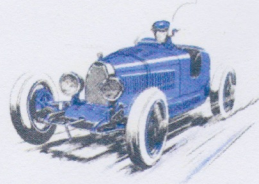


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THE RECREATION OF ROBERT BENOIST'S TYPE 59/54 GRAND PRIX BUGATTI

The Type 59 Bugatti was designed to replace the 2.3-litre Type 51 and the 4.9-litre Type 54 Grand Prix models, and was first raced as a works entry at the Spanish Grand Prix held at San Sebastian on 24th September 1933. Eight examples had been produced by the end of the 1934 season, initially fitted with 2.8-litre but later 3.3-litre engines. It soon proved to be relatively uncompetitive so the factory installed the highly tuned Type 54 Engine No 8 into a Type 59 chassis. This particular engine had powered Count Czaikowski's Type 54 Bugatti to its world one-hour record set at the far from suitable Avus track near Berlin on 5th May 1933 when it averaged 132.87 mph and reached a maximum speed of about 150 mph on the twin straights.

This unique Type 59/54 Bugatti, driven by Robert Benoist, made what was destined to be its sole appearance at the 1935 ACF (French) Grand Prix held over 40 7/4-mile laps of the Montlhéry circuit near Paris on 23rd June 1935. After arriving too late to practice this undeveloped car, displaying Race No 24, proved to be no match for the Mercedes-Benz and Auto-Union factory teams and the Scuderia Ferrari B-Type (P3) Alfa Romeos. It trailed round at the back of the field, famously losing its bonnet which Benoist stopped to refit, before retiring after 16 laps. Thereafter the factory concentrated on developing their alloy-blocked Type 50B racing engine.

During a visit to Molsheim in 1968 Bugatti arch-enthusiast Ray Jones found and acquired four Type 59 Bugatti chassis frames, together with about 40 tons of obsolete Bugatti components. Almost all later Bugatti chassis frames are number-stamped, on a Type 59 centrally on the back of their tubular rear cross-members. These are Frame as distinct from Chassis numbers which were never stamped on their frames, only on their engines and chassis plates, and there is no direct correlation between the two. One of the four chassis Jones found had Frame No 2, and this was eventually to form the basis of his recreation of Benoist's 1935 Type 59/54 Bugatti.

The chassis of Benoist's 1935 Type 59/54 Bugatti had Frame No 6 which in 1936 formed the basis of the first Grand Prix Bugatti to be fitted with their new Type 50B engine and in 1938 the basis of the first and only Type 59/50BIII-engined Bugatti, the so-called Cork car, designed to conform to the newly introduced 3-litre Grand Prix regulations. The Cork car, assembled by Ray Jones alongside his recreated Benoist car, has over recent years appeared at a number of European historic racing events, hence the need for Jones to use Frame No 2 for his recreation.

Count Czaikowski was fatally injured on 10th September 1933 when leading the Monza Grand Prix in his Type 54 Bugatti Chassis No 54209 fitted with Engine No 8. The car overturned on spilt oil and he was trapped beneath it. Photographs confirm that the car was little damaged, and it was returned to the factory which prepared the Count's Bugattis, delivered them by truck to his numerous races and returned them afterwards back to the factory. A number of other surplus Type 54 engines were rebuilt by the factory, re-numbered and fitted to Type 50/50T production models, but the special Engine No 8 remained at Molsheim until after the war.

2.

In 1950, when already a Bugatti enthusiast, Jean de Dobbeleer opened a motor car dealership in his native Brussels, and before long added trading in second-hand Bugattis to his business. Initially he sourced these Bugattis principally from Belgium and France and restored them as necessary, often obtaining replacement parts from the Bugatti factory in Molsheim. One of his acquisitions from the factory was a complete Type 53 four wheel drive rolling chassis, depicted on p.151 of Charles Fawcett's book *The Bugattis of Jean de Dobbeleer* published in 2011. This book, however, surprisingly made no mention of this particular car in its text.

In December 1960 de Dobbeleer supplied a list of about 140 of the Bugattis that had passed through his hands to the late Hugh Conway to assist him in his compilation of a world-wide Bugatti register, which was duly published in 1962. The one Type 53 in this list was described as a "chassis complete" and "not for sale actually". He routinely included the country each Bugatti had come from and to whom it was sold, and in five instances quoted the Bugatti factory as his source. However in this and six other instances of very rare models such as Types 45, 73 and 101 he declined to record that they were cars from Molsheim which had never been sold.

De Dobbeleer is thought to have sold his non-running Type 53 to American dealer Tom Barrett, probably for his client Carlton Coolidge of Ohio who received it in 1970, and confirmed by Conway as Chassis No 53002 in his 1973/4 update to his 1962 register. Of the other Type 53 Bugattis produced Chassis No 53001, listed as owned by Fritz Schlumpf, is now in the French National Motor Museum at Mulhouse, whilst the fate of Chassis No 53003 remains unknown.

Coolidge asked Ray Jones to restore his Type 53 to running order, and whilst doing so he identified its engine as the special Engine No 8 originally fitted to Count Czaikowski's record-breaking Type 54 which was later installed into Benoist's Type 59/54 works entry for the 1935 French Grand Prix. Eventually Jones acquired this Type 53 from Coolidge, removed its engine for future installation in his projected recreation of the Benoist car utilising his Type 59 Frame No 2 chassis, and replaced it with a standard Type 50 unit No 25T. Type 53 Chassis No 53002 has long been in the ownership of Miguel Gonzales of Spain.

By about 1995 Jones had completed the assembly of his Benoist and Cork cars, and in November 1997 Type 59/50B owner Charles Dean and the author of this report visited Jones in South Carolina to inspect these two and his various other Bugattis. Although fully assembled and looking most impressive, in fact neither was in running condition. Notes of this visit dated 17th November 1997 include a mere paragraph for each of these two cars, the heading of the Benoist one inaccurately calling it a Type 59/50B. After correcting mistakes it read as follows:-

"The original 1935 ACF car driven by Benoist was on Frame No 6 which was later used for the Cork car. This recreation uses original drilled Type 59 chassis Frame No 2 but the original 1935 ACF Type 54 iron-block Engine No 8 and various other original parts from that and other cars. Engine has a unique larger sump, a cross between the Type 50/54 and later Type 50B units, and also a larger blower than normal Type 54. Original Type 59 split front axle, original Type 59 four-speed gearbox, original double-reduction Type 59 rear axle with much heavier ZF limited slip differential, no radius rods unlike later frames, cable brakes, de Ram shock absorbers. Engine No 8 does not appear as expected on sump but is reputedly on various internal parts, flywheel, clutch etc., right hand change and throttle, central handbrake, Scintilla magneto. Hugu exhaust, widest type rear wheels."

3.

Over the last year or two Ray Jones's son Greg has completely restored the car to mechanically sound running order, and recently asked the author to produce an independent and far more comprehensive report. Greg has taken over 2000 photographs of the car and, to assist with this report, has supplied a representative selection of the most relevant ones, all taken on either 22nd April 2015 or 22nd May 2016. As well as more general photographs they include close-ups of each original factory number or other stamping or marking that could be found to enable the car's current provenance to be reported upon as accurately and comprehensively as possible.

By the mid-Thirties all Bugatti chassis frames were sub-contracted by the factory to Brunon & Valette of Rive de Gier, some 20 miles south-west of Lyon. In practice they produced and supplied the longerons (side-rails) and channel-section cross-members, components which without a multi-hundred ton press the factory could not produce themselves, and the completed frames were then assembled at Molsheim. Brunon & Valette stamped their VB logo (a "V" with an attached "B") on most if not all the parts they supplied, and in the rarer models such as Types 54, 55 and 59 an individual number was added. Several of the frame photographs show VB 1 stamps, thereby confirming beyond doubt the authenticity of the chassis frame itself.

Inspections of many of the surviving cars has shown that there is no close correlation between Brunon & Valette's VB and the factory's Frame numbers which were stamped after their assembly at Molsheim. Other photographs show Frame No 2 stamped on the back of the tubular rear cross-member of this car's chassis, a component made and fitted at Molsheim.

Before the factory began assembling a car its frame was marked out to indicate the correct positions for the major components such as its engine, bulkhead, gearbox, etc. This was done by lines of centre-pop dots, together often with markings. Several such rows of dots are shown with markings on the photographs, e.g., AV MOT and AR MOT indicate the positions of the front and rear engine mounting bolts. However the meanings of others are not understood, whilst their adjoining numbers such as 137, 610, 1442 and 1634 are presumed to be metric dimensions.

The forged rear spring hangers on a few later model Bugatti chassis frames differ from those on all earlier models in that they were produced from an alloy rather than from mild steel so were stronger, and the outer ends of their cylindrical portions were slightly tapered. The single rear spring hanger photograph proves that it is an original being stamped MH 2, a nickel-chrome alloy steel produced by Marine and similar to Aubert & Duval's AD3 found on many Bugatti components, most notably on steering arms. This spring hanger is also stamped with (an inverted) G for gauche, indicating that it is the left-hand rear spring hanger, it has the tapered ends and also displays a standard factory-executed Brinell hardness test dimple.

Many factory stamped numbers are shown on close-up engine photographs but, without both an intimate knowledge and personal experience of working on Type 54 engines, identifying all their locations with absolute certainty was sometimes impossible. There were no photographs of the sump, the only number found on the crankshaft was a 1 on the inside face of one web, there were none on the connecting rods or their pistons and those on the rod caps were indecipherable. A raised 156 twice and a raised 410 (?) were found inside cylinder block casting photographs, and a pair of main bearing halves were numbered 9 (so assumed to be the rear main bearing) with 156 alongside on the cylinder block with another 156, presumably on the opposite side.

4.

Several numbers were found on the component parts of the camshaft drive, e.g., G 102 above J G 2 on one of its shafts, and the similar G.102 above (J?) G 2 on another shaft, or elsewhere on the same one. A 4 was found on each of the vertical drive shaft bearing caps, another one on the vertical drive casing to which one of these caps was secured and yet another 4 together with 3N and C2 on the face of one of its bevel gears. 3 N C 2 was found over an EB logo and a 4 were found between two gears on another shaft. The steel disc of a Ferodo-lined clutch plate was stamped JEB above a balance symbol and JEB alone diametrically opposite. A flange stamped McEVOY-POMEROY PAT No 35?? must be the drive to a standard McEvoy Pomeroy oil pump as used to provide lubrication of Bugatti Type 57C supercharger bearings.

Photographs of fifteen engine parts proved to be impossible to identify or locate accurately and with certainty. Accordingly provision of the precise identities and locations of these engine parts was requested to allow their inclusion later in this report. No photographs of the front axle were supplied, however during my brief inspection of the car in November 1997 Ray Jones confirmed my belief it had an original Type 59 split front axle, and this was further confirmed by ABC Registrar Sandy Leith in this car's entry in his 2003 register. It is presumed not to be numbered or marked in any way.

The four photographs of the car's gearbox show that its casing and lid are both stamped 4 in the expected positions, quite heavily on the lid but much less so on the casing. An EB logo followed by a 2 are stamped centrally on the machined top rear flange of its casing. Such a stamping has not been seen before in this position. A similar EB logo followed by a 4 has already been noted on a geared shaft in the camshaft drive. This car's entry in Sandy Leith's 203 ABC register entry confirms that it has the original Type 59 Gearbox No 4.

The rear axle centre casing is numbered 4 across the front of its nosepiece and is repeated on its wired-on front cover, the latter having inadvertently been double-stamped. The ratios of its double-reduction gears are indicated by the numbers 28 above 20 for the primary bevel gear reduction, then beneath them the numbers 33 above 12 for the secondary plain gear pair, these numbers being stamped on the opposite side of the nosepiece from the torque arm mounting. The outer face of the final 33-tooth pinion has been scribed No 94364 and AO 9398. Its mating 12-tooth pinion is hand-marked with the date 14/4/38, and six of its adjacent teeth appear to be stamped in the order ?/E/1/59/E/?, the "59" presumably referring to its rear axle Type.

The inside of the right-hand (driver's) side of the rear axle casing is stamped Zz nd R followed by an illegible character which may be a 9, whilst the inside of the other casing has a single stamping, seemingly a combination of a 1 and an L under some surface oil, in the same position as the Zz in the right-hand half. The outer face of a ball bearing has been hand-marked 4, whilst three of the 12-tooth pinion teeth can be seen on the same photograph, the first two stamped x and 12 respectively and the third hand-marked 14.

Finally a spacer ring, possibly from behind the large pinion, has been hand-engraved in writing with a four-letter word resembling but probably not Jamb followed by o/l and a short illegible word. The meanings of many of these stampings and markings are not understood, but they do serve the purpose of confirming beyond reasonable doubt the authenticity of most if not all of these rear axle parts. Sandy Leith's 2003 ABC register does confirm that this car has an original Type 59 double-reduction rear axle which, on the photographic evidence, must be No 4.

5.

The car's front road springs are originals, as is confirmed by the stampings on their leaves. They are clearly a matched pair, both their bottom leaves being stamped 78172 transversely with three centre-pop dimples on opposite sides approximately alongside their centre-bolt holes. The top leaf of one is stamped with a letter O almost overlapping a letter I and then the letters NE above a 38, but nothing could be detected on the other top leaf although something could have been out of shot on its photograph. The letters OINE are evidently what remains of a poorly stamped Lemoine who, with Gouvy, were Bugatti's principal suppliers of road springs, whilst the 38 probably denotes its year of manufacture.

The car's rear springs are also a matched pair, the top leaf of one being stamped 61137 transversely just ahead of its bolt-hole, the other one 61137 further forwards. The first one is also stamped 22 longitudinally along one edge alongside the rivet which holds the leaves together with four centre-pop dimples opposite, and is clearly stamped Lemoine longitudinally further forwards. The second one is stamped 21 twice, once along each edge, one being much fainter than the other, and both partially covered by a pair of centre-pop dimples. It shows no sign of being stamped Lemoine. The four dimples are repeated on the bottom leaf of the first one, but no markings could be detected on the bottom leaf of the second one.

The two front shock absorbers are original blue-painted de Rams and are stamped 1263 and 1284. Blue paint had been removed from a pair of original de Ram casings stamped 1355 and 1356 which have since been restored, repainted and are now the rears fitted to the car.

Two close-up photographs of the markings on two original Bugatti Type 59 piano-wire wheels were supplied, one stamped R 93 on the inside of its rim above a 93 on its centre adjacent to its inserted steel brake drum. The other was identical except for its R 98 and 98 stampings. There was no way of determining their rim widths. According to Sandy Leith's 2003 ABC register the car has four original Type 59 wheels confirming, as has since been advised, that the other two are now fitted to the car. The car's coachwork is entirely reproduction, understandably so as the original is not known and is extremely unlikely to have survived. Fitted to its equally necessarily reproduction bulkhead is a replica Bas-Rhin style Bugatti chassis plate stamped with Chassis No 2 (meaning Frame No 2) and no horsepower rating.

Since the foregoing part of this report was written another memory stick with more photographs was received, on 11th June. It contains four files, one entitled Bugatti with almost 2200 photographs, all of which have since been viewed and most of which inevitably had not been seen before. Nevertheless, because the earlier photographs had been selected as being the most significant, few of these new ones provide additional relevant information. Rather they serve to illustrate in unbelievably great detail the expertise which has gone into each and every one of the numerous restoration processes executed to produce the superbly presented finished car.

These photographs also allow a greater understanding and appreciation of the car's internals than would be possible from an external inspection. For instance, at the heart of its engine is its massive cast iron cylinder block, from its integral crankshaft main bearing supports and their caps all the way up to its integral cylinder heads. Its aluminium alloy connecting rods run directly on the journals of the one-piece counterbalanced nine main bearing crankshaft, and its pistons are magnesium with domed heads and valve cut-outs. The camshaft drive train features Celeron-like fibre gears on the oil pumps and two more, one driving each camshaft gear.

6.

The three Zenith 48K carburettors are angled at 45° to allow them to fit under the huge supercharger and feed into its full-length inlet port. It has twin parallel outlet ports which feed into a pair of matching ports in the large cast aluminium inlet manifold, one supplying the inner four cylinder block ports and the other the outer four via two smaller manifolds.

The remarkably intricate rear cover of the Bugatti multiplate clutch supports three rather than the usual pair of actuating levers, whilst the casing of its Type 59 gearbox is a development of the three-speed Type 54 and four-speed Type 55 gearboxes. All three casing types are bolted directly to the sides of their longerons, but the Type 59 casing differs in having four large circular lightening holes in each of its sloping bearer arms. This Type 59, like the Type 54 and earlier Grand Prix Bugattis, has its gearlever outside its cockpit but, unlike the others, its hand-brake lever is inside.

From the rear of the gearbox a substantial original Bugatti universal joint of the Hardy-Spicer type at the front end of the propshaft takes the drive to a direct flanged joint to the rear axle. Bearing in mind its double reduction gears and its ZF limited slip differential the rear axle casing is remarkably compact. One benefit of its double reduction arrangement is to bring the line of the propellor shaft coincidental with that of the dry-sump engine, another is to permit a wider range of overall ratios, from about 2.9 to 4.5 : 1.

It is universally accepted that the major components, viz. chassis frame, engine, gearbox, front and rear axles of this recreation are original Molsheim products, but these photographs highlight the fact that the vast majority of the lesser components are likewise identifiably original Molsheim products, the few remaining ones being accurately fabricated reproductions. After viewing all these photographs one cannot but have the greatest respect for Ray Jones for his dedication for over forty years towards the completion of this recreation - and that of the Cork car - ably assisted more recently by his son Greg operating under his father's supervision.

David Sewell, 19th June, 2016.