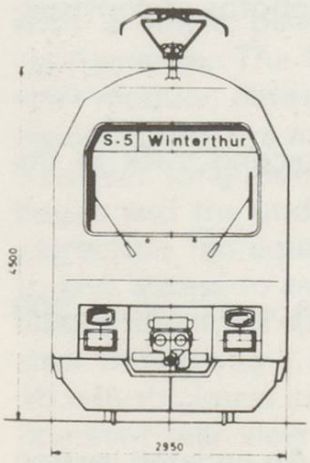
Re 4/4 V CONVERTER LOCOMOTIVE FOR THE ZURICH DISTRICT RAILWAY

By S.L.M. Winterthur

A Re 4/4 V locomotive, two double-deck coaches (types B and AB respectively) and a driving trailer of type Bt form a basic train unit having a length of about 100 m. Both ends of the unit are equipped with automatic couplings, so that simple and rapid coupling with a second or third train unit is possible.

The Re 4/4 V locomotive has only one driver's cab. Its layout is ergonomically suitable for both sitting and standing operation. Optimum working conditions, including air conditioning, are provided for the driver. The driving cab is adjacent to the machine room, which in turn backs onto the luggage compartment. Train personnel have access via a passage from the luggage compartment into the adjacent coach.





Data	
Wheel arrangement	Bo'Bo'
Gauge	1435 mm
Wheel diameter, new	1100 mm
Locomotive mass, tare	74 t
Additional load (luggage)	4 t
Mass of mechanical part	37 t
Continuous rating (UIC) at motor shaft	3000 kW
Maximum rating (traction and electrical braking) at wheel	3200 kW
Starting tractive effort at v=0-48 km/h	240 kN
Maximum braking effort	140 kN
Maximum speed	130 km/h
Overhead line voltage	15 kV, 16 2/3 Hz

Corrugated sheet metal is used for the locomotive body walls, due to weight and strength considerations. The lightweight construction of both the body and the bogies is one of the main characteristics of the mechanical part. Another feature is a further developed version of the shifting axle drive, which provides both transverse decoupling and radial adjustment of the axles. This concept is identical to that used for locomotives delivered to privately-owned railways in 1987.

Excellent track following characteristics and thus minimal stressing and wear of track and wheel sets are obtained by:

- lightweight wheelsets having low unsprung mass, i.e. monoblock wheels with bonded shrink-fit and hollow-forged axle
- flexicoil spring axle-box links
- wheelsets transversely decoupled with respect to the bogie and traction motors
- links between traction motor and the center girder of the bogie, trapezoidally arranged, provide radial adjustment of the wheelsets even when tractive effort is being exerted.

Transfer of tractive and braking forces between bogie and locomotive body is via a pair of traction rods, mounted almost horizontally.

BBC (Brown, Boveri and Company Limited, Baden, Switzerland) three-phase drive equipment incorporating asynchronous motors has been chosen. Up-to-date power semi-conductors (gate turn-off thyristors), as well as the use of microprocessor technology for control and automation systems, are further features of this new SBB (Swiss Federal Railways) locomotive.

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