In September 2009, Zentralbahn ordered four 7-part and six 3-part electric rack-and-pinion and adhesion multiple unit FINKs from Stadler. The seven-part trains travel over the Brünig Pass. The three-part commuter trains serve as reinforcement modules for the seven-part InterRegio trains and as relief trains for the regional suburban railway and can also be used in the valleys. The FINK is equipped with a powerful drive equipment with 2 two-motor pure adhesion bogies and two individual, pure rack-and-pinion drives per three-car drive module. The trains are built for a maximum running speed of 120 km/h and can also be used for multiple unit train control. They are 54 metres long and contain 139 seats, of which 18 are in first class. The modern vehicle concept with fully air-conditioned multiple units, panoramic windows, passenger information system and low-floor entrance areas is perfectly optimised to meet the needs of passengers.
Technical features

Vehicle data

**Customer**
Zentralbahn, Switzerland

**Lines serviced**
- Lucerne–Interlaken East
- Lucerne–Engelberg

**Gauge**
1000 mm

**Designation**
ABeh 160 xyz

**Axle arrangement**
B0’1Az’Az1’B0’

**Number of vehicles**
6

**Commissioning**
2012/2013

**Seats**
147

**Of which are tip-up seats**
8

**Floor height**
- Low-floor: 420 mm
- High-floor: 1100 mm

**Entrance width**
1300 mm

**Axial thrust**
800 kN

**Length over coupling**
54.000 mm

**Vehicle width**
2650 mm

**Vehicle height**
- 4050 mm from top of rail

**Bogie axle width**
- Adhesion bogie: 2000 mm
- Trailer/rack-motor bogie: 2380 mm

**Wheel diameter (new)**
810 mm

**Wheel diameter (worn)**
740 mm

**Traction motor three-phase**
TMF42-38-4

**Max. output**
- 1400 kW (adh.)
- 1600 kW (rack)

**Starting tractive effort**
- Adhesion: 120 kN
- Rack-and-pinion section: 220 kN

**Maximum speed**
40 km/h, uphill

**Rack rail**
- (105 %), downhill: 29.0 km/h
- (120 %), downhill: 27.5 km/h

**Maximum speed, adhesion**
120 km/h

**Maximum gradient, rack-and-pinion**
120 %

**Maximum gradient, adhesion**
35 %

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**Technology**

- Car body with an integral aluminium construction
- Height-adjustable rack-and-pinion drives to compensate for wheel wear
- Powerful drive equipment with 2 two-motor pure adhesion bogies and two individual, pure rack-and-pinion drives per three-car drive module

**Comfort**

- Air-conditioned passenger compartments
- Low-floor and high-floor entrance areas with folding step
- Large, double-glazed windows and panoramic compartments guarantee superior brightness
- Wheelchair spaces
- Barrier-free vacuum toilet system in low-floor area
- Electric sockets in first and second class
- Modern passenger information system with flat screens

**Personnel**

- Air-conditioned driver’s cabs

**Reliability / Availability / Maintainability / Safety**

- Fire alarm and fire extinguishing system in the passenger compartments