

SIEMENS

Charger Diesel-Electric Locomotive

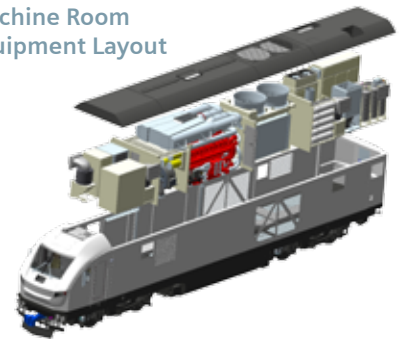
IDOT, Caltrans, WSDOT

In the summer of 2014, the Illinois Department of Transportation (IDOT) and the California Department of Transportation (Caltrans) along with the Washington Department of Transportation (WSDOT) ordered 32 new high-speed diesel-electric passenger locomotives from Siemens to complement existing passenger service throughout the Midwest, California and the Pacific Northwest.

The wide-body, single-cab design, is suited for push/pull operation. The Charger diesel electric locomotive is equipped with a proven propulsion system with a fuel-efficient Cummings 16 cylinder diesel engine providing up to 4400 hp. The engine feeds an alternator and the IGBT traction converters provides single axle control for 125 mph operation while meeting EPA Tier 4 emissions standards.

This latest version of Siemens' locomotives technology used in the Charger locomotive offers significant advantages to the customer, such as increased performance and efficiency, higher recuperative braking power, enhanced operability with a high level of component redundancy, and faster maintenance for optimum service availability.

Machine Room
Equipment Layout



Performance and Capacity

Maximum Speed	125 mph
Rated Voltage	1080 V @ 50 Hz
Rated Power	maximum 4,400 hp @ 1,800 rpm at AAR standard conditions
Operating Range	600 to 1,800 rpm
Head End Power	1,000 kVA
Tractive Effort (max.)	65,000 lbs / 290 kN

The machine room layout is based on the Siemens European Vectron locomotive providing the benefit of a clean and spacious design, successfully proven under various operating conditions in applications worldwide.

To further enhance reliability and improve maintenance, all wiring, cabling and piping is routed under the middle aisle walkway within the locomotive machine room for easy access and protected from external elements.

The Charger locomotives are equipped with an electronically controlled pneumatic brake system. The dynamic braking allows the energy of the traction motors to

feed the Auxiliary & HEP System in order to minimize fuel consumption.

Traction and locomotive control is performed by the proven SIBAS® 32 control system. The core of the control system is the multi-vehicle-bus, interfacing with locomotive subsystem control computers, all the I/O stations as well as the man-machine-interfaces, such as controls and displays on the engineer's console. This locomotive has cab signaling, positive train control and train radio.

The locomotive truck has a center pin, traction pivot design, offering a low connection to the carbody. The truck frame is an integral welded structure.

The locomotive propulsion unit consists of a pinion hollow shaft drive with traction motors that are fully suspended and gearboxes partially suspended for improved stability and ride quality. The primary and secondary suspension springs utilize the flexicoil system, a well-proven design used on hundreds of Siemens trucks worldwide. A triangular tie rod assures stable wheel set guidance. Use of pivot elements and lateral mounting of secondary suspension springs significantly reduces the rotation stiffness of the truck, resulting in considerable reduction of wheel and rail wear.

Vehicle Dimensions and Weight

Weight	264,556 lbs	120,001 kg
Length	71.5 ft	21793 mm
Width (including handrails)	10 ft	2984 mm
Height	12.5 ft	3810 mm
Distance between truck centers	32.5 ft	9900 mm
Wheel Diameter (new)	44 in.	1117 mm
Wheel Arrangement	Bo'Bo'	
Minimum Curve Radius	250 ft	76 m



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