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Class 501 and 502: First Impressions by Jason Sargerson

The troubled introduction of SBB's new Class 502 FV Dosto units has been discussed in recent issues of *Swiss Express*. In contrast the launch of the Stadler Class 501 'Giruno' trains for the Gotthard line has been much less fraught. Jason Sargerson has travelled on examples of both these new classes and presents here his first impressions of SBB's new flagship trains.



SBB Class 501 arriving at Zürich, 11.07.19

All photos: Jason Sargerson

Class 501 'Giruno'

SBB ordered new high speed trains for the Gotthard route in 2014 from Stadler. These trains are intended to operate from either Basel or Zürich through the Gotthard Base Tunnel to Chiasso and on to Milano. The initial order was for 29 trains, with an option for 92 more. Each train is formed of 11 cars and is 200 metres long. First class seating is provided for 117 passengers and there are 286 seats for second class passengers. In theory, the trains allow for a further 400 passengers standing. It is to be hoped that this is not the case in practice, and that two units will be used on heavily patronised services. Two units will be 400 metres in length; this appears to be an operating objective for the SBB.

The new trains will replace the current rolling stock on the Gotthard route – the tilting Class 500 and 503. These units will revert to more sinuous routes where their tilting mechanism will be of benefit. The new Class 501 units are non-tilting units, with the highest speeds likely to be reached in the relatively straight Gotthard Base Tunnel. The Class 501 units are claimed to be the first high speed and low floor units in service. Although access is low floor, there are steps up within the carriages. The trains have been nicknamed 'Giruno' or Buzzard and are described by Stadler as SMILE (Speedy, Multisystem, Innovative, Lightweight, Express)

The design of the train is based on the FLIRT family of trains built by Stadler. However, Stadler has anticipated further development of the train with a flexible interior that can be redesigned for both the SBB and other operators (*Sweden's SJ has also ordered the train*).

To operate in Switzerland, Germany Italy and France, the train has tri-voltage capability for 15kV AC, 3kVv DC and 25kV AC. If the fleet is extended, SBB hope to operate the train into Germany and Austria as well as Italy. The main route initially in Switzerland will be IC2, Zürich or Basel to Lugano and Milano.

The trains have been built by Stadler at their Erlen factory. Only four of the trains' bogies are motorised, but the motors are capable of delivering SBB Class 501 door, Zürich, 11.07.19.



an output of 6000 kW and a top speed for the train of 250 km/h (160 mph). The design features pressure-tight carriages to ensure good temperature and sound insulation. Testing began in 2016 and the first trains entered passenger service in 2019 on the relatively easy Basel to Zürich route, either via Brugg or via Olten.

First Impressions

I managed to travel on one of the first passenger journeys from Zürich to Basel in July 2019. I was travelling in first class, where there were relatively few passengers. However, when I walked through to second class to take some photos, I found many people standing. So, I hope the SBB have ordered trains with sufficient capacity, because my experience of the Gotthard route is that the current trains are often overcrowded.

The acceleration was very smooth and there was little engine noise. In my carriage though, there was an annoying hum, either from the air conditioning or the electrical equipment in the carriage. The seats in first class were comfortable, but they were relatively firm, not quite as good as Mark IV seats. There is room both under and between seats for luggage. The seats match the windows and there is a blind to reduce glare. There are sensible small folding tables between some seats, but longer tables are present at others. The windows appeared to be relatively small; this may be



SBB Class 501, 1st Class, 11.07.19.

a design feature for high speed trains, so passengers are not disconcerted at high speeds.

There is a comprehensive information system, with details of destinations, timings and maps of the route.

So overall, the trains are an excellent addition to the SBB stock. My concern is that they will soon become crowded and the SBB will need to double up the trains after only a few years of operation. It may have been better, in hindsight, to purchase double deck trains for all the Inter-city routes, including the Gotthard. Operation to the full timetable on the Gotthard route is intended from the introduction of the December 2019 timetable.



SBB. Class 502 IC at Zürich, 06.06.19.

Class 502 Twindexx or 'FV Dosto'

The Class 502 double deck trains are the newest double deck stock for the SBB for both Intercity (IC) and Inter-Regio (IR) services. The trains have had a protracted and difficult development since the original order was placed with Bombardier in June 2010. Service introduction was forecast for December 2013. However, design difficulties regarding 200 km/h operation on the Gotthard line and concerns over disability access delayed the trains until 2016. Testing

of the trains has also highlighted problems with doors, control software, on-board signalling and traction, so the trains have only entered limited service from 2018. Because of the difficulties, Bombardier have agreed to supply a further 3 trains on top of the original order for 59 trains, making 62 trains in total.

Variants

The three variants of the train are:

502:0, 8 car Inter City: 200 metres, includes a restaurant car

and family car, three first class cars, 606 seats including 176 first class and 401 second class and 29 dining seats.

502:2, 8 car Inter Regio: 200 metres, three first class cars, 682 seats including 181 first class and 501 second class.

502:4, 4 car Inter Regio 100 metres, 330 seats including one first class car with 47 seats and three second class cars with 283 seats.

The numbers ordered of each variant are:

Inter City 8 Car. 23

InterRegio 8 Car 30

InterRegio 4 Car. 9

Intended Use

The plan for use is as single trains on less crowded services, but with the option of adding the 4 car train to either of the style of 8 car trains to increase seat availability on heavily used services. The SBB literature says there will be up to 1300 seats – but this will mean having two 8-car IR units together – 16 cars in total, which may only be possible on a few services.

The key routes for the trains are most likely to be:

IC1: Genève–Bern–Zürich–St Gallen

IR15: Genève–Bern–Luzern

IC61: Basel–Bern–Interlaken

IC8: Brig–Bern–Zürich–Romanshorn

IR36 and 37: Basel–Zürich

IR13: Zürich–St Gallen–Chur–Zürich



The trains have been built at Bombardier's factories at Villeneuve in Switzerland and Görlitz in Germany. The trains have a number of design innovations that have proved problematic. The coaches are pressure resistant, thus improving ride quality when entering tunnels and when trains are passing. There is a tilt mechanism of 2 degrees, thus allowing faster speeds on curves and giving shorter journey times. This mechanism is currently not in operation. The trains have a distributed drive, with 6 out of 8 cars motorised, or 3 out of 4 cars motorised. The motors are approximately 10% more efficient than the equivalent train of IC2000 double deck stock powered by a Class 460 locomotive. Maximum running speed is 200 km/h.

Because the trains have not entered service as planned, there has been a build-up of stock in storage. Some have been stored near Zürich, some at St. Triphon and I found two units undergoing testing in the new bunker station at Le Châble! At least this will protect the trains from the graffiti artists.

First Impressions

I went on my first journey on the Long Distance Double Decker (LDDD) or 'Dosto' Class RABDe 502 in second class from Zürich to Basel. It appeared to be trouble free. Acceleration and stopping were smooth and there was no obtrusive engine noise. The seats were possibly a little firmer and straighter than the equivalent IC2000 seats, but not uncomfortable for the journey of just over one hour. Overall design of the coaches appears to be similar to the IC2000 stock. There is room under most seats and between seats for luggage. The seats match the windows and there is a blind to reduce glare.

There are sensible small folding tables between the window seats, allowing easy access to all four seats in a group. The staircase to the upper deck is a curved single set of stairs that will probably be awkward with a suitcase – the best design appears to be in Class 511, with a two stage staircase.

My second journey on the Class 502 was from Winterthur to St Gallen on a very wet day. My only comment here was that the braking appeared to be uncertain, being very jerky on the approach to stations. This may have been due to the wet conditions, but is possibly one of the issues still being addressed by SBB and Bombardier.

My third journey on the Class 502 was in first class, from Sargans to Chur. First class is comfortable; the seats are slightly firmer than the IC2000 equivalent. There is plenty of room for luggage between the seats and under the seat. The seats match the windows and there are window blinds to reduce sunshine. The seats have small tables in some places and longer fold out tables between other seats. I had a look in the family car, where there are slides for young children. Some children really look forward to travelling in the family car, so these are an excellent option for parents.

So, overall the trains appear to be an excellent addition to the SBB stock, when everything is working smoothly. At the time of writing there are 12 units in operation and when all the issues have been solved to SBB's satisfaction; full timetables should be possible in either late 2019 or 2020. 🇨🇭

TOP: SBB Class 502, Staircase, 06.06.19.

MIDDLE: SB, Class 502, Second Class Seats, 06.06.19

BOTTOM: SBB Class 502, Family Car, 14.07.19