

Zeitschrift: Swiss express : the Swiss Railways Society journal
Herausgeber: Swiss Railways Society
Band: 6 (2000-2002)
Heft: 6

Artikel: Steam around Switzerland. Part 5, Bern Neuenburg Bahn express passenger locomotive type E 3/6
Autor: Hardy-Randall, Malcolm
DOI: <https://doi.org/10.5169/seals-854914>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

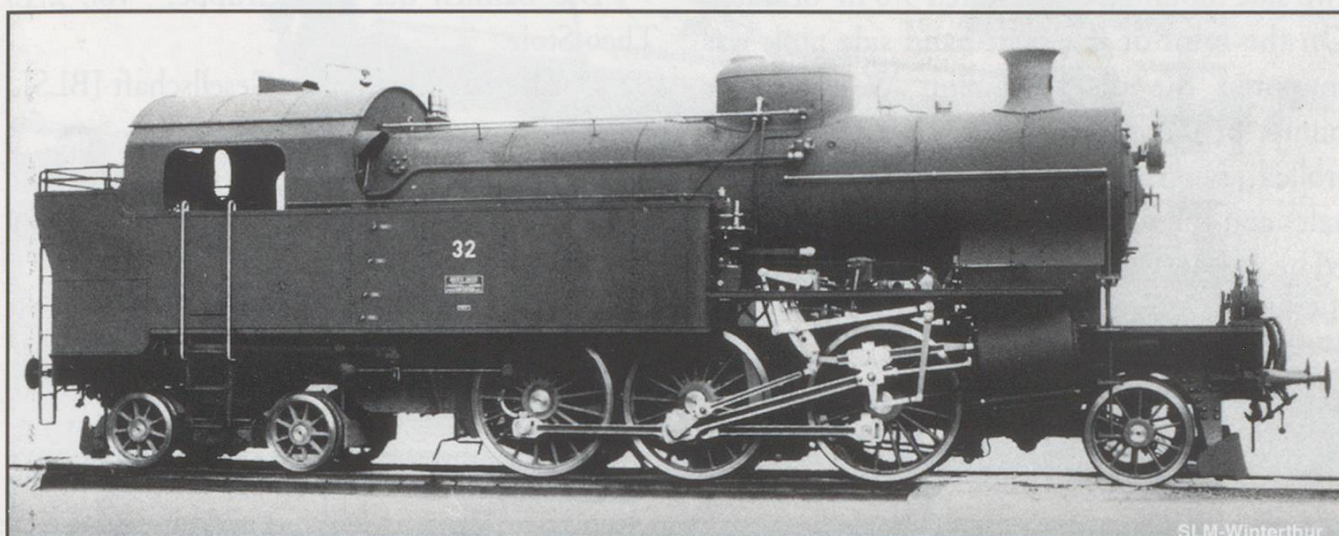
L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 09.12.2025

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

**PART 5 - BERN NEUENBURG BAHN
EXPRESS PASSENGER LOCOMOTIVE TYPE E 3/6**

The Bern Neuenburg Bahn or Bern Neuchâtel direct route via Kerzers to Neuchâtel was opened in 1901, when it was connected at Holligen to the SCB tracks on the south eastern side of Bern. With the opening of the first Simplon tunnel in 1906 followed by the inauguration of the Bern Lötschberg line in 1913 a more direct route - via the BN and the BLS - to Milan was created for traffic from east and central France. In 1913 the Paris - Italia Express started service via Pontarlier and Bern to Milan, and to haul this train the BN required a stronger locomotive. To this end the company SLM Winterthur built two tank locomotives of the type E 3/6, numbered 31 and 32 under works numbers 2 350 and 2 351. Just one year later the Paris - Milan service came to an end with the start of the First World War and it was to be several years before it recommenced. However, the E 3/6 remained in service as the principal express locomotive on this line until it was replaced by the electric locomotive in 1928, but worked on various duties until it was sent for scrapping in 1933.

The locomotives had to be able to haul a trailing load of 300 tonnes at 40 km/h over the route with its ruling gradient of 18‰. The E

3/6 - later reclassified as Ea 3/6 - was listed as a type "Adriatic or Pacific umgekehrt [reversed]" and was regarded to be one of the best proportioned steam locomotives to run on the Swiss railways. The design of the boiler, steam dome, cylinder arrangement and chimney of this locomotive was a precursor for the C 5/6 heavy freight locomotive that went into service shortly after the Ea 3/6.

A 4 500 mm long boiler operated at 12 bars and supplied wet steam to the 21 tube Schmidt superheater. A double slide regulator fed steam to the four cylinders, which had a bore of 425 mm and a stroke of 640 mm. Each of the two cylinder castings housed an inside and outside cylinder unit. The two internal and two externally mounted inclined - at 1:8 - cylinders, each fed with fresh steam and controlled by Walschaerts/Heusinger piston-valve gear, powered the central axle of the three coupled driving axles. Boiler safety was provided by two pop-valves located above the firebox. Sand from the large centrally-mounted steam/sand dome was fed to the central driving axle when travelling in either direction. The carrying-bogie was designed according to the Helmholtz principle. With a driving axle load-

ing of 18 tonnes this locomotive ranked the highest in the BLS group.

A coal bunker located on the rear of the driving cab had a capacity of 2.5 tonnes and two side mounted tanks stored 9.0 m³ of water. On the front of the right-hand side tank was mounted the double action Westinghouse pump for the brakes. This brake system controlled, via a single brake shoe/axle, the driving axles and the rear bogie, and was supplemented by a screw brake system that operated on the driving axles only.

Although this type of locomotive was withdrawn from service on the BN in 1933,

several versions worked on many European railways up to 1976.

References used:-

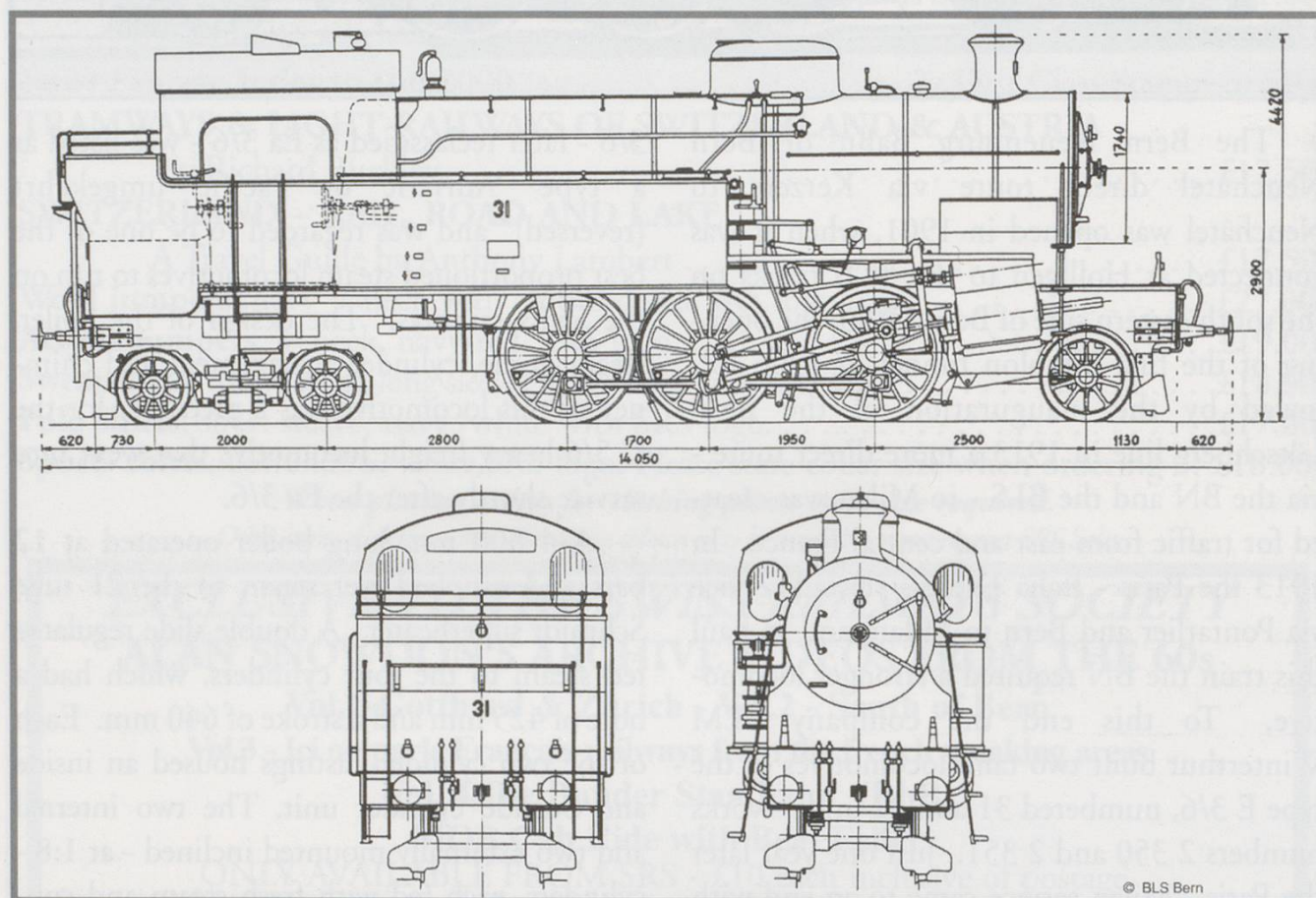
Die Bahnen der BLS Gruppe. Vol. 2.1. Theo Stolz.

Der Berner Alpenbahn-Gesellschaft [BLS]. Claude Jeanmaire

Der Dampfbetrieb der Schweizerischen Eisenbahn 1847 - 1923. A. Moser.

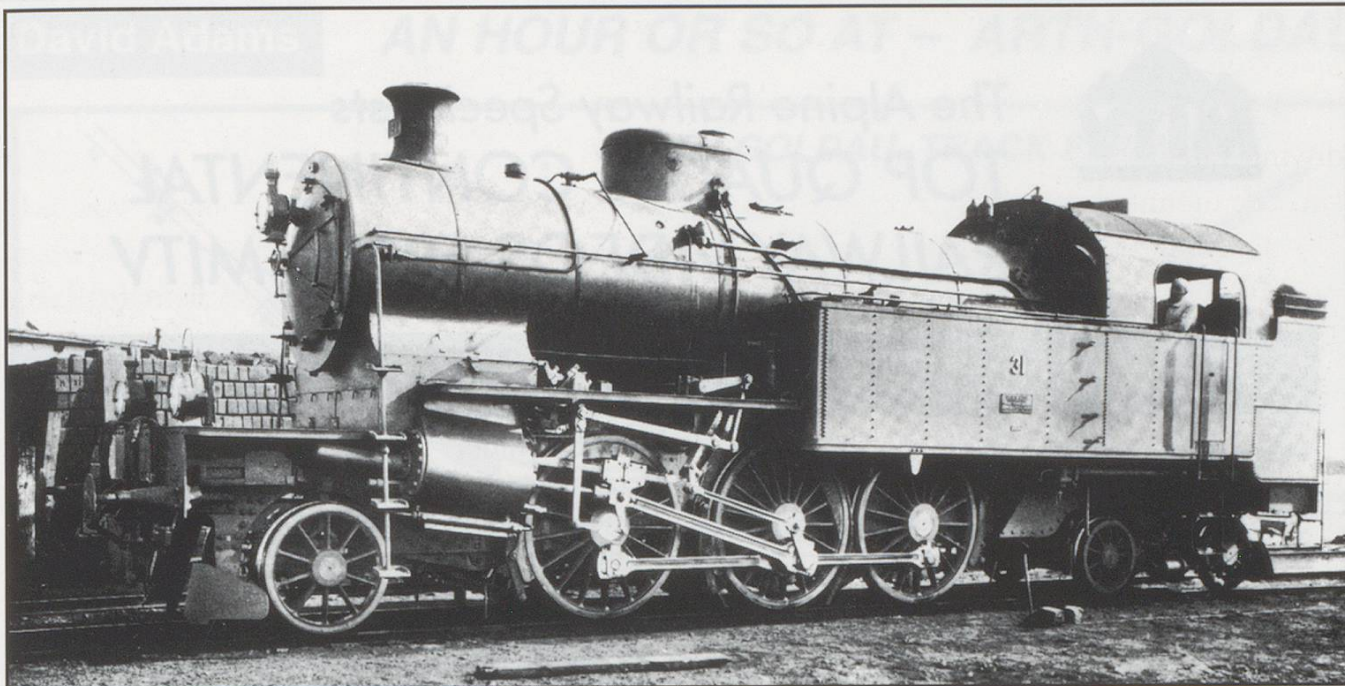
BLS Documents.

[n.b.] All figures are new standard with space separator



Locomotive Data.

Type	Ea 3/6	Nos	31 & 32	Built by	SLM	Works No	- 2 350 & 2 351	
Date built	1913	Date in Service	1913	Date out of service	1933	Scrapped.		
Power(HP)	- 1 600 @ 45 km/h.	Power(kW)	- 1 176	T/E at wheel rim	kn	- 98.1		
Speed maximum	km/h 90	Speed Indicator	Hasler					
Driving wheels	Diameter(mm)	- 1 600	Rigid Wheelbase(mm)	- 3 650	Total wheelbase(mm)	- 10 950		
Length overall(mm)	- 14 050	Height(mm)	- 4 420					
Loco weight(Tonnes)	Empty - 69.3	Service - 879	Adhesion - 59.7					
Water capacity	- 9.0m ³	Coal capacity(Tonnes)	- 2.5					
Brakes	Westinghouse Double action	Screw	Cylinders	No.4	Bore(mm)	- 425	Stroke(mm)	- 640
Boiler	Operating pressure - Bars	12	Length(mm)	- 4 500	Tubes	- 164/21	Grate area m ²	- 3.0
Firebox heating area	m ² - 42.4	Superheater area m ²	- 12.7	Total Heating area m ²	- 210.7			
Trailing load	Gradient	10 % 400 tonnes @ 60 km/h	18 % 300 tonnes @ 40 km/h					
Construction cost	SFr114 500							



Hotel Frohsinn

Visiting the Gotthard and the surrounding area of Lake Luzern?

Experience real Swiss hospitality in a family run hotel with well appointed rooms, excellent food and plenty of local atmosphere.

The hotel is located in an ideal place to start your tour. Situated at the beginning of the North Ramp of the Gotthard with a commanding view of the railway, and equally well placed for those walks in the beautiful surrounding countryside of William Tell fame or that longed for journey on nearby Lake Luzern.

For brochure and reservation details:

Hotel Frohsinn. CH 6472 Erstfeld Switzerland

Tel: +41 41 882 0101, Fax: +41 41 882 0100, e-mail: frohsinn@bluewin.ch

Web-site: www.frohsinn-erstfeld.ch

TRAVELOGUES - The following are available from the editor

1. Switzerland via the TGV - Summer 1999 - Phil Riley
2. How to get the most out of a Swiss Pass - Summer 1999 - Margaret Smith
3. ICN Special - March 2000 - A J Spencer
4. Switzerland with Festiniog Travel (RhB/FO/MOB) - Summer 1999 - Philip Elwin
5. Michael Farr's 2000 Diary - Summer 2000 - Michael Farr. An exhaustive survey!
6. The Toggenberg and Graubünden - Summer 1998 - David Stevenson

Send 50p each in stamps to the editorial office for nos. 1 - 4 and £1.00 each in stamps for nos. 5 and 6 which are very much longer and have more pictures.