The Red Arrows
– Part One by Neil Wheelwright

SBB Red Arrow RAe2/4 1002 at Zurzach in June 1967 when it was operating one of the Badezüge from Zürich HB taking passengers to the local thermal baths.
Photo: Bryan Stone

This article is about the lightweight electric railcars introduced by the SBB between 1935 and 1953 to reduce costs and develop traffic on secondary routes and to cater for the then extensive charter and excursion traffic. Strictly speaking, they were not all called '*Red Arrows*' (or Rote Pfeile / Roter Pfeil in the singular), but that serves for a title.

All of the early railcars suffered from frequent re-classifications and re-numberings as the original system did not allow for them. Added to this was the disappearance of third class in the 1950s, the re-naming of luggage compartments from "F" to "D" and the decision that railcars should be numbered starting at 1000, meaning it's rather complicated! The various numbers and classifications are detailed in the tables below each section. The abbreviations in the tabless signify:

SLM - Swiss Locomotive and Machine Factory
SWS - Swiss Wagon Factory Schlieren
BBC - Brown, Boveri & Cie
MFO - Maschinenfabrik Oerlikon
SAAS - Société Anonyme des Ateliers de Sécheron.
VHS – Verkehrshaus Schweiz

The Single Units

In 1933 the SBB decided to obtain a number of lightweight trains to provide feeder services from regional lines. It was expected that single railcars, designed for one-person operation would reduce operating costs and provide a better environment for passengers.

Two electric and two diesel railcars were ordered from the Swiss railway industry who delivered the first units in March 1935. Their success led immediately to further orders which were delivered between 1936 and 1938.

The units were intended to be lightweight, so a light steel frame was covered with aluminium. To minimise air resistance, the floor was arranged to be only 720mm above rail height and the roof mounted resistors were covered but with side ventilation. As the cabs were not separate from the passenger compartment, steps were taken to ensure switches at the trailing end were locked in the off position.

However, by 1939 the success of the units was such that they often had to be replaced with loco hauled trains to reduce overcrowding. This was not helped by

SBB Red Arrow RAe2/4 1001 at the Basel 125 parade in October 1985 showing roof detail. *Photo:* Neil Wheelwright

the outbreak of war encircling Switzerland which led to increased passenger numbers. The fact that the units could not haul trailer vehicles did not help.

The units were used extensively on charter work and 'demonstration' runs around much of the country to give everyone a chance of a ride on a Red Arrow.

The diesel units, which had a 6-cylinder engine and mechanical transmission, were allocated to Lausanne depot for use between Lausanne, Payerne, and Solothurn, the second unit being held in reserve. Wartime use was restricted due to fuel shortages. 612 was transferred to the Nyon-Crassier line in 1949.

As delivered, the units were only fitted with dumb / auxiliary buffers and a hidden emergency draw hook under the front covers. On 205-207 the coupling was modified so that they could haul a specially designed van for skis (there is a description of a 'one-axle', unbraked ski-trailer introduced in February 1937 although it seems that only one of them existed).

In 1943 unit 205 plus the ski-trailer were rented to the OeBB to cover for stock shortages caused by the 'emergency' wartime electrification. It was returned to the SBB in 1944 once their own locomotives were delivered. The van was scrapped in 1956.

The absence of draw hooks and buffers, led to some operational problems and so it was decided to fit them with a light hook and screw coupling and buffers so that a coach or van could be towed and they could be hauled at the end of another train. This required strengthening of the bodywork to absorb the traction forces and modifications to allow braking of another vehicle. 601/602 were the first to be rebuilt, increasing weight by about 5t. A trailing load of 30t could be hauled up to a gradient of 1.2%. Over 1.8%, no trailing load was allowed. In 1947 five BDF4 (later ABDi) coaches were provided, each weighing only 22t.

606 was rebuilt 2.6m longer as a 100% First Class unit with better, wider spaced seats in 1952. 601 was also converted, after an accident, in 1953. However, they reverted to second class classification at certain times.

In 1948 these were the first trains to use the 'R' classification.

Electrification during the war opened up more places for the units to run, but the absence of draw hooks and buffers continued to be a problem although at least one 2-axle vehicle was used until delivery of the lightweight BCF4s in 1947.

When the diesel units were rebuilt for electric power in 1951/2, full buffers and a light draw hook were added, increasing car length by around 1m. Once converted, their use was similar to the other single car units. During EXPO64 both were assigned to Olten, again with one kept in reserve.

After the war, the units were used in passenger service until delivery of the BDe4/4 railcars. The last routes operated were the bathing trains between Zürich and Zurzach ending in 1968, when RABDe12/12 sets took over, and from July to December 1960 on weekdays, a railcar ran from Lenzburg via Melligen to
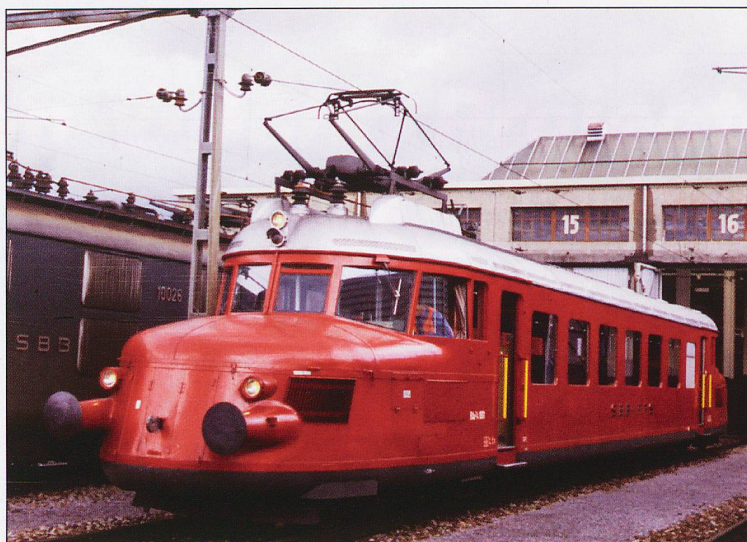
SBB Red Arrow RAe2/4 1001 at Biel depot in July 1997.
Photo: Neil Wheelwright

Kilchberg, to carry workers for the Lindt chocolate factory.

The units came back into scheduled operation for EXPO64 (EXPOsition Nationale Suisse / Schweizerische Landesausstellung held in Lausanne from 30 April to 25 October 1964).

Withdrawal started after EXPO64 with the two ex-diesel units. Between November 1966 and December 1968 units 1004 to 1007 were withdrawn, 1002 went in August 1984 and 1007 was sold to the OeBB in 1974. 1003 / 203 is at the VHS but is not operable, several parts, including the transformer having been used to keep 1001 operating with SBB Historic.

The vehicles were renumbered surprisingly often, hopefully clarified as follows…

The units were initially designated CLe2/4 but were re-designated in 1937 as Re2/4; Unit 207 was designated Re2/4 from delivery. From 1947/48 the designation was RCe. From 1956 they became RBe2/4 and were also renumbered from 601 - 607 to 1001 - 1007. From 1956 the two extended railcars became RAe2/4 but units 1002 and 1006 had already changed their numbers in 1954, so that RAe2/4 1002 was actually RCe2/4 606.

OeBB RBe2/4 202 at Balsthal in August 1986. This is ex-SBB Red Arrow 1007. *Photo:* Neil Wheelwright

Type	Number	Built	Builders	Details	Withdrawn
RAe2/4	1001-1002	1935-1936	SLM/SBB/BBC/ MFO/SAAS	41t, 395 kW, 125kph, 60pl	1968 1001 in service with Swiss Historic

Type	Number	Built	Builders	Details	Withdrawn
RAe2/4	1003-1007	1935-1938	SLM/SBB/BBC/ MFO/SAAS	38t, 395 kW, 125kph 67pl	1966-1974 1003 withdrawn 1968, in VHS as 203. 1007 to OeBB as 202 in 1974

Type	Number	Built	Builders	Details	Withdrawn
CLm2/4	101, 102	1935	SLM/Sulzer/SBB	34t, 214 kW, 125kph, 70pl	1951-53

Type	Number	Built	Builders	Details	Withdrawn
RBe2/4	1008-1009	1951-1953.	SAAS	40t, 260 kW, 110kph, 70pl	1964

Jura Arrow

Unit RBe2/4 1010, in service November 1938, was officially named '*Flèche du Jura*' (Jura Arrow) at commissioning. (Note – I have also seen the spelling - Flèche du Jura.)

This unit was unusual in that it was commissioned by the Foundation "*Flèche du Jura*", paid for largely by public subscription, a result of the poor level of service offered by the SBB. The purpose of this foundation was the procurement of a light rail car and provided 100,000 francs (plus 62,000 from the Confederation, SBB providing the balance), for the purchase of an electric railcar of the. type Ce 2/4 to be operated by SBB for 20 years.

It was initially painted in an apple-green livery with the text Flèche du Jura on the side. This was replaced with a Swiss cross, SBB lettering and standard green in 1954.

It was built for services between La Chaux de Fonds and Biel/Bienne or Neuchâtel and whilst technically and conceptually similar to the Red Arrows, it had a different body design, an unusual suspension arrangement and was not painted red. 1010 had 56 seats, a WC and a small baggage area which included tip-up seats and a section for the post, which became an equipment room in 1957.

Although intended to operate with a driving trailer, none were provided but from 1947 a lightweight (20t) coach with open platforms was available to run with it.

In 1954 it was moved out of the Jura to Lausanne for use between St-Maurice and St-Gingolph. In 1962 it left the Swiss Romande entirely, moving to Rorschach and used on limited services such as Kreuzlingen – Konstanz.

The unit was used for EXPO64 despite having to have some accident damage repaired. Speed was limited after traction motor problems in 1971 and its last services were between Rorschach and Rorschach Hafen until replaced in 1977. It was broken up in summer 1978. 🇨🇭

SBB RBe2/4 1010 at Konstanz in June 1966 where it was operating the shuttle to Kreuzlingen. Photo: Bryan Stone

Type.	Number	Built	Builders	Details	Withdrawn
RBe2/4	1010 Flèche du Jura	1938	SLM/SIG/ MFO/SAAS	44t, 440 kW, 110kph, 22.6m.	1977

(Part Two of this article featuring the Double and Longer Red Arrows will appear in a future edition of *Swiss Express*.)