

Lancia Rally 037

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"B" like a Beast

It isn't so simple to deal with the 037 Group B: it's easy to let ourselves get carried away by enthusiasm and praise these wild beasts from fantastic shapes and high technology, the result of a never been so free and extreme rule. It's fantastic to shut ones eyes and become intoxicated with epic battles on the roads of half a world, in a time that saw a large number of talents gathered in the same challenge. It's nice to turn the pages of the books of those days and watch the photos of these unbelievable cars into action, but then to wake up with a start from the dream later on and remember that wild beasts could also kill: Bettega, Toivonen, Cresto, not to mention those who crashed and looked death in face. I remember the letter sent by a fan to a sports magazine in which he gave voice to the Group B return. The journalist, who answered him, had personally lived that experience and told his distress when he saw the drivers and friends starting for special stages, without knowing whether he would have seen them again. Is it right to live with such a distress? Let us learn from these short comments, just when we are on the point of telling the 037 story, a car that, with the quirks of Fate, passed through the Group B story, leaving indelible tracks in its fans' memory and in the Rally history.

At the beginning there were the regulations

In the early 80's the FISA (then the name of the FIA's motor sport regulatory division) decided to begin the World Rally regulations. It was a booming period for the car industry, and the racing car world showed its effects positively in the form of big budgets to be invested in motor races. Up to that time the rally world has been dominated by Group 4, the cars produced were no less than 400 units during one calendar year. Why should manufacturers be engaged in the production of so many units when, with the same budget, they could produce a fewer number but with a higher-tech. profile? Not to mention the advantage of the good performance and image to the industries taking directly part in the world championship. It was like if suddenly it had been decided to cut the historic connection between rally cars and production-derived cars to bring them nearer F1 single-seaters and Prototype sports cars which used technology and knowledge at the highest degree. If in the 70's Stratos was an exception, i.e. a beast born to run, a produced-derived vehicle in compliance with the rules but with heavy finance losses, thanks to the new groupings Stratos became a usual car. Now, every team could have its own Stratos. FISA separated the rally cars into three new classes: the "earth planet" from the Group N, produced-derived cars with four seats, built in 5000 units at least and without any significant changes with respect to the production-derived versions. The middle car, i.e. Group B, four-seat GT cars with 5000 units produced in twelve months, with changes allowed of the mechanical parts and chassis but not for the body. Finally, the "moon", or Group B, sports cars built in 200 units with changes allowed of the mechanical parts and body. The concept of evolution was added to that last class: the preliminary project could be deeply reworked on condition that 20 models, at least, could be produced under the new specifications. All that will permit the manufacturers to start models at a fairly low cost. Besides, Group B was divided into two subclasses on the basis of sports car capacity (effective capacity of the engine x coefficient 1.4). Divergent was fixed at 3000 cc., below which the minimum weight allowed was only 960 kg, while over it was 1000 kg. This choice will be the basis of a general research for lightness, just when power performances boosted out of all proportion, thanks to more and more sophisticated supercharging engine techniques. The 1982 was the year referred to for the new set of regulations. While federal committees were studying the paper revolution, another important revolution was on the point of rushing into the rally special stages: announced in 1980 and officially entered in 1981, the Audi Quattro appeared in the world rally championship and its presence was beginning to make itself felt. The Germans had never been frequent participants in races, but when they decided to plunge into the race world they made sure they had the card making the difference over competitors. Of course, the choice of a five-cylinder engine was rather exotic one. To that it was added the permanent use of a turbocharger, that in Formula One was becoming necessary as an unavoidable choice, but in rally races it was occasionally used by Lancia only and with opposing results, particularly as for reliability. The German engine, with a capacity of 2100 cc,

delivered a good power of 300 bhp. But the solution which gave more perplexity was certainly the AWD (all wheel drive) at.... "four legs". At the beginning sceptical opinions were largely shared: it was uncertain that the AWD system benefits could compensate the necessity of an extra weight on the car and a major complexity in the drive working. However, the Germans moved by degrees: they started from Iltis, the light four wheel drive vehicle, born to be used by the army. Later on three Iltis entered the 1980 Paris-Dakar, where they monopolized podium. Finally, the choice was to bring the solution on a series car to enter the rallies. The operation was greatly supported by Dr Pinch, Ferdinand Porsche's nephew and manager responsible for the car factory with four-ring logo, while the designing and management of the race was entrusted to Roland Gumpert, a young and charismatic German engineer. Once solved its youth problems, the Quattro was already winning in its first season, gaining the honour in Sweden, driven by Hannu Mikkola, and at the San Remo Rally piloted by Michelle Mouton. At this point the large squad of sceptics vanished in the air to leave space to admiration. The future of rally racing cars seemed to be the 4W drive!

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Operation "037"

After experiencing Stratos and 131 Abarth, that brought to Fiat Group six constructors' titles in seven years, in Turin they searched the way to remain on top of the 80's. It's no use saying that Cesare Fiorio's men had everything: technical expertise, great experience, and method in exploiting every way of escaping from rulings, perfect organization, economic resources and awareness of their skill, i.e. a self-confidence that is the lubricant of a winning team. Moreover, A112 Trophy turned out an interesting talent breeding ground at the disposal of Fiat Group sports activities. All this potential was concentrated and expressed by a new racing car. The preliminary studies, started during 1980, were devoted by Pininfarina to the body-work design and product industrialization as well as to mechanical parts together with Abarth. The start of a project was never easy and we could immediately witness its splitting in two parties: those who were willing to go on the line of the 131 Abarth, turning a series car into a Group B and those who suggested to follow the way that brought to Stratos, that is to build a racing car from which to derive a series of 200 units, needed for re-entering the rules. A good dilemma, since that Fiat designers ventured on both solutions, becoming winning in both cases. Finally, they will opt for the second one with a little compromise: the lack of time obliged them to start from the silhouette already existing in the Fiat car range. Ritmo, Delta or Beta Montecarlo? Eng. Sergio Limone remembers: "the choice was made in the Beta Montecarlo that Lancia had already built in Group 5, race version, and in which we had already some experience". The pressed steel silhouette had already good qualities as for stiffness and stoutness against crashes, but it was further reinforced with the addition of tubular elements having 35 mm \varnothing . Then they mounted simple and light tubular frames on the structure, for front and rear axle: these were made by circular section tubes of 25-30 mm \varnothing , linked by square section elements. The unit was so stout that the rigorous crash tests required by FISA were overcome successfully, highlighting an excellent crashworthiness. Due to recent competitors' experience, the mid-engine didn't seem any longer the best solution for rallying: from one side the heaviest part of the weight was directly supported by driving wheels, but on the other side the car was more snappy and unstable. The problem was partially solved by the accurate designing of suspensions: they chose a system with overlapped transverse links with wide extension arms, both for the front and the rear. On the front, Bilstein gas pressure shock absorbers were endowed with variable flexibility helical springs. The system was more complex in the rear: shock absorbers were two, mounted with the reverse piston rod so as to permit a quick intervention from technicians, while the spring was placed on a third mid element. On the whole, the system was simple and easy one for the adjustment needs, also thanks to the homologation of the four mounting points of the arms, by which it was possible to change the height from the ground and the oscillation of suspensions (from 190 mm to 260 mm) by means of few and easy operations. As for brakes they chose self-ventilated disks matched with Brembo aluminium callipers. The system was endowed with handbrake twin circuit, twin brake booster and braking control. The rack and pinion steering gear was equipped with steering column, articulated and releasable on four points in case of crashing. To favour the weight concentration around the barycentre, the tank was divided into 2 units of 35L each, located immediately behind the cell separator and before the rear wheelhouses. A second problem to be solved was the engine choice: there was no time to design a new unit from a blank sheet. The only available engine was the four-cylinder Abarth 131, that represented a losing choice from the very beginning, considering the

scarce power which was able to deliver. To try to revitalize it was a compulsory choice, but how? They could follow the turbo engine way already experimented with Stratos and used in the new Audi Quattro, whose secrets started to be let out. The winning idea occurred to Angelo Lampredi, by that time aged but always man of genius, one of main successful technicians in those adventurous years of Ferrari. It was up to him to brush up the volumetric compressor solution that was in fashion in the post-war period, based on a so simple as effective argument. Engineer Limone remembers: "At those days we hadn't the electronics of today and it was well known to all of us about the turbo significant lag. Thus Mr Lampredi revived a volumetric compressor able to supply power since 2000 rounds and missing of famous turbo lag, the turbo response delay." As a matter of fact, the really useful factor to a rally car was to get max torque when out cornering. There were really very few stretches on certain roads, where it was possible to boost power when was at the top of the engine rounds. The four-cylinder in-line with 1995 capacity did not change particularly in its dimensions: the bore was 84 mm with a stroke of 90 mm. The engine block was still in cast iron and the head in aluminium alloy. The twin overhead camshafts were driven by a toothed belt. The four valves for each cylinder had 34.5 mm diameter for the induction and 28 mm for exhaust. Feed was supplied by carburettor Weber DCV NH 15/250 operating on a 40 mm throttle. Volumetric compressor Abarth, positioned on the engine right hand, was able to deliver 0.60 to 0.90 bars. Compression ratio was brought to 7.5:1 and horsepower was increased to 205 at 7000 rpm with a torque of 23 kgfm at 5000 rpm. A particular care was taken of the exhaust system design: four manifolds, on the rear side, became two pipes up to the inside of the exhaust silencer placed behind the engine, with at the end two swelling end plates. Pressure lubrication took advantage of three pumps located on the engine block, one pressure pump for the delivery and two pumps for the return, that kept the circuit at 4/4.5 bar. The system was fitted with a cooling radiator, placed in the anterior part of the frame together with the water radiator. The unit was transaxle positioned in the rear part, on purpose to avoid the troubles caused by six-cylinder transverse Stratos. This choice was also due to facilitate maintenance and repair operations for mechanics. Due to the lack of time needed to develop a gearbox "ad hoc", they turned to the ZF heavy unit, already widely tested on the De Tommaso Pantera and on the Maserati Bora. It was a 5 speed gearbox plus reverse with frontal dog-clutches that included a self-locking differential at 25%. The clutch was of a dry single-plate type with 230 mm diameter. At the beginning they considered the idea of the all-wheel drive, but that was a completely new field for Lancia engineers. In substance, there was no time to develop a system having performance and reliable features, even if, the idea wasn't however rejected. It was up to Pininfarina to dress the new creature: no easy job because it had to combine the restrictions of mechanical parts and chassis, without giving up to the maintenance needs of mechanical parts and the necessity of a high aerodynamic load. First attempt was, in fact, a false step: it looked like a mixture of parts belonging to Lancia gamma and the future baby 037 had difficulty in finding its own stylistic identity, maintaining a close resemblance with Beta Monte Carlo. When the styling department managers realized that, it became necessary to restart from a blank sheet. The result was less sensational than Bertone's Stratos, but it expressed the balanced nature of a car born mainly to run. Wheelbase 2240 mm allowed to set up a body that intensified its agility: the frontal part wasn't different from the one of the more peaceful Beta coupe. Four headlamps of circular form were placed beside the traditional Lancia small template, used at that time, but the whole was made more aggressive by a large spoiler, which offered the needed aerodynamic load in the anterior part and housed a generous cooling mouth for the radiators placed under the bonnet. This latter was slightly convex shaped to house the spare wheel. The body side, low and slim, was made by stiffening ribs which strengthened its image. In the terminal part the body-line showed the power hidden under the bonnet through the muscular wheelhouses. The windscreen was very inclined and the roof line immediately started declining constantly towards the tail. This fact allowed max height to be maintained in 1245 mm. It was a curious choice to mount two small aerodynamic bulges corresponding with the driver and the crew: from an updated interpretation of the one of classical stylistic sports cars bodied by Zagato in the 50's and 60's. The cockpit reminds the Beta Monte Carlo stylist mark, while on the rear pillars they obtained two showy air vents like "two ears", according to the layout also used on the Lamborghini car, designed by Bertone, which had the task of conveying fresh air to the engine. The tail harmony was interrupted by a large spoiler having nothing to do with styling, but it gave the incredible aerodynamic load, needed to maintain the back wheels stuck to the road. After some wind tunnel studies they opted for a major negative lift to the detriment of some fewer kilometres at top speed. Since they had already chosen to mount an engine favouring the torque at low rates, it was obvious that aerodynamics should also have favoured the drive features. A large sweeping rear window in plexiglas consented to look and inquire curiously into the engine lodging, while the rear big light groups, rectangular

shaped, were positioned among big hot air outlet grilles. The narrow cockpit was separated from the engine compartment by a double-glazed window and a sound-absorbing panel that more than sound-absorbed scarcely lowered the rumble of a sensational mechanics. As for the material used in the bodywork building, they made large use of plexiglas and fibreglass reinforced with Kevlar, which consented to limit the weight within 1170 kg. To allow a quick and complete repair of the mechanical parts the bonnets were integrally opening, the front bonnet was hinged before the chassis, and the rear one was hinged on the roof. To run the new creature they chose some rims in the light alloy made by Speedline with 16" diameter, used for Pirelli P7 205/55VR16 front tires and 225/50/VR16 rear tires. The Lancia Rally 037 was introduced in the early 1982 at the 59th Turin International Motorshow: thanks to its streamline it inflamed the fans with passion, but also of the few lucky customers in a position to pay 45,630,000 It. liras and get a piece of the history of the racing cars. Its features: the car was only available in the red colour, but it will be not a matter of colours preventing Lancia from selling the first 200 units needed for Group B homologation. Its performances, on the other side, are "a shout": top speed was 228 km/h. But the more interesting factor was the acceleration: only 6 seconds to reach 100 km/h, thanks to the generous torque offered by Volumex compressor and to the limited weight. Besides, differing from the Stratos car derived production, which was an unstable and unreliable grasshopper, the 037 was polite and knew how to behave, provided without overstatement. Every unit was first mounted in the porta San Paolo workshop and then dismantled on purpose of painting. Each unit testing was guaranteed by the famous name of Giorgio Pianta, former-driver and manager in Abarth, who will deal with the whole the 037 evolution.

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1982: the jewel in the dust

Thus conceived, the 037 turned out a good starting basis for races, but obviously for competition purposes they had to start on that target. Lancia engineers needed less than one year to turn the fragile and ugly duckling into a winning car. After long practice sessions made on the private track of the Mandria, near Turin, the car had its official debut on 1st April 1982 at the Rally Costa Smeralda, valid for the European title: Bettega and Allen retired for trouble to the gearbox selectors. In an interview given in 1983, Giorgio Pianta described these first samples as follows: "It was a lighter hardly variant of the production-derived car. Its engine with carburetors didn't deliver more 230 bhp, scarcely 15 more than the old 16-valves of the 131. And these cars were so heavy..." i.e. not so distant from 1170 kg of the series version. In fact, to line up the car in the race fields, first interventions had been, in that stage, restricted to detailed aspects: first the glass parts were replaced by plexiglas. The side windows were now fixed and the cockpit ventilation was provided by the small slide windows, in addition to the outlets obtained on the roof. The door mirrors were also replaced by the ones already adopted on the Stratos. They designed a second type of frontal bonnet endowed with a four head lamp system, while the back rectangular lights were replaced by a smaller model of circular shape. The engine air outlets were also simplified. The cockpit inside was more essential one: the dashboard in plastic was changed with a stronger and lighter preformed stainless-steel. The three-spoke steering wheel was replaced by a deep centre steering wheel with a wheel positioned rather close to the driver, avoiding the driver to have a stressful work for the shoulders and their detachment from the seat during too fast manoeuvres. The pedals made in light alloy disappeared in favour of stainless steel pedals, more robust and handling ones, allowing the driver to play with the heel and toe operation. The instrumentation included the rev counter, the pressure and supercharger manometers, the oil manometer, the battery voltage gauge and the fuel level gauge. Warning lights and fusible cut-outs were moved to the central part, ready to the driver's hands. To start the engine when it was cold it was necessary a twine positioned in the diaphragm between the cockpit and the engine, between the seats. Sparco Radio, board computer and electronic exchange were placed on the co-driver side, together with the fire-extinguisher. The cockpit inside was reinforced by a strong roll-bar cage, made by pipes, that gave major safety conditions and torsion rigidity to the car. As for the mechanical parts, they strengthened the suspensions, while the braking system was replaced with parts studied from Abarth and built by Brembo: detachable brake disks, pliers with four pumps on the front and two on the rear. The hand brake had its own independent circuit to make the car turn easily in bends. The rims were now made in alloy, according to a different drawing. A new air filter, more voluminous and efficient, was mounted on the engine, while the accelerator was operating on a pop-off overpressure valve positioned at the beginning of the induction manifold. The overpressure coming

out of the pop-off valve of Volumex went through a duct to cool the gearbox oil radiator, positioned between the engine and the silencer of the exhaust system. After the unlucky debut, the 037 appeared also in the world championship with two cars for the Tour de Corse. The cars had already decreased their weight: about 1015 kg, but it wasn't sufficient to go on diet to turn over a new leaf: Bettega crashed at 150 km/h with multiple fractures to both the legs, while Alen ended in nine position, declaring he didn't feel at his ease at the wheel of the new "weapon" Lancia. Three weeks later, at the Acropolis, still some kilo less thanks to lightened radiators (19) and the dry-sump in carbon fibre. Two cars again, again two retirements: Alen had his car chassis cracked, while Adriatico Vaudafieri, at the wheel of the Jolly Club car, complained about some trouble to Volumex. At this point Lancia engineers realized the necessity of adopting the Evo version in order to go on into a deeper development. The rear frame was reinforced with a tubular triangle, while in the cockpit they introduced a new titanium roll-cage that consented to minimize the weight and increase the structural resistance. As for the bodywork they replaced fiberglass with Kevlar and later on with carbon fibre. The weight decreased to 985 kg first and then to the 966 kg., very close to the minimum 960 kg prescribed by the rules and, it needed to be patient if prices started having a sudden rise. Giorgio Pianta pointed out that also the suspension worked better with that weight. But the most radical change was made on the engine: the carburettors left the place to the Bosch-Kugelfischer, a more updated injection system. Among other things Lancia designers adjusted a very innovative system for water injection: it dealt with the spray of the liquid through the air compressed by Volumex in order to reduce the temperature, thus decidedly improving the engine performances. It's curious to observe how, in the next season, Ferrari and Renault will adopt similar systems for the F1 turbo optimization. Suddenly the four-cylinder engine of the 037 gained 70 bhp, its max power climbed up to 304 bhp, but its reliability showed the effect of it heavily. The Evo 1 was homologated on the 1st July 1982, but its debut took only place in August, at the Madeira Rally, with the first retirement made by Zanussi-Bernacchini crew. Same music at 1000 Lakes, with the only participation of Alen who broke his 310 bhp engine, and at the San Remo Rally, where Lancia entered three cars: Markku was again in trouble with the engine, while Tabaton and Bacchelli cut themselves off crashing their 037 cars on the fifth special stage. They thought they had discovered the origin of engine failures in the supercharging pressure that was reduced from 1 bar to 0.85: under the old value the air temperature was too high and power decreased. At this point the problems seemed solved...the Lombard R.A.C. Rally saw the 037 driven by Alen finishing fourth, but the Finn complained about the engine because it didn't deliver the required power and the Volumex didn't work well. Markku didn't suffer from persecution complex: in effect the problem existed, but Lancia engineers took some time to get through it. They discovered that at a slow running, when the power was suddenly requested, the lubrication wasn't sufficient: the solution was found in the scavenge oil tank, which was flowed out in the acceleration phases. Contested by technical commissaries at the 1983 Monte Carlo tests, the tank was integrated in the oil carter with a separate rooms system. That was the end of the engine failures. Just for information, in that 1982 not everything went wrong: first win of the 037 arrived on the August 15th in the hill climb race at Svolte di Popoli, where Teodoro Perugini dominated at the wheel of an official car of the Martini Racing team. At Tour de France, valid for European championship, Clarr-Bernacchini gained an encouraging third place in a race that, even if no longer comparable with the standards of the old days, has never been a promenade. Alen-Kivimaki dominated at the Pace Rally, valid for the national English championship. But the honour to drive the 037 to the first win in an Italian rally was due to Tabaton-Tedeschini that gained the victory at the Rally Valle d'Aosta. Small results like an aperitif before a nosh-up.

1983: A perfect season

At the beginning of the 1983 season the Lancia programs were not yet defined for the world rally. The team was also engaged in endurance races with the LC2 and that cut resources to make the 037 run. In Turin, to gain the title everybody knew well that it was necessary for them to maximize the score in all participation. The Lancia Company had the right men to activate such a risky policy; the Martini Racing was always led by Cesare Fiorio, with his right hand Ninni Russo. The organization led by them was still one of the most powerful and efficient entering rallies. Moreover there were the crews: the core was made by Alen and Rohrl: Markku, with co-driver Kivimaki, by then tied indissolubly to Fiat, seemed he had reached the maturity needed for bring the title home. As for Walter Rohrl, it was nearly to be back at home after the Opel interlude: he had already won the world championship at the wheel of the 131 Abarth in 1980 and in 1982 driving the Ascona 400. But of course, appetite comes with eating. Andruet always in race with his

beautiful co-driver woman "Biche", by then had years of experience behind him in the rally activities, but his talent did not seem too much to show the effect of time. Moreover rally drivers are like some vintage wines: the older they grow the more they are good. As for Bettega, after the accident at the 1982 Corsica Rally, could be the season of the final consecration among the top drivers of the world championship. The more awkward position was for Adartico Vaudafieri who had to prove he had deserved the chance offered by Lancia. However, competition didn't joke: Audi Quattro was the main opposing car that won the constructors' title: the car with a rated engine that arrived to have about 340 bhp at 7000 rpm with a torque of 46kgfm at 4500 rpm. Beyond the power it was the 4 wheel drive that frightened: we expected that Quattro cars were unreachable on dirt roads, while the 037 should keep a certain margin of lead on the asphalt. Unfortunately the road bed that could be more congenial to Lancia was only present in a few heats of the world championship. Also as for the drivers the AUDI could count on a dangerous triad of hawks of the road: to Hannu Mikkola and Michelle Mouton we have to add Stig Blomqvist. Renault House will restrict itself to lining up the Renault 5 Turbo 2 in some races, usually driven by Jean Ragnotti. Opel started the season with the old Ascona, waiting for the new Manta Group B. Ascona was an awfully good car, above all when it was in two bad clients' hands like Ari Vatanen and Henri Toivonen. The Japanese were still searching the formula to be dominating for a long time on the world championship, after some interesting paws in the past, but neither Nissan 240 RS cars, nor Toyota Celica Turbo cars seemed in a position to gain the top of the time list. They could only hope for someone ahead who will let an open door to them towards the top. BMW M1, Citroen Chrono Visa and the old Vauxhall Chevette RSR 2300 were hopeless. In 1983 the world championship started up, and it couldn't be differently from the awful Monte Carlo. The Lancia House joined the fight with all its potential of means, organization skill and cheeky face in making the most of the regulations. First help came from heaven: no snow, therefore the advantages of the four wheel drive were cancelled already at the start. Second help came from Pirelli that carried a good 1500 tyres to Côte d'Azur, by 10 trucks, for only Lancia own use. Each crew disposed of six different types of tyres, among which a new type with a compound tread, softer at the centre and harder on the borders. We had then to add the half-clandestine presence of a salt truck registered in the Sestriere Company's name. However, in spite of all this deployment of forces, the SS2 frightened, on the way of Uriage Les Bains, first four kilometres were made slippery and dangerous by verglass. Had they to mount ice tires and then to trudge the following 22 kilometres, or had they to mount slick tires and to risk flying off at once! Sleep on it: cars will start with intermediate tire P7 on the front and MC on the rear. Out of the slush of the first 4 kilometres, Lancia technicians improvised a tire change in full race, replacing the two MC with standard slick tires. Rohr was served in 60", but Adruet and Alen got off with 50". The play didn't permit to pass the Audi cars driven by Blomqvist, Mouton and Mikkola, but it helped to limit a damage that could be even worse. From there on the victory of the "Mount" was a matter among Lancia drivers: Rohrl made chronometers jump, dominating on the 11 out of the 31 special stages, breaking the records of many stretches already run in the past years. In the final part he restricted himself to checking the result and bewareing of Alen. Blomqvist was the best Audi driver, he got ahead of Mikkola and of the Opel driven by Vatanen. The Lancia with Andruet, after a good start, was left behind by some trouble to compressor that made the French driver newly go down to the eleventh place. He stepped on the gas pedal like a devil, he got the best time for six times, but he didn't go over the eighth place, behind the Renault driven by Ragnotti and the Opel driven by Toivonen. While Alen and Robert were celebrating the victory, the commissaries' shadow fell on the Lancia team. The system of the engine oil re-suction lift, envisaged to avoid the lubrication problems that happened in the 82' season end, was considered as a real pump outside the circuit and therefore banned as irregular one. In the end Cesare Fiorio succeeded in clearing it up with F.I.S.A technical managers. Next "Manche" of the world championship was run among the Swedish snows, but here 037 cars are missing. Mikkola won at the wheel of the Audi, before his team-mates Blomqvist, Mouton and Lampi. Nevertheless the Audi world didn't enjoy a serene atmosphere; it came out that Blomqvist was a sort of Mikkola's butler under contract and in Swede, just to lower his performance, he was given the Audi 80 Quattro Group A, which had 150 HP less Group B. On a ground congenial to him, Blomqvist easily kept up with his mates, making Mikkola cut a poor figure. The Finnish driver after meditating, burst out in Portugal next meeting, causing damage not only to his team mates but also to the Lancia cars driven by Rohrl, Alen and Vaudafieri. The 037 cars got the better of it in the first 11 special stages on the asphalt. Rohrl took sooner the lead before Markku Alen, but Mikkola tried to limit damage, placing behind the Lancia driven by Vaudafieri. Once on the ground, the Audis set off: after the SS 19 Blomqvist took the lead, but he kept it for a short time, unable to hold out against fierce Mikkola's attacks. Mouton established herself steadily behind the two bulldogs. By then, it was a family

struggle and it was Blomqvist who paid for it; he crashed his Quattro into a rock, to his French team mate advantage. Rohrl, aware of the German cars superiority, stuck to the essentials and without overdoing things he got a good third place, before his team mates Alen and Vaudafieri. After Portugal the Safari Rally appeared on the horizon: Lancia was absent. This "daredevil" marathon always shocked people and in Turin they decided against risking a poor figure with a still too young car. The Audi entered for the first year but African lottery proved once again rather peculiar: it wasn't the favoured and hi-tech Quattro with four wheel drive to dominate, but the old Opel Ascona 400 with Ari Vatanen. At the Safari the slow and steady wins the race and with fewer parts broken. Mikkola and Mouton were content to complete podium . At the Tour de Corse, there were no two ways about it, that was the moment of the 037. Also Lancia managers thought so, and they carried five cars to the island: Rohrl, Alen, Andruetti, Bettega or Vaudafieri? The German driver and the French driver were generally expected to win in experts' opinion, but to their surprise Alen won before Rohrl, Vaudafiori and Bettega. Andruet, very unlucky, because of some trouble to water injection, suffered from one of the few retirements of a car by then having fewer defects. The 037 seemed born to race on the narrow roads and sharp turns of the island, but what about the others? In search of major performances on the asphalt, the Audi sent Darniche to Corsica for a long practice session, early ended with the French driver's crash. In addition to that the Germans were grappling with the evolution of the Quattro: engine capacity was lowered from 2144 cc to 2109 cc., increasing its power from 340 to 360 bhp thanks to a new system of electronic injection. This small miracle allowed the Quattro to compete in the same weight class of the 037: 960 kg. However, the limit was still too far: by the adoption of Kevlar for the body and a shorter gearbox without intermediate differentials, its evolution arrived to have 1070 kg and it will be scarcely reduced again. The German car, even if pushed by an exuberant power, was always a heavy big box. In Corsica, none of the two Audis driven by Mikkola and Mouton, crossed the finishing line: the first one went off the road, while the French "panther" had its engine broken. In Corsica there was also the Manta 400's debut: lighter about 80 kg than Ascona, it was limited by an aspirated engine with no more than 275 bhp and by a torque that only expressed itself at a high level rate (32kgm/7200 rpm). Audi Quattro cars should newly have their moment on the difficult dirt roads of Acropolis, but to everybody's surprise Walter Rohrl dominated again. During the first special stage Mouton said goodbye to the rest of companions on account of an accident, but the struggle was still open to take the lead: Mikkola, Alen, Rohrl, Blomqvist and Bettega were fighting for the leadership. From the 12th SS on, Mikkola took steadily the lead and nothing seemed to oust him from that position: neither the Lancia attempts to peak the engine power, increasing the boost feeding and eliminating the additional air filter. However, Mikkola didn't trust his car reliability and looked after his technicians' work carefully. And it was just so because they played a nasty trick on him: the hook of the rear bonnet fastener was not closed well. Hannu started for the thirty-eighth special stage and didn't realize that the hatchback jumped by itself, hammering the oil duct radiator. When he realized it, the engine had already failed. Rohrl and Alen flew to the lead of the rally, tailed by Blomqvist, who could do nothing in order to go and reach the two Lancia drivers. At this point the question arose about the strength points of the 037: first of all reliability. Up to now the Lancia suffered one only retirement (Andruet at the Tour de Corse). If to the solidity of the car we add that the crews got wrong very rarely...As for the car features it's better to trust protagonists' comments: as for Alen "the engine is so flexible. The drivers of the other cars and above all of the Audi, have to manage to keep a peak r p m. We haven't. No need to increase speed as a devil. It's sufficient a light touch of the pedal and we restart, like a bomb, at every rpm." Rohrl's declarations were not so different from his team mate's. "First quality of the Lancia Rally is its engine. Only it can explain most victories of this car: it pushes from 2000 rpm. If it can give you pleasure, you can drive the Lancia with the fifth gear only. There will always be sufficient capacity. I agree that in rallies I keep 7000 and 8000 rpm as often as possible, but you are often faced by some events in which you had to come out of a corner at slow running. The Lancia Rally makes the difference. Other features of this car: the chassis is perfect! Steering, brakes, suspension, everything works perfectly." After the Greek parenthesis, they flew to New Zealand, where to the battle with chronometer was also added the battle with bumbf. Audi House entered Blomqvist after expiry dates, prescribed by regulations. Lancia managers noticed it and applied to FISA commissaries. Stig was disqualified in spite of his team's recourse. On the New Zealand slippery grounds Mouton flew to a victory that nobody seemed in a position to take her away. Rohrl had by then drawn in his horns and he would have been willing to content with a second place, but on the 26th special stage an unforeseeable event occurred: a conrod pin broke up of the Quattro that was in the lead. Beautiful Michelle was obliged to stop with a hole in the engine block. Mikkola had already said goodbye to everybody because of some injection trouble, just while he was again achieving the leader position. The hero

of the day was Timo Salonen at the wheel of the Nissan, who got a series of extraordinary times, being placed second, behind Rohrl and before Bettega. Someone up there in heaven loved the Audi, and in Argentina rain and snow shuffled playing cards. If then we consider that in some special stages there were fewer curves, we can understand how Lancia drivers' chances were so poor: Audi cars spread out and Mikkola gained the heat, before Blomqvist, Mouton and Mehta. Alen, the fifth and first of the Lancia drivers, was content to limit damages, while Vaudafiori plunged already off the road at the sixth special stage. At the 1000 Lakes Mikkola won, ahead of Blomqvist. The Lancia House lined up Alen only (was it possible to prevent a Fin from entering the home rally?), who was cautiously satisfied with the third place that was equal to gold: in fact, another win was sufficient to award the constructors' title to Turin. First opportunity was the Rally of San Remo. The Lancia House entered the field with all his potential. First of all there were eight 037 cars at the start: beside the official ones with Rohrl, Bettega, Alen and Vaudafiori, Lancia lined also up the 037 cars driven by Miki Biasion and Antonio Tognana, managed by the Totip Jolly Club, one model of the Tre Gazelle West team was given to Zanussi-Cresto and the other of the Griffone team to Tabaton-Tedeschini. Anonymous sources also told about the presence of a Fiat 292 van, equipped with incorporated brooms to clean special stages on gravel. The rally took place on five legs with the first, fourth and fifth on asphalt and the second and third on gravel: as for the 037 there shouldn't be problems, even if Roland Gumpert assured he had found a good set up for the Quattro also on gravel. Trouble could arrive from special stages on gravel, where the Audi cars were judged to have a clear advantage. In fact the first special stages saw Rohrl's clear dominium over Bettega, Biasion, Alen, Tabaton, Vaudafieri and Zanussi. It was a good starting point to face two days on gravel, but Fiorio wasn't so quiet. Special stages between Liguria and Toscana were covered by a thin layer of powder that went away only after a few passages. The Lancia technical manager recovered four "muletto" cars for scouting, he gave the cars to young drivers like Capone and Cunico and sent them secretly to clean special stages on gravel before fans were starting to peep out. At the end of the second stage Alen was the only one who held out to the Audi cars return, He alone got ahead of Michelle Mouton, Blomqvist and Mikkola. Bettega was 5th, Rohrl 10th, Vaudafieri 8th, Biasion 13th, Zanussi 12th, Tabaton 9th. Fiorio was newly pondering the situation: next stage Alen will start first, but behind him there will be the Audi cars. Was it still worth sending the road sweepers to give everything on a plate to his driver, but also to his direct opposing teams or rather trying to make up lost time for latecomers? The four "muletto" cars disappeared and Alen had to manage by himself against the Audi drivers. He held out in a remarkable way and by the end of the day he kept leadership before Blomqvist and Rohrl. Bettega was 7th, Biasion 9th and Vaudafieri 8th. There was a bang to the Zanussi-Cresto crew: their 037 left the road and smashed rolling on itself. They survived the accident unharmed. Among the opposing teams Mikkola left because of a fire start on his car, while Mouton got bogged down in the 5th position. Things became complicated for the Quattro cars because of the failure of power steering and a lot of other parts, such situation enervated drivers and got technicians into panic. The last two stages turned out as a walk for the 037: Alen dominated over Rohrl and Bettega, while Biasion was 5th. Only two Quattro cars reached the finishing line: the one driven by Mouton, 7th, and the other by Darniche, who had always stayed behind, came 9th. Constructors' championship was definitively gained by Lancia with two races early. Drivers' title remained as a prize to win: Mikkola took the lead with 105 score over Rohrl's 102. The German could still be the winner, but Lancia House decided not to enter the next races: the season had already cost enough. Just for information, Toyota won with Waldegaard in the Ivory Coast Rally, while Blomqvist dominated the RAC. Drivers' title was won by Hannu Mikkola! Besides the constructors' title, Lancia gained also the Italian Championship, won by Miki Biasion, the rising star, who gained also the European championship for his talent, after a hard struggle against the Manta 400 driven by Guy Frequelin. The driver from Bassano wasn't a product coming from Fiat, and in order to take him away from Opel where he was brought up, Fiorio was obliged to promise his participation to the European championship and the San Remo Rally Afterwards it was a very good investment.

Waiting for the S4

In 1983 Lancia introduced the 037, EVO2 version, whose main novelty was the new engine. With a bore and a stroke brought to 85 mm and 95 mm respectively, its capacity reached 2111 cc, while its power climbed to 325 bhp at 8000 rpm was obtained with 0.9-1 bar boost. Max torque was 32 kg/fm at 5000 rpm. The exhaust manifold was revised, whereas in the intake one, the slide valve, cause of the accelerator jam, was replaced by a pop-off valve. The Roots supercharger was fitted with new aluminium lobes. The front

chassis was modified to house a battery different location and the rear bumper was eliminated to allow the engine to have fresh air coming. They were also preparing a new gearbox with the box built in one piece joined to the spacer. This unit fitted with new ratios will be used later on the season. Was all that sufficient to keep the 037 a competitive car? The Lancia experts perfectly knew that their creature started being on its way down and the race department had already in mind another innovative and radical project, that will take the Group B rules to extremes. We only knew that it will envisage the all wheel drive and an engine that will combine volumetric and turbo features. Waiting for the future S4, 037 was asked to defend its brand as well as it could. In fact, the Audi managers seethed with discontent when they saw the constructors' title taken away, and for the 1984 season they formed a big team: they joined Walter Rohrl to Mikkola, Blomqvist and Mouton. Perhaps, Rohrl felt frustrated because he couldn't fight the battle for the 1983 drivers' title till the end. The Quattro, A2 version, drew near the threshold of 400 HP, while they should have solved the problems concerning reliability and organization, met by the team in the earlier championship. At the end of the year the Quattro Sport made its first appearance: a monster able to reach 550 bhp. The starting season bases were kept and Audi gained constructors' and drivers' championships with Stig Blomqvist. Mikkola, who was no longer protected by favourable contractual conditions, had to yield to his team mate's excessive power. The Swedish driver dominated in Sweden, at Acropolis, in New Zealand, Argentina and Ivory Coast, while the Finnish driver won the Portugal rally and gained numerous podiums. Lancia went through a lean period: they tried to enter Monte Carlo Rally in bulk with 4 cars, but they didn't get more than the 5th place caught by Bettega. It was something better in Portugal, where Alen finished second, before Bettega and Biasion, who drove the 037 of the Jolly Totip team. At the debut at the Martini Racing, Toivonen finished the race with a crash after going off the side of the road. In 1984 they also tried the victory at the Safari Rally, a ground particularly difficult to be raced by the 037: Alen crossed the finish line 4th, while Preston, the specialist in African races, closed 6th. For information, Waldegaard will gain the race at the wheel of Toyota Celica Turbo. Finally, in May they celebrated Alen's win at the Tour de Corse. He was followed by Biasion, the young driver more and more dangerous to competitors and team mates. In the same race Peugeot Turbo 16 debuted, equipped with a perimeter tubular chassis and with all wheel drive, powered by four-cylinder in line 1775 cc turbocharger, that delivered about 350 HP: a high rating to drive a 910 kg car. Mechanical parts location was particular: in the wide rear room, the small engine was clamped to the partition wall from the cockpit, on the extreme right. Turbine came out in the middle, over the longitudinal gearbox, while on the extreme left, perfectly symmetrical to the engine, there was the package of radiators. A small, fast and handling car, maybe the best Group B interpretation. At the Acropolis Rally Allen came only third, followed by Bettega, while Toivonen, Biasion and Capone, because of their going off the road disastrously, remained all there to admire the beautiful Greek view at the side of the road. Only Alen was sent to New Zealand. He brought home a quite good second place. Markku repeated himself at 1000 Lakes, followed by Toivonen, who scored his first useful result at the wheel of the 037. At the San Remo Rally still they went out in bulk, hoping to monopolize the competition: at the start there were seven 037s, only two of them were official cars. Peugeot 205 driven by Vatanen beat all his opponents hollow, but Bettega managed to catch the second place before Biasion and Tabaton (037 Grifone Olio Fiat). If in the World Championship the 037 showed it was no longer up to its opponents, in the European one it spread over them ruthlessly: Carlo Capone with co-driver Sergio Cresto gained the title, whipping the model car given into the care of the Tre Gazzelle West team. The Jolly Club opponents were satisfied with the Italian Rally Championship title, gained by Adartico Vaudafieri after a hard struggle with Gianfranco Cunico (037 Bologna Corse). After an apprenticeship season, in 1985 Peugeot 205 T16 showed all its terrible potential in Vatanen's and Timo Salonen's hands. The Monte Carlo Rally was a matter between Vatanen and the Audi driven by Rohrl, but the bulky toy, given to the German driver, was not at its ease on the Monte narrow stages. When accounts were settled, Walter had 5'17" gap, the price of the second place. In Lancia they were content with the 6th place got by Toivonen and the 9th by Biasion. In Portugal Miki grasped the second place, but he missed the Safari. In Kenya they deceived themselves for a moment when the 037s of Preston, Bettega and Alen scored good times. But the African race was long and tiring and Lancia cars started suffering. Alen had an engine failure since the first leg. The day after it was Bettega's turn, who broke the suspension and destroyed the engine accordingly. On the contrary, Preston was mocked at by the distributor. Young Juha Kankkunen won at the wheel of the Celica Turbo. Everybody hoped in the Tour de Corse, that in the year before it was still a victory, but on the contrary round the corner there was tragedy. Ready, steady, go! Bettega, Alen and Biasion started their 037s off at full speed on the impossible roads of the French island, but on the 4th special stage, Zerubia, Bettega lost control over his Lancia, went off the road and crashed into a tree, dieing

instantly. His co-driver survived the crash. It was just when Peugeot entered the race with the Turbo evolution rated for 450 HP, and most sensitive people, the rally world insiders started wondering whether the Group B cars are bad for the sport and drivers' health. It took one year to find an answer. At the Acropolis rally only two 037s of the Tre Gazzelle West team took part. They were driven by Zanussi-Cresto and Pregliasco-Cianci: it was as if the Italian team had got nowhere and they ended up by retiring. At 1000 Lakes Toivonen and Alen came 3rd and 4th respectively, at the wheel of two official cars. Waiting for the S4 we had still four 037s at San Remo Rally, but only there were only booby prizes. Toivonen was still third, before Alen, Cerrato and Biasion (the last two with 037s of Jolly Club Totip). The new Lancia Delta S4 had its debut at the RAC: it was sufficient to have a look at it to understand how this car was so extreme and powerful one. Its structure was tubular, covered with Kevlar and carbon fibres. Four cylinder engine, 1795 cc combined with Volumex compressor and turbo charging to increase the torque of the complete rpm. The 450 horsepower carried 890 kg of bulk, but, obviously, it belonged only to the first evolution step. The new Lancia adventure seemed a good omen event: on the English muddy grounds the new creature dominated with Toivonen, while Alen gained the second place. The World Rally Championship was won by Timo Salonen at the wheel of Peugeot, before Blomqvist and Rohrl. The best placed among the Lancers was Toivonen, only seventh. The season was saved by the European championship, where the 037 overwhelmed all the opposing teams. At the end of the season the first six drivers had run at the wheel of a Lancia Rally: Dario Cerrato won the title, followed by Tabaton, Servia, Zanussi, Pregliasco and Biasion. Only bits were left for the others and distributed with avarice. Finally, here comes the fateful and tragic 1986 season. Manufacturers didn't seem to understand how dangerous was the play they went on by pushing it to a more and more exaggerated evolution. It was an absurd frenzy. The Audi entered the fray with the Quattro Sport S2 with 600 HP. But Lancia and Peugeot were not joking. At those days, rallying cars were like bombs covered with some plastic. In comparison with this last monster generation, the 037 seemed a peaceful car for promenade. Spanish Servia tried the Monte Carlo adventure at the wheel of a model of the Jolly Club Totip, but he didn't go further than the seventh place, in a race dominated by the Toivonen-Cresto crew. Safari was the last official 037 participation: the Martini Racing lined up four cars for Alen, Biasion, Preston and Hellier, plus the Greek Criticos's private one. Good Markku got the better of his opponents; he came third, while Criticos and Hellier had to be satisfied with the 9th and 10th places respectively. Preston went off the road and Biasion had some trouble with alternator. The winner was still the "battleship" Celica driven by Waldegard. After all, the awful African marathon represented the last chance for a car that was no longer enough competitive, but it had still a good reliability. Meanwhile, Group B was tragically drawing to an end. In Portugal the Ford RS200 driven by Joaquim Santos slid off the road and plunged into the spectators crowding the sides: thirty people were injured and three were killed. For the first time in the rally history drivers went on strike and withdrew from the rally. At the Tour de Corse, Toivonen-Cresto were leading the race when their S4 flew off and crashed into a row of trees. The car set fire as a torch. There was nothing to do for the crew. It was the drama of two lives broken by a tragic accident, and it was the drama of those who will have to risk of losing their life again at the wheel of those racing cars. At the end FISA took the only possible decision: the 1986 will be the Group B last year. From 1987 on Group A will become the reference category. The 037 history went on staying in the background, with less important rallies, where the Group B cars were still admitted, with uphill races on ice and autocross. But the best days were by that time behind them.

Stefano Costantino

We are grateful to Lancia Club for permission to take a photograph of the model showed at the 2004 Automotoretrò.

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