



Trainsimming Modern French Railways

Part Two March 2003

A CC 6500 in the Green Maurienne livery taking Italian passenger carriages on a Pilgrim train back to Modane, and Italy, July 1994 (Etoile de Savoie).

Engine Model: Bruno Terrien

(From a purist point of view the extra 40 in the number was only applied from 1999)



In Part Two:

- **French Engine numbering system**
- **Color schemes**
- **Electrics**
- **Diesels**
- **Small Shunters**
- **Resources**

In Part two we cover all electric and diesel locomotives in use, or retired in the last few years, starting off with the SNCF numbering/classification system, color schemes, and then a description of the locomotives by family, covering their use.

Particular attention will be paid to locomotives used on the routes presented in part one: the Etoile de Savoie, PACA and the non TGV lines out of Paris Gare du Nord and Lille Flandres in TGV Nord.

The electrical locomotives developed in the 60's and 70's have different versions for use on the 1500V DC network, the 25 kV AC network and with dual voltage versions that can be used on both networks.

Dual voltage locomotives normally have two pantographs, one for AC and the other for DC. Older locos need to drop one panto, coast, then raise the other when changing.

French Locomotive Numbering system

Traditionally, and still used by Railway modelers and specialist magazines, the French numbering/classification system comprises:

- Letters or numbers designating the number of driven and non driven axles on each bogie
- Then five numbers, the first two or three designating the type of propulsion power and the class, and the last two or three the number of that engine in the series.

To confuse things sometimes, as there are only a 100 numbers in this system, numbers move on to the next set.

A	1 Driven axle	1	1 Non driven axle
B	2 Driven axles	2	2 Non driven axles
C	3 Driven axles		
D	4 Driven axles		

Number	Power
0 – 9999	1500 DC
10000 – 19999	25 kV
20000 – 29999	Dual voltage 1500 DC and 25 kV
30000 – 39999	Tri system Electric
40000 – 49999	Four system Electric
60000 +	Diesel

Hence CC 6559 in the opening picture is the 59th loco of the Class 6500 1500V DC loco, with two bogies each with three axles.

A1A-A1A 68523 is a diesel, where 685 is a separate sub series, with two bogies, each with a driven axle, a non-powered axle and a driven axle.

Strictly speaking the BB and CC are not now used, and at present, following segmentation, an additional prefix is being put on the number to designate the SNCF branch owning the loco.

1	Grandes Lignes	Long Distance Passenger
4	Fret	Freight
5	Action Regional	Regional
6	Infrastructure	Maintenance
8	Ile de France	Regional in the Ile de France
9	Owned or subsidized by Local authority or third party.	

The other leading letters are

X Diesel rail cars and multiple units (Autorails)	2101-4999
Y Shunter (Switcher)	2201-9999
T Gas turbine sets	1001-2082
Z Electric multiple units (Automoteurs électrique)	3711-9636



A CC 72000 in the latest En-Voyage scheme for Grandes Lignes. The scheme uses vinyl overlays, and has been widely condemned as being tacky. This loco has also been re-engined with a more ecological engine.

Model: Brunno Terrien,

Locomotive color schemes

In marked contrast to, say, the Germans or the Swiss with a limited number of color schemes over the last thirty years, the French have a wide variety of color schemes,

some of which relate only to specific locomotives, with have sub varieties within the main scheme.

Electric locomotives

Blue-green	Blue green with white lining or aluminum trim	The original standard livery for electric passenger or mixed traffic locomotives
Béton (Cement)	Cement gray with orange bands	From 1980 - standard 1980 and 90 livery
Grand Confort (sometimes called TEE)	Pale Gray with red band lined in orange	Used on CC 6500 and BB 15000 to match similar painted carriages on high speed trains
Corail Plus (sometimes called Multiservice)	Metallic gray with red flash on side and front end (the prototype had a blue flash)	From 1997 to match the refurbished Corail plus carriages
Ile de France	White with blue window bands plus red doors and front ends on EMUs	Used for EMUs and push-pull in the Greater Paris area
Fret	Two tone gray with green sides	From 1999 on locos allocated to the Fret division
En voyage	Gray with one mauve and one turquoise nose with an En Voyage picture/vinyl.	From 2002 on Long distance passenger

Main line diesel

Green	Mid green with yellow stripes	The first post war scheme
Blue and Gray	Blue and Gray with white lining	With variations the standard color for diesels
Fret	As Electric	
En Voyage	As Electric	

Shunters

Green	Green with yellow stripes	
Orange/Brown	Orange with brown band	From mid eighties – Also called Arzens orange scheme.

The schemes for EMU's and DMUs will be covered in part three.

www.train-rail.com has color side plates for each loco showing the color schemes used.

The person most responsible for the French style is **Paul Arzens**. His first loco was the CC 7100, but his design that perhaps most typify French loco design are the ones with the slanted windscreens, and the BB 67000 and A1A-A1A 68000 diesels, the blue scheme on these diesels, as well as the Grand Confort express train livery and Orange/brown shunting scheme.

Major developments in post war electric locos.

From Part one, we know that France has both 1500V DC lines and 25kV AC lines, the later electrified since the late 1950's. As a result the major developments in Electric locos post war were:

- Production of 1500 V DC locomotives with minor improvements to pre war designs. (**BB 8100**).
- Development of fast electric trains with motorized bogies – with the **CC 7000/7001** in 1949, or BB bogies fitted with the **Jacquemin** transmission developed by the SNCF (**BB 9200**) in 1957.
- The development of 25 kV 50Hz locomotives. The first ones developed the “**Fers à repasser**” (Flat irons) in 1954 for the Thionville line had central cabins to simplify the development, and reduce costs.
- The development of the Universal locomotive capable of both fast passenger and slower heavier freight. This was initially using monomotor – that is all the motorized axles on the bogie powered by one motor through gears - and the deployment of twin gears; one with a high speed for passenger, and a lower speed with more pull for freight. Fitted originally to the “**Dancers**”, then to all later classes of electric (and diesels) locomotives.
- The development of “true” dual voltage locomotives – true in the sense that they had the produced the same power under both 1500v DC and 25kV AC. Probably with the **BB 22200**.
- Once the **BB 26000**, a true dual voltage universal locomotive (because of the Synchronous motor) was developed (**1988**) no more mono-current locomotives were built.

SNCF Electric locos in use or recently retired.

Family Name	1500 DC	25 kV AC	Dual voltage	Three system	Notes
Nez cassés (Broken noses)	CC 6500				Nez cassés (broken noses) is the generic name for the locos built by Alsthom (electric and the diesel CC 72000) designed by Paul Arzens with a slanted window, which reduces glare on the windscreen. A sub class in Green is named the Mauriennes from the name of the route to Modane.
-	CC 7000/7100				
Nez cassés (Broken Noses)	BB 7200	BB 15000	BB 22200		
Bonnes à tout faire (Maids for all)	BB 8100 BB 80000				
Danseuses (Dancers)	BB 8500 BB 88500	BB 16500 BB 17000	BB 20200 BB 25500		So called because they dance on the rails.
Jacquemin	BB 9200 BB 9300 BB9600 BB9700	BB 16000 BB 16100	BB 25100 BB 25200		M. Jacquemin was Head Engineer of the Division of Engineering and Electrical Traction (DETE), which developed the transmission system. The standard type of the 1950's
Fer à repasser (Flat irons)	BB 12000				So called because of their central monocab The first 25kV AC engines built for the Valenciennes Thionville line – now withdrawn
Sybic			BB 26000		Sybic means S ynchronous – B icurrent
Astride				BB 36000	Astride A synchronous T ritension D rive E ngine
-			BB 27000		The last class of loco. Freight only.

Class: **CC 6500**
 Number: **6501 - 6578**
 Built: **1969 - 75**
 Voltage: **1500 V DC**
 Speed: **200 Km/h**
 Multi: **No**
 Number in Use: **76**



Use: Originally Passenger on Fast and named passenger trains, now Freight

Color Grand Confort, Béton, Maurienne Green, FRET

For a long time the most powerful class of the SNCF – there are three sub classes with different side body grills – the second batch of 20 originally fitted for working the third rail supply on the Chambéry-Modane “Maurienne” route. Although these have long been converted, some still retain their light green paint scheme.

Originally pulled high speed trains to the South of France, but the arrival of the TGV PSE and Atlantique, and the BB 26000 has meant they are now used for freight, with occasional passenger.

The last four were originally dual voltage **21001 - 4**

A CC 6500 in Grand Confort scheme on its way to Modane (Etoile de Savoie) July 2001. Note the extra 4 added to its unit number to signify it is a Fret loco.

Model: Bruno Terrien

Class: **CC**
7000/7100
 Number: **7001 - 7002**
 Built: **7101 - 7152**
 Built: **1952 - 55**
 Voltage: **1500V DC**
 Speed: **140 km/h**
 Multi: **No**
 Number in Use: **Retired**
2001



Color **Blue-Green with turquoise Band**

Use: Passenger in the South East, then fright, with occasional passenger.

7107 is the joint holder of the world record for electric traction of 331mph in 1955– although the pantograph was burnt through and the rails buckled afterwards. Used for high-speed trains including the Mistral then used for freight and some push pull trains in the South East until the last five retired in 2001.

A CC 7100 on a two day pre-retirement trip at Chambéry (Etoile de Savoie) November 2001 with UIC carriages.

Model: Josep Medina

BB 7200 +15000 +22000 Nez cassés

The 1970 generation of loco. The BB 15000 was developed first, replacing the proposed BB 14500 which was a 25 kV AC version of the CC 6500 – it was felt that with more modern electronic controls the BB could do

the work of the CC. There are sub-variants of all three types, with a different inclination of the window and side grills.



Two BB 7200 in Béton scheme at Bellegarde station (Etoile de with the Evian water bottle train February 1995. Model: Chris Longhurst

Class:	BB 7200	BB 15000	BB 22000	Use:
Number Built:	7201 - 7440	15001 -15065	22201 – 22405	BB 7200: Mixed Passenger and fast express freight in the Sud Est region, and Sud Ouest. Certain locos are limited to 100 km/h for heavy freight. Some have special buffers to pull the Talgo Train.
Built:	1976 - 85	1971 - 1978	1976 - 1986	
Voltage:	1500V DC	25kV AC	Twin voltage	BB 15000: Passenger from Gare de l'Est, in Alsace Lorraine and now from Paris Nord
Speed:	160 Km/h or 200Km/h	160 km/hr	160/200 km/h	
Multi:	About 50	No	Some	BB 22000: Passenger and Fright all over France, including Etoile de Savoie and PACA, except south of a line from Bordeaux to Toulouse. 4 are equipped with TVM and multi-unit so they can pull fast night goods train on TGV routes, and for a time these had yellow noses and worked in the Channel tunnel.
Number in Use:	238	62	202	
Color schemes:	Béton; Multiservice; Fret	Maurienne Green (5) Grand Confort Béton; Multiservice; En Voyage	Béton; Multiservice; Fret Some Béton with yellow noses for the Channel Tunnel	



A BB 7200 in Multiservice scheme with a Corail train Model: Chris Longhurst

BB 8100 Bonnes à tout faire

Class: **BB 8100**
BB 80000
 Number: **8101 – 8271**
 Built: **80001 - 80012**
 Built: **1947 - 55**
 Voltage: **1500 V DC**
 Speed: **105 Km/h**
 Multi: **Yes**
 Number in Use: **37 - Due to retire in 2003**



Use: Built after WWII to replace steam as the electrification moved South, their ability to multi-traction meant they were able to pull heavier freight trains in the South East, including tankers on the Rhone Valley. The BB 80000 is modified to moving stock at Paris Austerlitz.
 Color: Green; Béton

*A BB 8100 in Béton scheme pulling TER22102 Chambéry to Culoz 29/03/2002 (Etoile de Savoie)
 Model: Pierre Meut*

The Dancers

The first of the mono-motors, with the twin gearing for faster passenger or slower freight, but with a tendency to sway from side to side because of the small bogies, hence the name. Not really liked much by “les cheminots” (railway workers), for this and the cramped

cabins, although the later types have a longer cabin. The **BB 8500** because of its tendency to sway, and its low power is now used for freight in Multi-unit, or for push pull services out of Paris Montparnasse or Toulouse. Some have been used as pusher trains on

Modane route (and renumbered 8700). There are three series, the last with a longer cabin. From 1996, the first series are now used to push stock in Paris and Lyon and renumbered **88500** (88501-88574).



*A BB 16500 in Ile de France livery with Double-deck push-pull VB2N stock
 Model: Jean-Pierre Gleonec*

Class:	BB 8500 BB 88500	BB 16500	BB 17000	BB 20200	BB 25500
Number Built:	8501 – 8646 88501 –88574 R	16501 -16794	17001 17105	20200 -20213	25501 -25694
Built:	1964 -1974	1958 -1964	1965 -1968	1969 -1971	1964 - 1979
Voltage:	1500 V DC	25kV AC	25kV AC	25k AC and 15 kV AC for Germany	Dual voltage
Speed:	100 –140 km/h	100 –140 km/h	90 - 140 Km/h	90-140 km/h	90-140 km/h
Multi:	Yes	Yes	Yes	Yes	Yes
Number in Use:	139	291	105	13	191
Color schemes:	Green Béton Multiservice Fret Ile de France	Green Special green Béton Green TER Picardie Fret Ile de France	Green Béton Ile de France	Green Béton	Green Béton Multiservice Fret Ile de France

The **BB 16500** was used for mixed traffic in the Northeast and for push pull trains from Paris Nord and Paris Est. When EMUs replaced these they were used for freight, often in Multi traction. Exist in short and long cabin versions.

The **BB 17000** is used for push-pull trains out of Paris Nord and Paris St Lazare, and occasional passenger trains from Paris St Lazarre

The **BB25200** is dual voltage locomotive with the second current 15kV 162/3 Hz for cross border traffic to Germany, and Basel in

Switzerland. They are based in Strasbourg.

The **BB 25500**, originally used for passenger trains, but quickly to push-pull duties in Paris from Paris Montparnasse, the Rhone Alps and on the Rivera, where they are being replaced by EMU's or freight



*A BB 16500 in Fret livery
Model: Jean-Pierre Gleonec*



*A BB 25600 in Béton scheme
equipped for push-pull with a
RIO trainset Antibes (PACA)
July 1999 Model: Serge Carrey*

Jacquemin



BB 25236 retains its original Green livery, as it will eventually become a Museum loco. Based in Vénissieux it can be seen in the Etoile de Savoie.

Model Pierre Meut

Class:	BB 9200	BB 9300	BB 9600	BB 9700
Number Built:	9201 -9292	9301 -9340	9601 -9642	9701 - 9704
Built:	1957 -64	1967 - 69	1967 - 69	R
Voltage:	1500 V DC	1500 V DC	1500 V DC	1500 V DC
Speed:	160 km/hr	160 km/hr	140 km/h	160 km/h
Multi:	No	No	Yes	No
Number in Use:	91	39	39	4
Color schemes:	Green Red (Capitole) Special Gray Arzens Béton Special Corail Multiservice Fret	Green (special dark) Green (special Oullins scheme) Béton Multiservice	Béton Special TGV Atlantique (2)	Special pale gray with dark gray and orange bands

The **BB 9200** is used on the DC network in the Southwest, and from Toulouse to Marseilles with some operating passenger services from Paris Montparnasse to Le Mans. Some fitted for the famous 200 km/h trains the Capitole to Toulouse, the Mistral to Marseilles. Some have been fitted

for push pull operations of Corail trains. **BB 9300** was born 10 years later and is a more powerful version of the 9200 with more modern controls, rheostatic braking and Electro-pneumatic brakes (the last 30 BB 9200 have rheostatic braking). Now starting to take on a freight role

BB 9600 are rebuilt withdrawn **9400** modified for push-pull operations around Lyon, Marseilles, Montpellier and Toulouse. Not used for freight. The **BB 9700** are rebuilt BB 9200s modified, with modern controls, for use on push-pull double-deck stock from Paris Gare de Lyon.

Class:	BB 16000	BB 16100	BB 25100	BB 25200
Number Built:	16001 -16061	16101-16115	25101 – 25125 25151 – 25195	25210 -25253
Built:	1958 -63	R 1967	1964 -1965	1965 1974
Voltage:	25kV AC	25kV AC	Dual voltage	Dual voltage
Speed:	160 km/h	160 km/h	130 km/h	130/160 km/h
Multi:	No	No	No	No
Number in Use:	43	15	70	51

Color schemes:	Green Béton Corail Multiservice	Special pale gray with dark gray and orange bands	Green Béton Multiservice Fret	Green Béton Multiservice Fret
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BB 16000 is just passenger traffic, originally including Strasbourg, but now Paris-Gare St.Lazare to Cherbourg. The **BB 16100** are rebuilt 16000 for push-pull double-

deck suburban services out of Paris Nord and Paris St. Lazarre

BB 25100 and **BB 25200**. Now mainly freight. Fourteen 25150 are based at Chambéry (Etoile de

Savoie), where they also pull trains for skiers. The BB 25200 is faster. Some have now been re-gearred for freight only, but some still do push-pull trains from Lyon to the Alps.

BB 12000 Fer a repasser

Class:	BB 12000
Number	120001 -
Built:	12148
Built:	1954 -1961
Voltage:	25kV 50Hz
Speed:	120 km/h
Multi:	No
Number in Use:	None from Dec 1999



Color schemes: Blue green originally then green

Model: *Edouard Staniczek*

The last of the **Fers à repasser** (Flat Irons), the others being the BB 13000 and the CC 14000, and CC 14100, these trains were the first series 25 kV AC locos in France, built for the first major AC electrification, the Valenciennes to Thionville ore line.

Partly because of cost, and because the technology was new they were built with a central cabin – hence one set of controls, but this is uncomfortable in contrast to trains to come: noisy with the pantographs above, hot in

summer, cold in winter, and also as the controls are lengthways you have to turn your head to drive.

Nevertheless they did sterling service, originally mineral trains, passenger and general freight, but later just freight, over the whole of the North of France, from Alsace to Dunkirk.

The BB 12000 retired in late December 1999, the BB 13000 in 1994 and the CC 14100 in 1997.

Sybic and Astride BB 26000 and BB36000

The BB 26000 is a universal Twin voltage loco, capable of working across the entire network. However, with the development of open access and cross border traffic the SNCF felt that they needed Tri system locomotives,

particularly to go into Italy, and the order for the last 30 Sybic was replaced with one for the Tri system BB 36000 Astride. The Sybic work passenger and freight, but the Astride is envisaged just for freight.

Class: **BB 26000**
Sybic
 Number **26001 -**
 Built: **26234**
 Built: **1988 - 1998**
 Voltage: **1500V DC**
25kV AC
 Speed: **200 km/H**
 Multi: **No**
 Number in Use: **233**



Color: Special with orange front ends, Multiservice (few), Fret (few), En Voyage (few).
 One in Two-tone gray for Alsace TER

Use: Throughout France, except Brittany and the Mediterranean, on both Freight and Passenger services, for example Channel tunnel to Modane freight services and 200 km/h Paris Cherbourg, Paris Toulouse and other services.

Sybic in Class specific livery Model: Serge Carrey

Class: **BB 36000**
Astride
 Number **36001 -**
 Built: **36060**
 Built: **1997 - 2001**
 Voltage: **1500/3000V**
DC and
25kV AC
 Speed: **220 km/h**
 Multi: **Yes**
 Number in Use: **59**



Color Originally Class Specific red/gray; From 36031 Fret

Use: Designed for freight and in particular for cross border freight from Belgium to Italy, they are based in Lens. They have now been reequipped with a third pantograph for Italy. Although they have electrical heating equipment for passenger trains they are just used for freight. www.train-rail.com believes that there reliability is questionable, and so they are subject to speed limits.

BB 36000 on freight from Modane (Etoile de Savoie) March 2000 Model: Claude Jousset

BB 27000

Class:	BB 27000	No photo available
Number	27001 -	
Built:	27090	
Built:	2001	
Voltage:	1500V DC	
	25kV AC	
Speed:	140 km/h	
Multi:	Yes	
Number in Use:	48 - 90 on order	
Color	Fret	
Use:	The latest series of locos these are freight only, with no electric heating for passenger trains. High level of driver Confort, central seat like the TGV duplex and electronic readouts.	

Locomotives based at the Chambéry depot (Etoile de Savoie) Dec 2002

BB 7200 1500V DC Electric	68
BB 8500 1500 V DC Electric	12
BB 25150 Dual voltage electric	14
BB 63000 Diesel	8 (All infrastructure)
Bb 67300 Diesel	36
BB8850 1500 V DC (Ex 8500)	8
Total	146

Diesel

With the exception of the diesel rail cars (Autocars), and small shunters (Autotracteurs), the SNCF had very limited pre war experience of diesels, and in fact at the end of WWII had just 18, including two prototypes for the PLM.

For a variety of reasons, including the purchase of 1300 new **141 R** steam locomotives from America after the war, plus new French steam locomotives, the maintenance time for diesels, and a general distrust of the reliability of diesels, the Dieselisation of the non- electrified lines proceeded slowly.

In practice it was a **step by step approach**, starting with large diesel electric shunters and then with increasing more powerful machines, with the last machine, the CC 72000 built in 1967-1974.

The SNCF decided on **diesel-electric** transmission. The first large shunter was built in America by the Baldwin Company, with SNCF engineers visiting America after liberation in 1944 to place the order. The **A1A-A1A 62000** (using the numbering system introduced in 1962) was retired in 1993.

The **BB 63000 (1954)**, still in use, was designed for shunting and for freight, and spread out quickly over the network. 800 of it or its sub series were built, making the largest series of main line locos in France.

However, it was not powerful enough for some task so that The **BB 66000 (1959)**, a more powerful design for the freight and passenger work, was designed for use on little used lines where it was felt not worth cascading steam locomotives from the newly electrified lines (because of the need to keep up steam when they were standing around).

The first main line diesels were the 35 80 km/h **CC 64000 (1955)** renumbered **CC 65500 "Dakota"** built specifically to replace the aging steam engines pulling heavy freight on the Grande Ceinture. They are now just used for construction trains on LGVs and laid off between use.

The other diesel built for a specific role were the twenty **CC 65000 "Submarines"** built between 1955 and 1957 for the network of lines around La Rochelle, with long

heavy but infrequent traffic to Bordeaux, Nantes and Poitiers, but which had a large tourist traffic in the Summer, so again it was wasteful to have steam locomotives hanging around. They were retired in 1988.

It was only in **1963** that the **BB 67000** and the **A1A-A1A 68000** were built to replace steam on the non electrified routes. The 67000 is a medium machine designed to go on all routes, while the 68000 is more powerful, and heavier, hence the extra axle, for pulling heavy passenger trains and freights. The 68000 had steam heating for passenger traffic, but the 67000 had to pull a separate carriage. Later versions with three phase electrical generators are generating the power required for the electrical heating of carriages. Both can work multi traction, with themselves or between the 67 and 68.

The final, most powerful diesel is the six axle **CC 72000** introduced in 1967. This - the last design - took advantage of the three-phase generator to pull passenger trains, and provide the electrical heating.

A BB 67400 built in 1975, was the last diesel built for the SNCF.

Construction Diesels BB 62400 and CC 65500

To meet the demand for diesels to pull construction trains for new LGV routes in 1990 the SNCF bought 44 Class 2400 diesels from NS (The Netherlands railways) – four for use as spares. They have retained their original NS Gray

with yellow cabs and front panels (2 in NS maroon and one in NS blue).

In addition the **Class 65500** named Dakota after the aircraft, which were the first heavy duty

diesels the SNCF had, and pulled freight traffic around the Grande Ceinture around Paris until electrification, are also kept in storage until used for construction on the LGV routes. Pierre Gauriat is developing a model of the later.

BB 63000 Family

A large class which once numbered 800, used for station pilot duties, freight trips and general shunting duties throughout France, but now being withdrawn rapidly because of the general lack of demand or the introduction of the Y 8000

shunters. The BB 63400/63500 are identical and are a more powerful version of the 63000 – they are numbered separately as Eurofirma financed the 63400. They are used by Infrastructure and many have been sold privately.

The 64700 are converted 63500 with a powered mate – or diesel with no cab – converted from 63000 for heavy shunting.

Class:	BB 63000	BB 63400 BB 63500	BB 64700	TBB 64800
Number Built:	63003 -63250	63401 –63423 63501 -64080	64700 -64723	64801 -64819
Built:	1953 -64	1956 71	Rebuilt ?	Rebuilt?
Transmission:	Electric	Electric	Electric	Electric
Speed:	90 km/h	90 km/h	80 km/h	80 km/h
Multi:	No	Some		
Number in Use:	86	514	23	19
Color schemes:	Dark Green yellow stripes; Orange/brown	Dark Green yellow stripes; Orange/brown	Orange/brown	Orange/brown

Two BB 63400s, one in the original green color the other in the orange/brown shunting livery (sometimes called the Arzen's livery).

Models: L'Auto-rail



BB 66000 family

The **BB 66000** was built for mixed traffic, until the advent of electrical heating in passenger cars, and now has a low level of activity in local freights or on construction trains. Some were rebuilt into 66600 (no longer used) or 66700.

The **66400** is a more powerful version with electric train heating and push-pull train capability, and these engines are used around Lille, Creil, Clermont Ferrand and Nancy.

The **66700** is a rebuilt 66000 re-gearred for shunting, to meet the need for more powerful shunting loco

Class:	BB 66000	BB 66400	BB 66700
Number Built:	66001 - 66318	66401- 66506	66707 - 66724
Built:	1959 - 68	1968 -71	R 1985 -91
Transmission:	Electric	Electric	Electric
Speed:	90 km/h	120 km/h	90 km/h
Multi:	Yes	Yes	Yes
Number in Use:	277	106	24
Color schemes:	Royal Blue with yellow stripes; Blue Fret Yellow Infrastructure	Blue Fret	Orange/brown

BB 66400 with push-pull trainset in Nord Pas de Calais Colors Lille Flandres (TGV Nord) 11 Oct 2002 Model: Edward Staniczek



BB 66700 in orange/brown shunting livery

Model: Edward Staniczek with Yannick



The BB 67000 Family

BB 67353 in Blue scheme outside the Chambéry depot (Etoile de Savoie) where it is based.

Model: Florian Barrallon



Class:	BB 67000	BB 67200	BB 67300	67400
Number Built:	67001 -67124	67201 -67269	67301 -67390	67401 - 67632
Built:	1963 -68	R 1980 -94	1967 -69	1969 -75
Speed:	90 Km/h	90 km/h	140 km/h	140 km/h
Multi:	Yes	Yes	Yes	Yes
Number in Use:	32	70	87	228
Color schemes:	Blue	Blue Gray/Yellow infrastructure	Blue Multiservice Fret	Blue Multiservice Fret

The **BB 67000** was designed to pull mixed traffic on all types of line, although as it had no heating it used a heating wagon for passenger traffic.

It was replaced by the **67300** which does have heating, and some 30 67000 were converted to 67300. Others were converted as maintenance and rescue trains on TGV lines with Scharfenberg couplings, and are known as

67200. The remaining 67000 are used for freight in the Marseilles area

A BB 67200 in the Yellow colors for the Infrastructure branch. Used for TGV rescue and maintenance train, with In-cab signaling. This one is apparently the only one in this scheme, as it was not liked.

Model: Florian Barrallon



AA BB 67400 in Fret with another pulling a Corail Train near St Germain des Fossés 1999?

Model: Fret Florian Barrallon Second engine Pierre Gauriat



The **67300** pulled mixed traffic in the Alps and Brittany, and the south of France, but most now have their gear blocked for freight only. The 67400 are the same as the 67300 except that they have a different Bogie design (adapted from the 7200+1500+22200).

The A1A -A1A 68000/68500

The 68000 styling is also designed by Paul Arzens, at the same time as the 67000, and looks almost the same, except it has three axles on each bogie, only the outer two powered. There are currently no models available,

Designed to pull heavier traffic than the 67000, and for faster speeds, they have steam heating. The 68000 and 68500 are identical except that the 0 has a Sulzer and the 5 a SACM – which makes the loco heavier. Both can

The **67400** are the last type of diesel in service, and pulls mixed traffic through France including push pull passenger trains. Some 67300 and 67400 have been adopted to pull the Talgo.

produce steam heating, and were originally used to passenger trains, to be replaced later by those diesels with electric heating (for example the 67300 and the 72000). Both are now used for freight, particularly heavy freight in double traction.

The engines have been swapped about, with 68500 built into 68000, and later the other way around.

Class:	A1A 68000	A1A 68500
Number Built:	68001 -84	68501 -68535
Built:	1963 -67	1963 - 1968
Speed:	140 km/h	120 km/hr
Multi:	Yes	Yes
Number in Use:	56	28
Color schemes:	Blue Fret	Blue Fret



The C 61000, the first post war French built diesel. Although intended for shunting and light branch work, because it was underpowered it frequently worked in double, as above, or with a mate – a cab-less version. Retired in 1981. Model MC Cob (beta)

Class:	CC 72000
Number	CC 72001 to
Built:	72092
Built:	1967 -1974
Speed:	140 km/h
Multi:	No
Number in Use:	91
Color schemes	Blue with white stripes; Multiservice; Fret; En Voyage



Use: Passenger and Freight

A diesel electric locomotive developed to pull freight and passenger, with some having a speed of 160 km/hr, on the non-electrified lines through France, including Corail passenger trains. Their use in passenger has declined since the TGV Atlantique, as cross France journeys from Lyon to Nantes now use TGV's and go around Paris on the link between LGV PSE and LGV Atlantique.

Some have been adapted with Scharfenberg couplings to pull TGV's on the non-electrified line from Nantes to Les Sables d'Olonne and are numbers 721xx. The class has been divided into Grandes Lignes and Fret and with the 1 and 4 prefixes.

30 locomotives are going to be upgraded with a new Pielstick engine to reduce pollution. These locomotives will be numbered 721xx. The first one delivered is the 172148.


CC 72000 in the Multiservice prototype livery 1998. The blue was replaced by red when it was applied more widely. Model: Bruno Terrien



The A1A-A1A 62000 built by the American Baldwin company just after the war at Chester, near Philadelphia. Used until 1993 with their last job pulling construction trains on the TGV Nord.

Model: Jean-Pierre Gleonec

Locotracteurs - Small Shunters

Class:	Y 7100	Y 7400	
Number	Y 7101 -7310	Y 7401 -7888	
Built:	1958 -62	1963 -72	
Trans:	Hydraulic	Mechanical	
Speed:	54 km/h	60 km/h	
Multi:			
Number in Use:	Not on database	Not on database	
Color schemes:	Green/yellow stripes; Orange/brown	Green/yellow stripes; Orange/brown	
Use:	Throughout France on shunting and trip. The Y 7100 has hydraulic transmission and, after experimentation, the later Y 7400 have hydraulic transmission.		
Model: <i>Pierre Gauriat</i>			

Class:	Y 8000	Y 8400	No photo available
Number	Y 8001 -8375	Y 8401 -8550	
Built:	1977 -90	1990 -95	
Trans:	Hydraulic	Hydraulic	
Speed:	60 km/h	60 Km/h	
Multi:			
Number in Use:	Not on database	Not on database	
Color schemes:	Orange/brown	Orange/brown	
Use:	The Y 8000 is more powerful than its predecessor, and so sees more main line use on trip working. The Y8400 are identical except they can be remote controlled by portable radio.		

Locmas

There are some small shunting locos maintained at the works, classed as LOCMA (Locomotive de manoeuvres), such as surviving Y6400s.

Model of Y 6400 *Olivier Sol*



Resources

The major references consulted were:

www.train-rail.com (In French). A veritable multimedia encyclopedia of French trains with full side plates of paint schemes, photos and videos – highly recommended even if you don't read French. However, not all engines and EMU/DMUs are on.

David Haydock & Peter Fox *French Railways Locomotives & Multiple Units* Platform 5 1999

Clive Lamming *Cinquante ans de traction a la SNCF* CNRE editions 2002

The number of locomotives in use as at December 2002, and at Chambéry depot are from the downloadable ParcSNCF Access file, maintained by Olivier on Le Web des Rails <http://lwdr.free.fr/>

MSTS Sites

French MSTS sites are fragmented, with many modelers maintaining their own sites. You should be able to find most models through these three sites or on www.train-sim.com

Simtrain www.simtrain-fr.org

www.trainsimfrance.net

Le Train simulator Francais <http://www.simtrain.dyndns.org/french/depot.htm>

Funtrain <http://funtrain.fr.st/>

Pierre Gauriat has a page on his site listing all original French material <http://ajtrainsim.free.fr/materfr.htm>

In Part Three:

Passenger stock, EMUs, DMUs and Diesel railcars

Thanks to Boris, and to Ces, for reviewing this. Any errors are of course my own. Ces is translating this series for Funtrain.

**UN TRAIN PEUT EN
CACHER UN AUTRE**

*One train can hide another. The cryptic sign
at French level (grade) crossings.*