

Investigation into the provenance of the chassis owned by Bruce Linsmeyer



Conducted by

Michael Oliver

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Summary

The objective of this research was to establish, beyond reasonable doubt, whether or not a chassis in Bruce Linsmeyer's possession was, as he believed, from a genuine Lotus 56 and whether it was chassis number 56/1, driven in the 1968 Indy 500 by Joe Leonard.

This process required substantial research into the design, development and racing history of all the Lotus 56s constructed, in order to facilitate identification of each of the cars and determine their current location and ownership.

The research identified individual characteristics of chassis 56/1 from period photos and compared them with present day photos, with the aim of cataloguing matches and discrepancies.

Following this process, I can state that it is my belief that, beyond reasonable doubt, the car is as described - a genuine Lotus 56 chassis (albeit one which has subsequently been substantially modified) number 56/1. This document demonstrates how and why I have come to this conclusion.

Introduction

In November 2011, I made contact with Bruce Linsmeyer, in connection with some research I was doing into the history of the Type 56 Lotus turbine racing cars. Linsmeyer owned what had been sold to him as a replica of a Lotus 56 chassis which he had rebuilt to resemble a 1968 car, including a turbine engine.

Although the car did not have a Lotus factory plate, it did have holes in the cockpit sides exactly where Lotus would have affixed the plate, as well as several other features suggesting that it could be an original Lotus 56 chassis, or a very good copy. Linsmeyer wished to independently verify the provenance of the car and to establish the car's history.

My work involved accessing as many photos of the cars as possible - while racing, in the factory and Indianapolis garages – as well as talking to the original mechanics who worked on the cars and other notable personalities who came into contact with, or in the case of the Granatelli family, owned the cars after they ran at the 1968 Indianapolis 500.

A list of the people contacted during the course of this project is provided in the Appendix section of this report.

Having completed the interviews, I then set about matching what I had been told and what I knew from photographs with the surviving cars and determining the exact history of the car in the possession of Bruce Linsmeyer.

Inevitably, with events which happened more than 40 years ago, there was some variation and disagreement with the precise nature and timing of some of the happenings. My findings contradict the accounts of some of the most famous racing names in Indianapolis history but I believe this document will demonstrate clearly that I have done my research diligently and that there is little room for doubt about my conclusions.

I am indebted to the people who gave up their time (and gave me access to their records and photos) without whom it would have been extremely difficult to carry out my research.

I finally completed my research in August 2012. On a personal note, the history of these cars is something which has puzzled me for the past 15 years, so it has been extremely satisfying to finally have the opportunity to unravel this puzzle.

Michael Oliver

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October 2012

Background

The roots of the Lotus 56 project can be traced back to 1963, when Colin Chapman's Team Lotus first entered the Indianapolis 500, in partnership with Ford Motor Company. The company's rear-engined open-wheel racing cars took the Brickyard by storm and Scotsman Jim Clark almost won the race in his rookie appearance and on Team Lotus' debut.

A year later, the performance advantage enjoyed by Clark and Team Lotus was even more dominant but a poor selection of tyre supplier resulted in a rear Dunlop tyre throwing its tread during the race, damaging the suspension and forcing Clark into retirement.

In 1965, everything went to plan: the cars were back on Firestone tyres and a new all-enveloping monocoque chassis combined with Ford's four-cam V8 engine meant that Clark roared to victory, the first victory for a rear-engined car at Indy. That same year, struggling with handling problems with his four-wheel-drive Novi roadster, the STP boss Andy Granatelli had approached Chapman, who had given them some advice on how to cure the 'push' which was afflicting their car.

Impressed both with the speed of the Lotus cars and Chapman himself, Granatelli came on board as a sponsor of the Team Lotus Indy entry in 1966, with the STP brand. Everyone thought Clark had won the race but after a dispute over lap-charting the victory was given to Graham Hill, so Granatelli would have to wait another year to win the 500.

That same year, the Granatellis had built a four-wheel-drive chassis to take a turbine engine but it had been warped during heat treatment so the entry was withdrawn and a new car was built for the 1967 500. The STP-Paxton Turbocar utilised a 'side-by-side' format where the United Aircraft Pratt & Whitney ST6 engine was mounted between the wheels, on the left-hand-side of the chassis and the driver, Parnelli Jones, sat on the opposite side. It was the sensation of the race, almost taking victory but for a \$6 bearing in the gearcase failing with just three laps of the race left, when Jones was leading comfortably.

Turbines at Indy divided fan opinion: as early as 1955, a Boeing turbine had been installed in a Kurtis Kraft roadster, which had tested at Indy but not during the month of May. The first turbine to try and make the race at the Brickyard had been John Zink's Trackburner in 1962, a rear-engined design with a Lotus-inspired chassis and Boeing turbine again but Dan Gurney struggled to get it into the race. In 1966 another roadster fitted with a turbine had also failed to qualify but the STP-Paxton car was the first serious turbine-powered contender and it shook the piston-engined establishment of USAC racing to its core, particularly given that a stalwart of the piston engine, Parnelli Jones, had opted to race the car over all other options available to him.

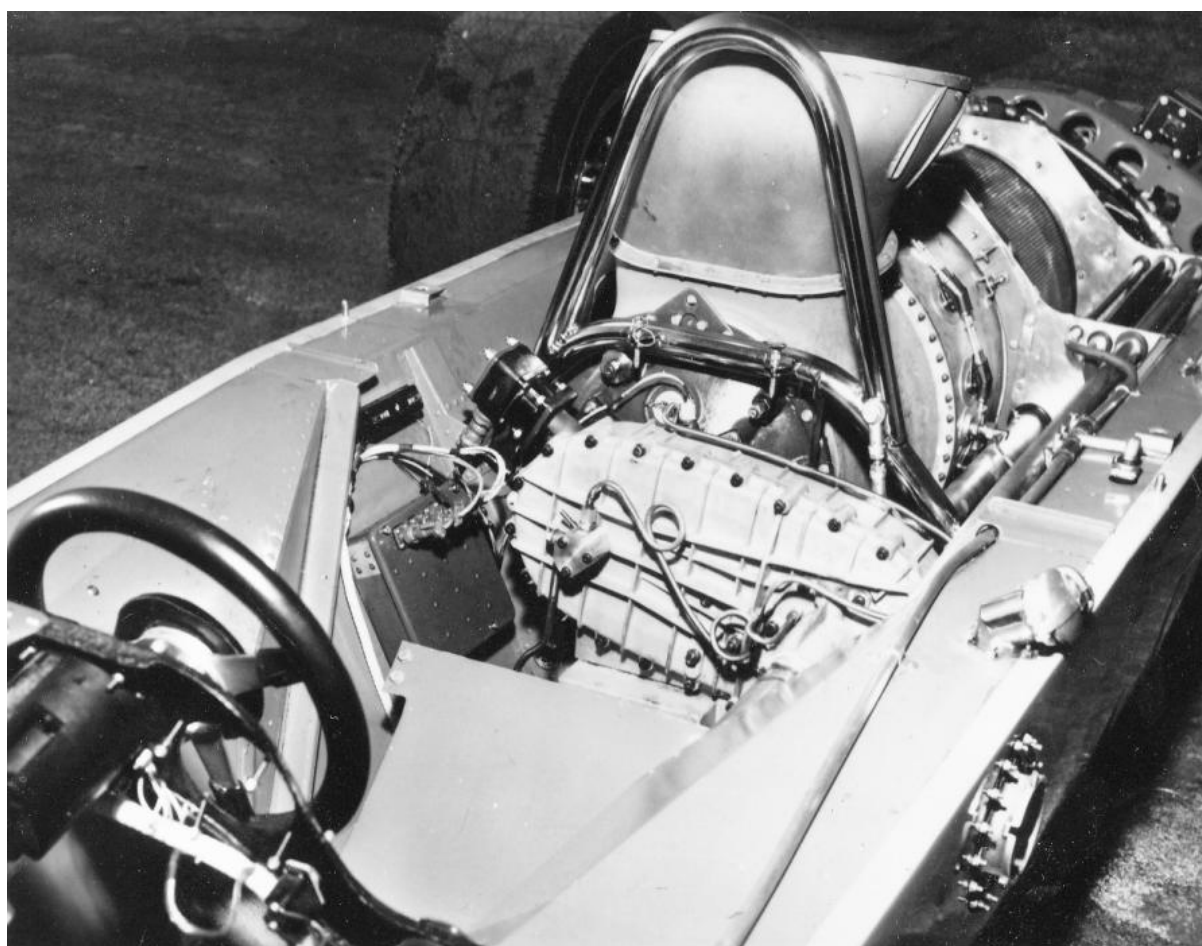
After the turbine nearly won the 1967 race, and concerned that it would render the piston engines of the majority of its team owners virtually obsolete overnight, USAC reduced the maximum permitted air intake annulus-area of turbine engines by 25%, from 23.999 to 15.999 square inches. At the time, no engine existed capable of meeting this new regulation but some clever engineering (removing two of the four stages from the existing Type 70 turbine design and adding a thin sleeve) enabled this to be achieved and so Granatelli commissioned Colin Chapman and Team Lotus to build him two turbine-powered cars for the 1968 Indy 500. The Type 56 project was born.

Design, build and development

The Type 56 hadn't always been intended to be a turbine design. Due to the uncertainty surrounding whether or not it was possible to find a turbine that would fit USAC's new regulations, it was envisaged that it could run either a 3-litre Ford Cosworth DFV engine with its capacity reduced to 2.8 litres then supercharged or a turbine.

Design work on the 1968 Lotus Indy car, designated the Type 56, began in earnest in August 1967. In December of that year, the decision was taken by Granatelli to opt for the turbine powerplant. Colin Chapman's design chief, Maurice Phillippe, was put in charge of the project. Given the success of the STP-Paxton car in delivering the torque of the turbine engine in a usable fashion in 1967, four-wheel-drive was again chosen, as with the previous year from the British company, Ferguson Research.

A stipulation of Pratt & Whitney's regarding the Type 70 turbine engine design was that no overhung loads were permissible on the output shaft (e.g. a conventional transmission could not be bolted on to it) so it was decided to transfer the drive to the side-mounted drive-line by way of a 3-inch thick Hy-vo chain produced by Morse, a division of Borg Warner, apparently based on the chain developed for the front-wheel-drive Oldsmobile Tornado.



The oval-shaped ribbed box beneath the roll-over bar is the case enclosing the Morse Hy-vo chain drive which transferred the drive from the turbine to the drive-line.

Once it became clear that USAC had failed in its bid to outlaw turbine engined-cars, further regulation changes which impacted on the Granatelli/Lotus Type 56 project were announced. In January 1968, USAC announced a ban on using wide tyres for all four wheels (the STP-Paxton car had used wide rear tyres all round) so that wide tyres could be used on the rear only. Later this was changed again so that four-wheel-drive cars could run only on the smaller front wheel tyres all round, while at the same time the regulations were revised so that two-wheel-drive cars could run 14-inch rim widths at the rear, up from 9½.

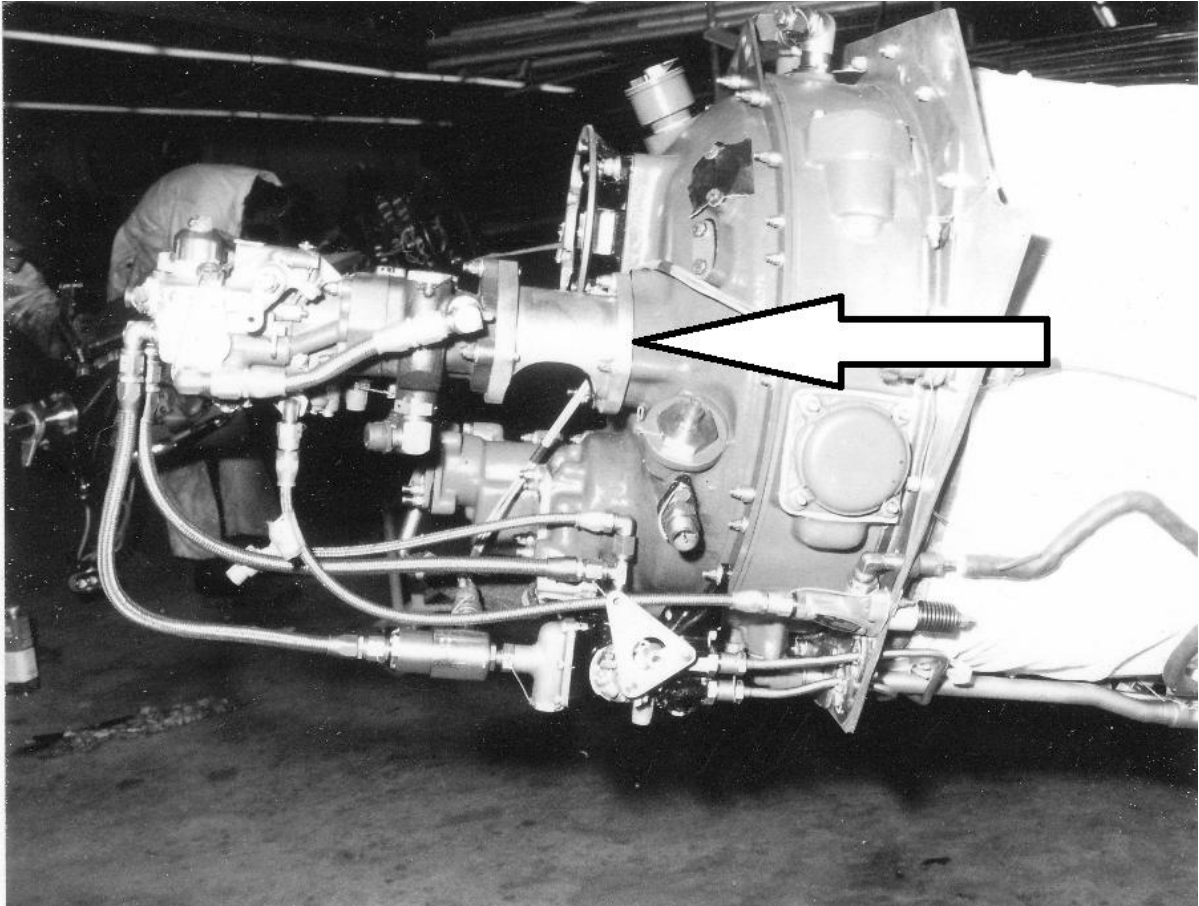
Fortunately, these changes, apart from reducing the overall levels of grip available to the cars, did little to upset the project. Weight and power distribution had been designed to be 50:50 front to rear and side-to-side, with the engine offset 2 inches to the right, balancing perfectly the weight of the drive-line running longitudinally up the left side of the car. Consequently, the suspension front and rear was almost identical, with top rocker arms attached to inboard spring/damper units mounted fore and aft of the tub ends, combined with lower 'A' arms. The drive-line consisted of unjointed solid shafts to ZF bevel front and rear final drives, coupled to the wheels by Hardy Spicer CV-joined halfshafts, all shod on Firestone tyres. Brakes were inboard Girling ventilated discs with twinpot calipers.

The body shape was a radical wedge profile which had not been seen in top level racing before and came about as a result of testing carried out in August 1967 at Indianapolis with a Lotus 38, using a 'black box' data recorder. This found that, with the traditional 'toothpaste tube' body shape, the car actually sat lowest when it was static in the pit lane: even on the banked corners where the extra load is 25-30% of the weight of the car, it was riding above static level, reflecting the fact that a considerable amount of aerodynamic lift was being generated by the car. The solution was a body shaped like a door-stop (or 'shaped like a thin wedge of cheese' as the STP press release put it!) which provided sufficient downwards aerodynamic pressure (what we know today as 'downforce') to keep the car in a stable position at speed.

The turbine engine was mounted flexibly at three points, reflecting the fact that when it was running at full power, the heat it generated internally caused it to expand by 3/16 inch in length and by 1/16 in width. Hot air from the engine exited through a duct immediately behind the driver's head, the flow being turned through 15 degrees by three aerofoil-type deflectors. This produced around 50lbs of thrust, helping to keep the nose on the ground and providing a small amount of forward thrust too. With this, the wedge body shape and four-wheel-drive, the cars were sure to be fast through the turns.

Because of the length of the engine, Phillippe was tight on packaging in terms of meeting the regulation requirements on wheelbase and overall length of the car. The fuel pump, which was normally fixed to the back of the turbine, had to be moved back, by way of an additional spacer, because it was just where the rear axle needed to be. Consequently, Pratt & Whitney had to modify the quill-shaft off the engine which drove the fuel pump, making it longer to accommodate the spacer, a move which would have unforeseen effects when it came to race day. The fuel itself was carried in four bays either side of the cars with a total capacity of 70 US gallons, filled via a pair of Avery Hardoll aviation drybreak fuel couplings, with breathers with flip-top filler caps mounted on

the top surface of the tub so that the mechanics could see when the tanks were almost full during fuel stops.



In order to accommodate the rear axle, a spacer (arrowed) had to be fabricated to allow the fuel pump to be moved back, which also required a new, longer quill-shaft to drive the pump to be made by Pratt & Whitney. It was these shafts which failed on both the surviving cars towards the end of the race.

The first working turbine engine arrived with Team Lotus in mid-February 1968, with the Ferguson four-wheel-drive system arriving a few days later. Early in March, the five car sets of axles arrived from ZF in Germany and the cars were approaching completion. Due to time constraints, initial plans to build five 56s – four race cars and one spare – were abandoned and just four were constructed.

By 20 March, the first car (chassis 56/2) had been completed and was given a shakedown at the Lotus test track at Hethel, England by Graham Hill. A day later, according to Team Lotus Competitions Manager Andrew Ferguson, who kept detailed records of the programme, chassis 56/2 was flown out to Indianapolis for four days of spring testing commencing 26 March.

At exactly the same time, Andy Granatelli was engaged in legal action against USAC trying to get them to overturn the reduction in maximum permitted inlet annulus size, arguing that the cars would be uncompetitive with the new limit. Jimmy Clark was the designated driver for the test, but was instructed to 'sandbag' as going out and setting fast lap speeds would have been extremely detrimental to Granatelli's argument.



March 1968: Parnelli Jones (sitting in STP-Paxton #40 car), Andy Granatelli (dark suit), Colin Chapman (light pullover) and Jimmy Clark (sitting in Lotus 56/1) during spring testing at Indy.

At the end of the third day of testing, Clark, who had turned a 161mph lap despite sandbagging, left for a Formula 2 race at Barcelona. The testing had not gone without incident, one of the shafts to the fuel pump breaking. This was to be the only time Clark would drive the 56, as on 7 April he died in a crash during a Formula 2 race at Hockenheim.

A post-Indy test debrief saw a large job-list delivered to the mechanics on the Indy team. As well as making the required changes to the test car, all the changes had also to be incorporated into the remaining three cars under construction.

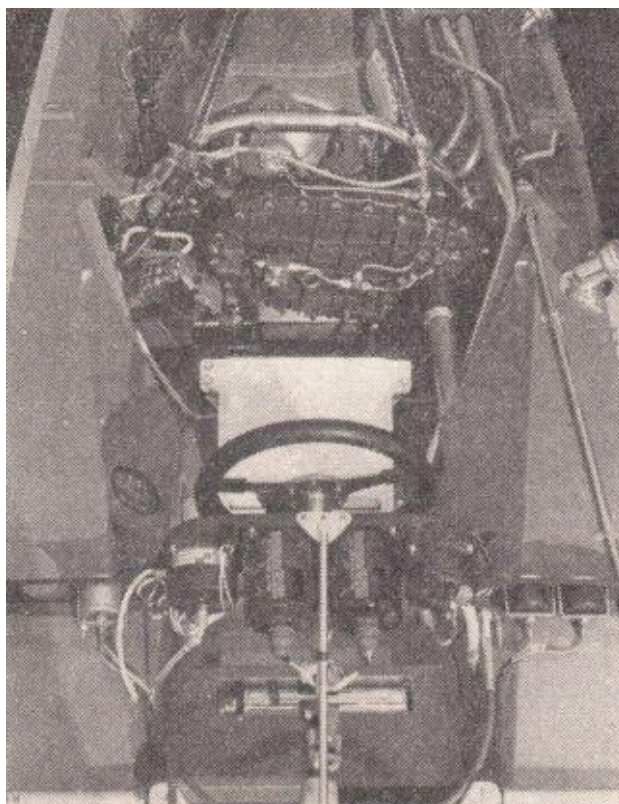
On 22 April, Lotus held an official press launch, at which two of the four cars were present, with Graham Hill demonstrating chassis 56/1, according to Ferguson. At this stage, it was difficult to identify clear visual differences between the cars, as they were, to all intents and purposes, identical: it was only later on at Indy, when individual driver preferences came into play, that clear visual clues began to emerge which aid identification.

Testing of the cars continued at Silverstone in the UK in the final week of April, with both Graham Hill and Mike Spence (who had been recruited to the team after Clark's death) doing the driving.

Following the press launch, the four cars which had now been constructed were air-freighted to Indianapolis at the end of April, ready for the month of May.



This I believe, shows Graham Hill at the April 1968 press launch in 56/1, with 56/2, returned from testing at Indy, and with a new Naca duct at the rear to feed air to the rear brakes, alongside.



This cockpit photo shows – just to the left of the steering wheel as you are looking at it – the dial mounted in the side of the inner cockpit panel which was a feature of the works cars. This was later blanked off and the dial moved on to the dash panel.

The month of May

The four Type 56s that had been built were divided up between Team Lotus and Andy Granatelli's STP team. Cars #60 (chassis 56/1) and #70 (chassis 56/3) were entered by Team Lotus for Mike Spence and Graham Hill respectively, while STP entered the #30 (chassis 56/2) and #20 (chassis 56/4) for Greg Weld and another, yet to be decided, driver respectively.

Early running was promising, with Hill and Spence trading best lap times until, by the end of running on 7 May, Spence in 56/1 had hit 169.555mph, less than ½mph below Mario Andretti's track record.



A rare shot of Mike Spence running in 56/1 before he had his fatal accident at the wheel of 56/2

However, all was not well in the STP camp, with their driver Greg Weld struggling to get up to speed in the #30 car. Granatelli had asked Chapman if he could 'borrow' Mike Spence to evaluate their car, which he eventually agreed to.

Not long after he set off, Spence crashed at Turn One. The car slid for 300 feet before it hit the wall, at an angle of 45 degrees. The impact tore off the right-side wheels but not before the right front had swung up through an arc and hit Spence on the head, knocking him unconscious. The car carried on for another 390 feet around the wall and then slid for another 240 feet before coming to a halt in the middle of the track.

The accident was attributed to driver error (Spence had been seen to enter the turn higher than was normal) although Vince Granatelli Junior believes there is a strong likelihood, given the experience of Graham Hill in the 500 and of the cars in subsequent races, that something broke in the right front

suspension of the car, causing Spence to lose control and hit the wall. So quick were Spence's reactions that he had - according to one of the mechanics working on the car - already activated the engine cut-off switch mounted on the steering wheel, before he hit the wall. But nothing could save him – his skull was fractured and he died in the Methodist Hospital that night.

The #30 car (chassis 56/2) was too badly damaged to be repaired at Indy and would take no further part in the 1968 Indy 500. The remaining three cars were held back from track running until the USAC Technical Committee was satisfied there was no evidence of mechanical failure. Four days later, USAC asked Team Lotus to re-make and fit new steering and suspension parts which did not comply with their requirements. They would be allowed to qualify on the existing parts but the new parts would have to be fitted in time for the race.

With the news that possible replacement driver Jackie Stewart would not be available due to having broken a bone in his wrist, Graham Hill was the only confirmed turbine driver by the middle of the month. Although drivers including Lee Roy Yarborough, Mario Andretti and Lloyd Ruby tried the 56s, none of them wanted to secured a drive – the latter two being unable or unwilling to 'jump ship' from their original cars.

At the same time, the revised STP-Paxton car, which had been rejected by Parnelli Jones as unable to contend for victory, was circulating with Art Pollard and Joe Leonard at the wheel, turning laps in the high 160s. However, on 12 May Leonard lost control at Turn One and smacked the wall hard with the left rear corner, damaging the car beyond repair.

Nonetheless, their turn of speed in the #40 car had impressed Granatelli and on 16 May, they both joined the team, Leonard taking over Spence's #60 (chassis 56/1) and Pollard taking the wheel of the #20 (chassis 56/4).

Leonard was quickly up to speed and ended the day second fastest on 170.422 mph. He would get no more running as the next day (the final day before qualifying) was rained off. He had completed just 20 laps behind the wheel of a Type 56.

Lotus 56/1 - Qualifying

On qualifying day, 18 May, Joe Leonard in 56/1 was drawn 11th in the qualification order and went fastest of all, averaging 171.559mph, setting new one and four lap records, which would remain unbeaten, sealing a 1-2 on the grid for the Type 56 turbines.

On 22 May, Leonard was lapping consistently at over 169mph with a full fuel load. The omens looked good for the race.



A happy-looking Joe Leonard after securing pole for the 1968 Indy 500 at the wheel of chassis 56/1.

56/3 and 56/4 - Qualifying

Hill's 56/3 also performed faultlessly and he shot around the four qualifying laps at an average of 171.208mph, setting new one and four lap records at the time, as he had been the first car to make a qualifying run. He ended qualifying second on the grid, providing the Lotus 56s with a 1-2 starting position.

Art Pollard, in the third car, 56/4, was the last to make a qualifying run that day. After just six laps of practice prior to qualifying, he turned a respectable 166.297mph for 11th spot on the grid. However, on Monday 20 May, it was reported that Pollard was lapping nearly 2mph faster than he had qualified, suggesting a stronger race performance was likely.

The 1968 Indy 500 Race

Lotus 56/1 – Race-day livery

The 1968 Indy 500 race took place on Thursday May 30th 1968. In order to aid identification of the car at speed and in traffic during the race, Day-Glo yellow paint was added around the front of the nosecone of 56/1 and on the sidewall of the front left tyre, while the car switched from running white on black numbers to black on white. The car ran several times between qualifying and the race with this new livery, but minus the large Lotus logo on the nose, and with odd-looking extended fuel-breather filler caps, which were abandoned for the race.

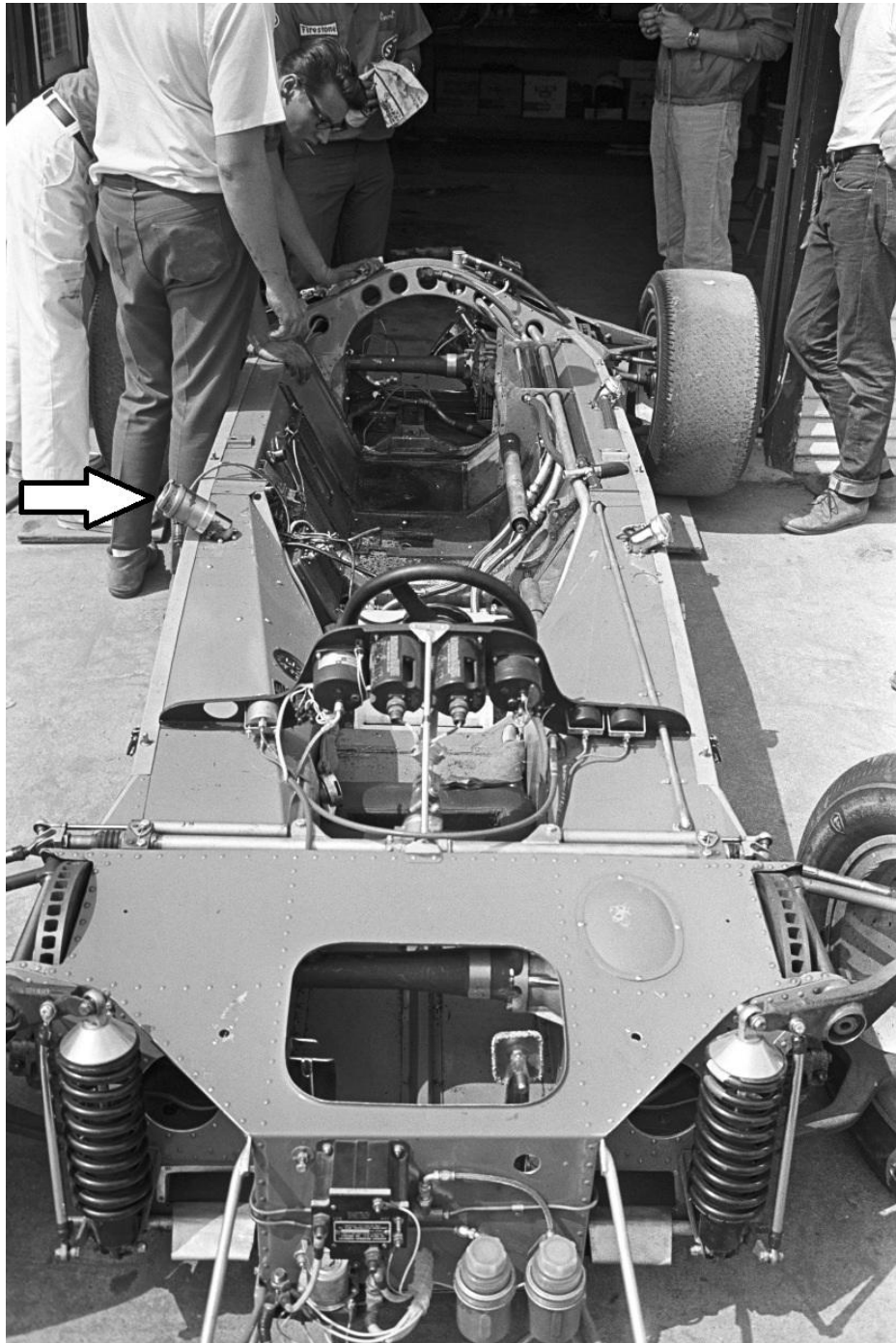


This race-day shot shows the Day-Glo yellow livery on the nosecone and front left tyre sidewall, while also visible are the relocated cockpit mirrors.

Lotus 56/1 – Race-day specification

As with the sister cars, 56/1 had been fitted with the new suspension and steering parts as specified by USAC.

Additionally, on this car, a third 'breather' with flip-top 'Monza' filler cap was fitted for the right-hand side fuel tanks by Vince Granatelli and his STP crew, this car being run by STP rather than Team Lotus. This was the only Lotus 56 modified in this way – the #20 and #70 cars having the extra filler on the left-hand side of the car, alongside the original.



The third fuel filler added to 56/1 before the race is arrowed. Only this car had the filler on the right-hand side, both 56/3 and 56/4 had it positioned to the driver's left.



This race-day shot shows the unique additional fuel filler added to the right-hand side of the car.



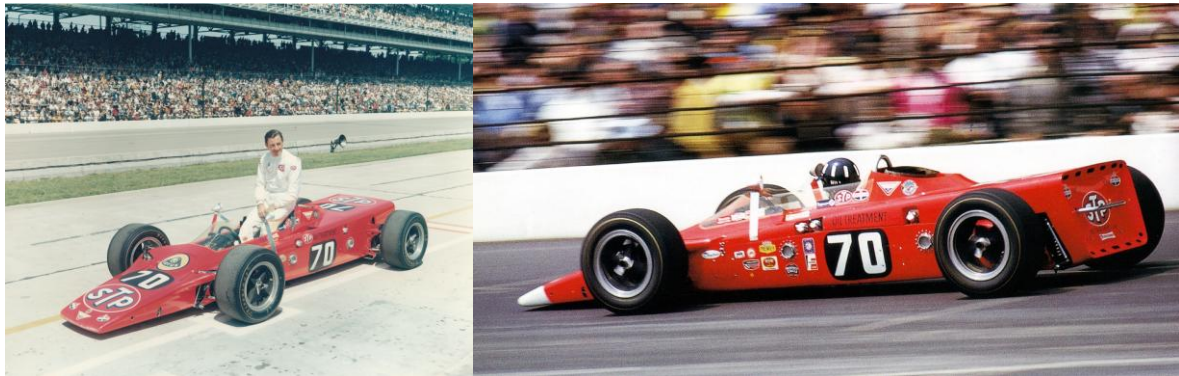
Another race view of 56/1: the right-hand side fuel filler cap can just be seen sticking out beneath the mirror.

The other change evident on 56/1 was the relocation of the cockpit mirror 'stalks': they were moved back and angled in a more upwards position compared to qualifying.

Lotus 56/3 and 56/4 – Race-day livery and specification

Graham Hill's 56/3 was broadly unchanged in its livery, apart from the addition of a white band around the front of the nosecone, still retaining the white-on-black numbers that it qualified with.

The main change to the specification of 56/3 compared to qualification was the addition of a third flip-top filler cap alongside the forward cap to the left of the driver's shoulder.



Comparison of 56/3 in qualifying specification and livery and race-day specification and livery. Clearly visible in the race-day shot are the white nose and additional 'flip-top' fuel breather cap.

Meanwhile, Pollard's 56/4 gained a matching black band around the front of the nosecone and retained the white on black numbers it had qualified with.

This car was also modified with the addition of a third filler with a flip-top cap but this was fitted in the same place as Hill's 56/3, e.g. just behind the original forward fitting, to the left of the driver's shoulder.



A comparison of 56/4 on qualification day (left) with the single fuel filler (just level with the driver's helmet) and in the race (right) with the double fuel filler arrangement.

Lotus 56/1 – Race-day performance

As is commonly known, Leonard in 56/1 was leading on lap 183 when the yellow lights came on for a crash. When the race resumed on lap 192 he went to accelerate but nothing happened and the car coasted to a halt, its fuel pump quill-shaft broken. The theory is that the lack of lubrication from the unleaded petrol, combined with the extra heat generated by prolonged running under yellow, caused the momentary seizure of the vane pumps, breaking the shafts.

Lotus 56/3 and 56/4 – Race-day performance

Hill ran a conservative early part of the race, typically running fifth and then fourth but always in touch. Then on lap 110 of the 200-lap race, Hill lost his right-front wheel and hit the wall at the exit to Turn Two, sliding along it for 200 feet before he came to rest. A pivot mounting point for the front rocker arm had torn away from the tub, causing the wheel to come off. The car hit the wall on the right-hand side and was reportedly quite extensively damaged, so much so that it would have to be returned to the UK to have its tub rebuilt.

Around the same time as 56/1 ground to a halt with a broken quill-shaft, the same thing happened to Pollard in 56/4.

The rest of 1968

The agreement between Team Lotus and STP provided for ownership of all the Type 56s to pass to STP immediately after the 1968 Indy 500, since they planned to run the cars in the remaining USAC Championship races.

In fact, what happened was that the surviving two cars, 56/1 and 56/4, competed at Milwaukee 10 days after the Indy 500, after which 56/1 was sold to Parnelli Jones, who continued to enter it in the USAC Championship for Joe Leonard to drive. Meanwhile, the STP team carried on with their entry of 56/4 for Art Pollard.

With two damaged cars requiring repair in the UK, there were only two serviceable 56s available – 56/1 and 56/4. Even 56/1 required the replacement of its original magnesium transmission case with the aluminium prototype, since it had been starved of oil during the race as a result of some pipes sited under the car being flattened, causing the remaining oil to carbonise and eventually the casing to warp.

Following a meeting shortly after the 1968 Indy 500, the USAC Rules Committee recommended that turbine engines should be outlawed from 1 January 1969, although they left the final decision to a USAC board meeting due to take place in July. When the results of the board meeting were announced in August 1968, the air inlet annulus area for turbine engines for the 1969 USAC season was further reduced, from 15.999 square inches to 11.999 square inches, effectively rendering the Type 56s obsolete at the end 1968.

In the meantime, the two remaining 56s took in the rest of the season of USAC Championship racing. The first race, the Rex Mays Classic at Milwaukee on June 9th, was 10 days after Indy. In this time, the STP team had managed to add outboard discs all round to the cars, as they were concerned about the strain on the half-shafts and the potential for high wear rates due to the need to keep the turbines running at a high idle to reduce throttle lag. This work was reportedly very amateurish and not done to the standard of the works mechanics. After qualifying on the second row, Leonard in 56/1 went out with broken suspension, while Pollard in 56/4 retired with a fuel leak.



Leonard retired 56/1 from the Rex Mays Classic at Milwaukee with broken suspension. The right-hand side filler is still fitted to the car.

After Milwaukee, Andy Granatelli sold 56/1 to Parnelli Jones, who was heavily backed by Firestone. Joe Leonard continued with the driving duties, although the car missed the next race, at Mosport, due to having to be repaired and strengthened around the suspension area.

At the Rocky Mountain 150 at Castle Rock, Colorado, Leonard retired towards the end of the race with a broken half-shaft and was classified 8th, having started the race in that position, too. Meanwhile, Pollard in 56/4 finished 5th from 12th on the grid. In Heat 1 of the Indy 200 at Indianapolis Raceway Park on July 21st, Leonard spun 56/1, suffering again from brake troubles and again at the Tony Bettenhausen 200 at Milwaukee on August 18th he succumbed to brake failure, as did Leonard, who had qualified on pole with Leonard alongside.



Brake troubles afflicted 56/1 in the Indy 200 at Indianapolis Raceway Park.



Close-up of footbox area of 56/1 at the Indy 200, showing distinctive hole in front face.



Leonard sends photographers and spectators scattering as he flies off course due to brake troubles.



Leonard was lucky not to hit anything or anybody as he went way off course in the Indy 200.

In the Trenton 200 on September 22nd, Pollard in 56/4 broke his suspension, but was still classified 10th. At Hanford on November 3rd, Leonard finally managed to finish a race, coming home 4th, having started the race from pole, while Pollard's 56/4 burnt its turbine blades in qualifying and did not start.

At the Phoenix International Raceway on November 17th, Pollard in 56/4 broke a universal joint before quarter distance, while Leonard in 56/1 did not qualify due to problems in qualifying.

In the final USAC round at Riverside on December 1st 1968 the two cars collided with one another just after half distance, after Mario Andretti had taken over at the wheel of 56/1 from Leonard as part of his chase for the USAC title. I have not been able to source any photos of the damaged cars.



Leonard at Riverside, December 1st 1968, 56/1's last appearance in turbine form. Note distinctive cooling slots in the rear panel (seven in the top – of which six are visible in this shot – and four in the bottom plus a fifth larger, square hole bottom right). Right-hand side fuel filler is also visible.

1969 and beyond

At the end of January 1969 Ferguson also describes how *'Andy announced that he was installing Plymouth engines (note plural engines) in his remaining Type 56 turbine chassis, and asked us to quote for two new bare 'tubs', complete with bodywork, able to accept the Plymouth units and all his current stock of running gear; the package was to be at Los Angeles airport no later than 15 March.'*

No further mention is made of this order for two new tubs and it seems almost certain that Team Lotus would have been unable to fulfil it, since they were under enormous time pressures to complete their own Type 64 Indy cars for the 1969 Indy 500: the first of these did not run until 27 March and the cars were late arriving at Indianapolis for the month of May. Instead it seems likely that Granatelli decided to convert his existing Type 56s or commissioned someone else to build these tubs for him.

Certainly, STP did go on to run two four-wheel-drive cars, which bore an uncanny resemblance to Lotus 56s, in the 1969 season. Initially, one car had a normally-aspirated Plymouth engine, while the second had a turbo Offy installed. Both these cars were entered for the 1969 Indy 500, with Art Pollard driving. Pollard practised both cars but qualified and raced the turbo Offy version.



The #20 Plymouth-powered car, dubbed the Super Wedge, appeared with radical bodywork, which was quickly discarded after early running.



The Plymouth-powered #20 struggled to get up to speed, and Pollard eventually raced the turbo Offy car.



Another view of the #20 Plymouth-powered car at Indy during the month of May 1969.

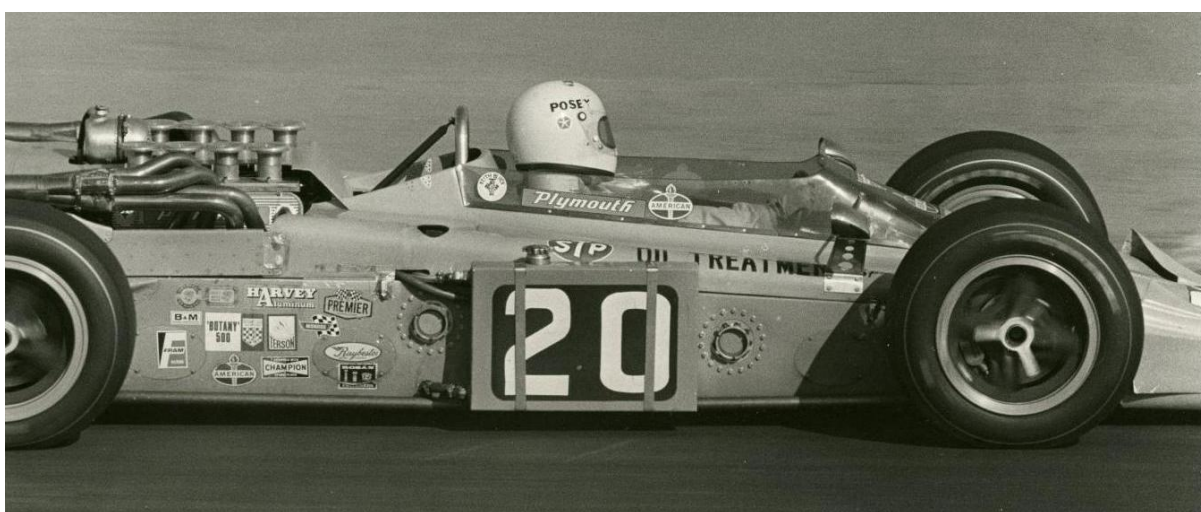


The #40 car was powered by a turbo Offy engine and this was the car that Pollard raced.



Another view of the #40 car as raced by Pollard in the 1969 Indy 500. The blanked-off holes for dry-break fuel couplings on the right-hand side of the car suggest new side skins had been fitted, if this was a Lotus 56 chassis. This would have been done in readiness for pits where refuelling would have been done from the right-hand side of the car (Riverside for example).

The two STP 4wd cars continued to be raced throughout 1969. By the end of the season, they were both running Plymouth power.



Sam Posey in the #20 STP 4wd car at Riverside during the Rex Mays 300, December 1969. Right-side filling from the pits at Riverside means that for this race the right-hand side dry-break couplings had been fitted.

These cars featured 18 rivet hole dry-break fuel couplings, not horizontally aligned but retained the four fuel tank access hatches on the right side of the car. They also featured four fuel tank access hatches on the left-hand side of the car, compared to the two hatches of the Type 56, suggesting that, if they were converted Type 56 chassis, the side skins had been replaced prior to the season's start.



The #40 car of George Follmer at Riverside in December 1969, running Plymouth power.



Another view of the #40 Follmer car at Riverside in December 1969.



A colour shot of the #20 Posey car at Riverside in December 1969.

The origin of these two cars is unclear. When interviewed by author and journalist Doug Nye in 1996 (Doug completed Andrew Ferguson's book after the latter's sudden death), Vince Granatelli said *"The piston-engined versions were built all new by us [e.g. the STP/Granatelli team], perfect Lotus copies – chassis, running gear, diffs, everything identical – to accept the conventional engines. They were all crashed, smashed, crushed and junked...they just got used up – they weren't important."* It is worthy of mention that if they were smashed, crushed and junked, it is not apparent when this happened – certainly both cars were intact and running at the final USAC Championship round of 1969 at Riverside, the last occasion when they ran in competition.

However, when I interviewed Vince in 2012, he said *"We had outside skins made up for the outside of the cars. We had a company that rolled up these sides. We couldn't get replacement fuel cells [for the Type 56s]. They were so expensive if you bought them from Lotus – when they built the cars in 1968 they didn't have any spare fuel cells. We built new ones so the new ones were a different shape."* So he is suggesting that they took two existing Type 56 chassis and re-skinned them to fit the new shapes of fuel tank that they had sourced.

This could have been possible, since at that time STP did own two of these cars – 56/4 and 56/3, the former presumably repaired after its Riverside crash the previous year and the latter having been repaired in the UK after its Indy 500 crash and sent back to the US. The problem with this explanation is that 56/3 still has its original specification Type 56 side panels and, to all intents and purposes, appears to have remained untouched since its return to the US in October 1968, including the fitting of a hollow shell of a turbine engine in it for display purposes.

There is a possible solution – albeit one which Vince Granatelli is adamant did not happen. In his book *Team Lotus, The Indianapolis Years*, Andrew Ferguson recounts a very detailed story about how Team Lotus sent back two, not one, Type 56 chassis to STP in October 1968 – the repaired 56/3 and the repaired 56/2. He says:

“The two rebuilt Type 56 cars remained at Cheshunt throughout September, and it was only after another plea to STP to supply piston or turbine engines for installation that a dummy turbine arrived. Eventually the cars were signed off and air freighted to Andy in October, with only one major snag. I had cabled him for payment of \$80,000 in advance before shipping the two cars, to which his cabled reply read: ‘If you don’t trust me by now, then keep the cars.’ Negotiation ended with Andy arranging for c.o.d. payments at Los Angeles airport.”

Ferguson then went on to give a detailed account of an incident which arose from this shipment:

“We had shown the value of the cars at £1,500 each, but STP had unnecessarily quoted Customs our c.o.d. requirement of \$40,000 per car. Now Andy was looking to us for help in retrieving the large amount of duty he had been forced to pay, but Colin’s patience was fast running out! The solution he put forward was for Andy to tell Customs it had all been a typist’s error, and reminded him that since he was always referring on radio and TV to how expensive these cars were, he was largely to blame. ‘This disastrous problem can be laid entirely at your feet,’ he declared.

Additionally, Andy had gone to press with the announcement of his Plymouth-engined cars for 1969, and Colin had once again been infuriated to find that the converted Type 56 chassis had been described as ‘STP-built’, with no mention of Lotus. This straw almost broke the English camel’s back!”

Throughout both paragraphs, Ferguson clearly refers to ‘the cars’ in the plural, including the 1969 Plymouth-engined cars as being ‘converted Type 56 chassis’ the value of the cars at ‘£1,500 each’ and a c.o.d. requirement of \$40,000 per car. All references that clearly imply there was more than one car involved. If 56/2 and 56/3 were returned to STP, which already had 56/4, this would explain how two cars with revised side-skins could have been fielded in 1969 and 56/3 remained unmolested and went on display in the STP headquarters.

There are two objections to this story: firstly Vince Granatelli is adamant that just one car returned because the contract between STP and Team Lotus only required them to pay for cars which qualified for the Indy 500, and 56/2 did not qualify for the race. Secondly, and perhaps more crucially, this would mean that there is one more Type 56 chassis which is unaccounted for, although there is a potential explanation for that, which is that this is the car owned by Parnelli Jones until recently and which is now with the Indianapolis Motor Speedway Museum.

Finally, there is an alternative solution, which is that 56/3 was converted for 1969 to run with Plymouth power and then was rebuilt later on with its original side panels and put on show at the STP headquarters later than Vince Granatelli remembers. The Type 56s being the basis for the 1969 cars would also explain the apparent disappearance of those cars after that season.

Either way, the side-skins on the 1969 cars – although initially looking similar to the casual observer – were undoubtedly different in that the dry-break fuel coupling and removable tank bay access hatches were quite different in location to the 1968 Team Lotus cars, which tallies with Granatelli’s most recent description of new side-skins being fitted to existing Type 56s.

The reality is that we will probably never know the full truth of what happened with the STP cars and anyway this is something of a side-show since it does not really affect the story of 56/1, which it is not disputed was sold in June 1968 to Parnelli Jones. Here is a summary of the possible scenarios:

Scenario 1: Two existing Type 56s fitted with converted side skins and run throughout 1969 with Offy and Plymouth power. This could have been either 56/4 and 56/3 and 56/3 later had the original side skins re-fitted. Pros: Explains apparent disappearance of 1969 cars after that season. Supported by Motor Trend 69 Indy preview saying team would race 'much reinforced Lotuses of '68'. Cons: No evidence that 56/3 was re-skinned and Vince Granatelli is adamant this car went straight on display. Also does not explain where the chassis Parnelli Jones has today came from.

Scenario 2: Instead of 56/4 and 56/3 being the converted Type 56s run in 1969, it could have been 56/4 and 56/2 if Ferguson's information about 56/2 going back to the US is correct. If 56/2, where is it today – is this the tub Parnelli Jones has? Pros: Explains apparent disappearance of 1969 cars after that season. Supported by Motor Trend 69 Indy preview saying team would race 'much reinforced Lotuses of '68'. Supports Vince Granatelli's assertion that 56/3 never raced again and went straight on display at STP HQ. Ties in with Andrew Ferguson anecdote about issue with customs re two cars going back in October 1968. Cons: Vince Granatelli is adamant that 56/2 never came back as they only paid for cars that qualified at Indy in 1968.

Scenario 3: One existing Type 56 fitted with converted side skins and one new tub built by or for STP. Existing Type 56 most likely to have been 56/4 as Vince Granatelli is adamant 56/3 was not touched before going on display at STP HQ. Pros: Photos show a Plymouth-engined car with shiny new aluminium on inside surfaces of tub, rather than gun-metal grey stove enamelling as per Team Lotus practice. New tub could then have gone to Parnelli Jones in 1977 to rebuild his car. Cons: Vince Granatelli says that they fitted new side skins to existing Type 56s (although this contradicts what he told Andrew Ferguson in the 1990s).

Scenario 4: Two new tubs (copies of Type 56s) built for 1969 by or for STP and original Type 56s preserved. Pros: One of these tubs could then have gone to Parnelli Jones in 1977 to rebuild his car. Cons: Fate of second tub cannot be explained.

Lotus 56/1 – Subsequent history

Vince Granatelli Junior, who was a mechanic with the STP team at the time (including a stint working as the mechanic on the Parnelli Jones car, 56/1, in 1968) is adamant that the ex-Joe Leonard car never raced again after it was crashed in 1968.

He told me that *‘...it was pretty much demolished. In 1976/77, I restored these cars (56/1 and 56/4). Parnelli sent me his car. I had all the spares that came from the cars. In the restoring of the cars [e.g. the two cars that crashed at Riverside] I used the new side pieces (that he’d had made up for the 1969 cars). I restored PJ’s car and I did put a new skin on (the left-hand side) because it [the original skin] was damaged. I restored the other car [56/4] as the #70 because it was more famous. Also there was already a car with #60 on (56/3 – the real #70 – on display in the STP HQ). I kept the ‘#70’ (56/4) for myself then sold it to a fella in Texas (Milton Verret)’.*

This car ended up with Jim Williams and was sold to the Indianapolis Motor Speedway Museum, where it resides today, still with the #70 livery.

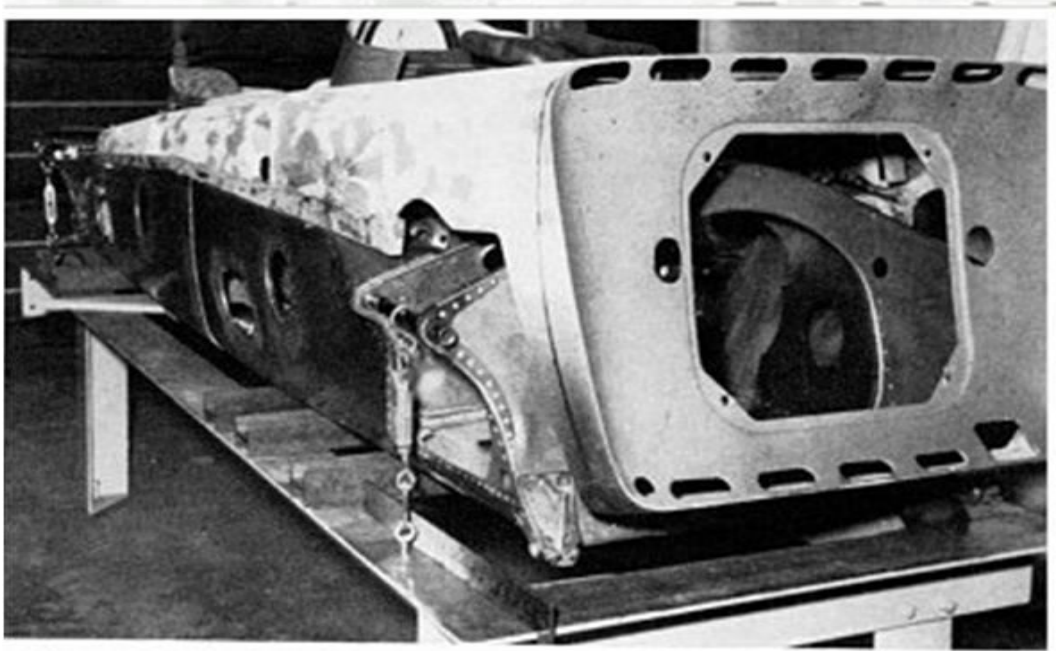
Meanwhile, Granatelli says that, after restoration in the mid-70s, 56/1 was returned to Parnelli Jones, who retained the car until May 2012, when his collection was sold to the IMS Museum.

This story is supported by ex-VPJ crew chief Jim Dilamarter, who told me *‘...the 1968 Lotus 56 #60 car driven to pole position at Indy was, as you say, wrecked in turn nine at Riverside in December 1968. This car was re-skinned and rebuilt by Vince Granatelli and Ronnie Falk [former STP crew chief].’*

However, as a result of my research, intentional or not, I believe this version of events is incorrect. In the pages that follow, I intend to lay out an alternative theory and then support it with photographic evidence.

My research shows that the tub from 56/1 was rebuilt in the spring of 1969 and incorporated into the Vel’s Parnelli Jones Ford Racing Team’s 4wd car entered for that year’s Indianapolis 500 as car #3.

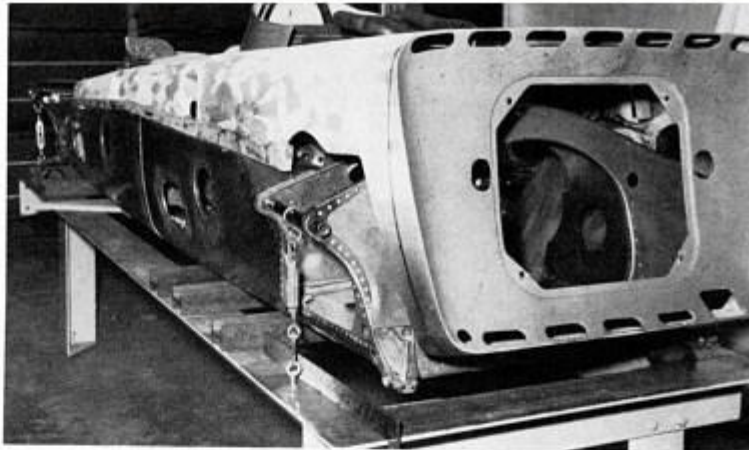
Several photos exist of this car under construction, clearly showing it to be utilising the chassis and part of the body of a Lotus Type 56.



This photo from Motor Trend magazine's Indy preview, which appeared in the June 1969 edition, shows the distinctive rear body of 56/1 with the slots cut in it and the oval-shaped rear bulkhead unique to the Lotus 56 design. The location of the holes for the dry-break fuel couplings and fuel tank access hatches in the side-skirts are also 100% Type 56. The caption in the magazine describes how Andy Miller 'was completing a 90-percent re-work of a '68 Lotus wedge and a pair of all new duplicates'.

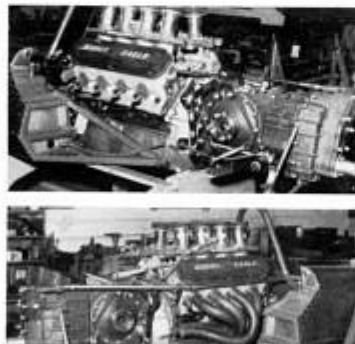
VEL'S — PARNELLI JONES FORD RACING TEAM

Veteran brickyard great Parnelli returns on Memorial Day with three, four-wheel-drive turbo-Ford wedges and may wind up in the saddle himself. Regular driver, Al Unser, showed up at Phoenix with straight two-wheel-drive and sat on the pole, although the team will probably switch back for the 500. Prepared by chief mechanic George Bignotti, Unser's Lola showed great promise until it broke a valve. Meanwhile, back in L.A., Andy Miller was completing a 90-percent rework of a '68 Lotus wedge (right) and a pair of all-new duplicates. The single most interesting detail of the new cars is four-speed transmission positioned ahead of the engine and behind the driver and connected by chains to the driveshaft for the front and rear differentials. As you might expect, Firestone tires and fuel cells are used. Phoenix performance shows P.J.'s coming.



LEADER CARD — BARDAHL OIL

Grand-slam champion of '68, Bobby Unser, will try for another 500 victory with the same winning combination. Super mechanic Jud Phillips will still look to the good health of the turbo-charged Offy but the team's main hope rests on a four-wheel-drive Lola instead of the Eagle. A '68 turbo-Offy Eagle (right), will stand as backup at the Brickyard and see service later in the season. Interestingly enough the winning Eagle of just a year ago was assigned to road-racer Lothar Motschenbacher who will be the second half of the Leader Card (Bob Wilke) stable in '69. Both drivers will be on Goodyear Blue-streaks along with almost 80 percent of the field. My, how the times do change.



ALL AMERICAN RACERS — OLSONITE EAGLES

On the rebound from a 1-2-4 Eagle finish in '68 (seven out of 33 qualifiers), and nearly winning with a stock block, the Gurney squad will be the bunch to beat. With pushrod displacement up to 320 cubic inches from 305 last season, power has jumped to 525 plus. Besides that, the whole car has been reworked. Going the way of Formula 1 Lotuses, the monocoque body terminates behind the driver's seat and the engine bolts directly to it via steel rail box setup. Then, the engine and Hewland gearbox act as pickups for the rear suspension. With the new fourteen-inch rear tires, the rear track (55 1/2-inch) is 2 1/2 inches less than the front to keep the tires out of the windstream reducing drag.



PENSKE / DONOHUE

The Penske/Donohue aggregate is on its way toward winning everything there is. Indy is the next stop. Propelled from the springboard of sponsorship by Sun Oil Company and Simoniz, "rookie" Mark Donohue will dazzle the boys with the best-prepared car, period. Since Penske has acquired an interest in Lola as well as Traco, both of his cars will be four-wheel-drive Lolas — one an injected V-8 Chevy and the other a turbo-Offy. Most pros figured Offy power for the 500 but with Follmer's speed show at Phoenix, all that may be changed. After their fantastic come-from-behind Sebring finish, people know never to ignore Penske.

This is the actual page from Motor Trend, with the caption about the 56 being reworked shown top left.

Incidentally, there is no evidence to support the statement in the Motor Trend caption that three cars were built: only two ever appeared — the Lotus 56-based car which ran at Indianapolis and a fairly rudimentary copy which ran several races towards the end of the year with a four-cam Ford engine. This was confirmed to me by ex-VPJ crew chief Jim Dilamarter who said that 'two complete

running cars were built' and 'one extra tub was partially completed'. He added that 'all of the cars and parts, extra tub etc., were sold at our auction'. In fact, this is only partially true, since only two cars, or the chassis of two cars, were sold at the auction, the third incomplete tub was not included in the sale as far as I have been able to determine. Again, this could provide a potential additional explanation for the source of the tub currently being used by the car owned by Parnelli Jones today.

Competition Press & Autoweek also visited the Vels Parnelli Jones workshops and produced a report with several photos. The photos show a car with a tub which slopes down towards the front, with a dash panel mounted on the top surface of the tub (important because the other VPJ car built that year had its dash panel embedded in the cockpit sides rather than sitting atop them), just as with a Lotus 56.

However, it is clear that the front footbox has been reworked in order to accommodate a radiator and related ducting. Such work might also have been necessary if the front footbox had been heavily damaged in the Riverside crash in December 1968. This could explain why the distinctive hole and reinforced plate evident in the Indy 200 photos taken in 1968 are not visible on the tub as acquired at the 1998 auction.

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New Shape For Jones' Indy Cars

TORRANCE, Calif., April 29 — Two brand-new cars for the Indy 500 are en route to the Brickyard from the racing shops of Vel's-Parnelli Jones Ford Racing Team.

A unique feature of the new racers is the fact that all the component parts, major and minor, with the exception of the engine

were built right in Torrance. The designers and builders are particularly proud of their all-California-built racer and expect the car to be considerably stronger and more reliable than the hybrid cars using a number of parts manufactured overseas.

The new Indy cars are a honeycomb aluminum tub enclosed

in a concave wedge body. The unusual glass fiber and aluminum body shape is actually concave along the top surfaces in order to keep the air flow on top of the body, decrease turbulence and provide desired down force on the high speed straights.

Quite a bit of help in designing the new configuration came from engineers who work daily for the Hughes Aircraft Co. and Digi-Tech Corp. These men spent most of their off hours during the winter designing and testing the multitude of new items on the cars.

FOUR-WHEEL DRIVE

The Jones cars incorporate a 4-wheel drive system that is a highly modified version of the Ferguson units that pioneered 4-wheel drive at the Speedway a few years ago. The new drive system has been developed in the Vel's-Parnelli Jones shop. The transmission output shaft transfers power through a chain drive to the equal length front and rear drive shafts. This necessitates a centrally-mounted transmission, installed directly under the driver's seat to provide equality of shaft length and better forward/rear weight bias than that of earlier 4-wheel drive cars.

With considerable help from the Ford Motor Co., an all-new 4-speed transmission has been built for the team cars.

NEW GEARBOX

The motive power comes from the 161cid, turbocharged Ford Indy powerplant which produces well over 700 horsepower on racing fuel. The designers felt the Hewland gearboxes, common on the rear-engined Championship cars, might not stand 500 miles of the

high power output of the blown Fords, so the new gearbox was developed for the team cars.

The engine itself is mounted backward in the chassis, turned around 180 degrees from standard practice, to incorporate the radical placement of the transmission for the better weight distribution.

The oil supply tank for the dry sump system is positioned in the nose of the car and a newly-designed water radiator is placed just forward of the oil tanks. Fuel is carried in matching cells installed in the sides of the car, with the oil cooler mounted behind the cockpit just over the driver's head. Instrumentation on the cars has been supplied by Hawk, made by the Harvey Hanson Co., a firm new to the racing world. The 15-inch wheels, the same on all four corners, will be shod with Firestone's latest Indy compounds.

Many space age metals are used in the construction of the cars, including titanium and the exotic metal, Vascomax.

A great deal of the development

work for the bits and pieces on the new cars was carried on last year when the team campaigned the 4-wheel drive Lola driven by Al Unser.


This Lola, completely refurbished, is also on its way to the Speedway to serve as a back-up car for the team. This car, powered by a turbocharged Ford, recently set a new track record at the 1969 inaugural USAC Championship car race when Al Unser sped to the pole position during qualifying for the Jimmy Bryan 150 at Phoenix, Ariz.

AL HEADS TEAM

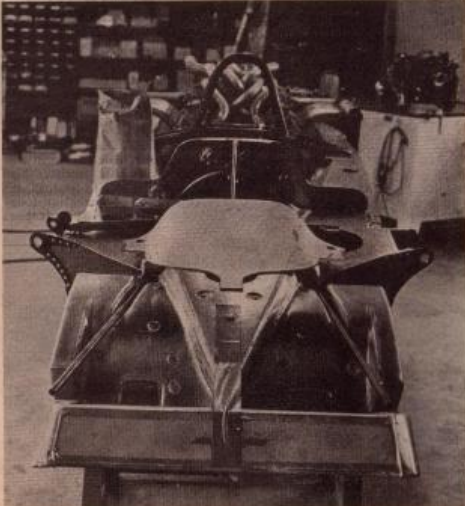
Al Unser is the number one driver for the Indy team. The driver for the second car is yet unknown. Although three cars are entered, the team plans to actually race only two in the Indianapolis 500.

Major sponsors of the Vel's-Parnelli Jones Ford Racing Team, in addition to partners Vel Miletich and Parnelli Jones, are the Ford Motor Co., Firestone Tire and

(Continued on page 19)

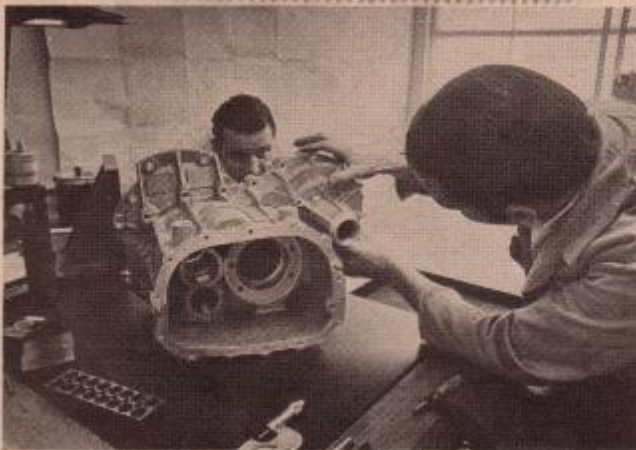


Vel's Parnelli Jones Racing Team partners, Vel Miletich (far left) and Jones inspect the reverse engine installation in their new Indy car with chief mechanic George Bignotti. (Jim Forbes photo)



The new car, to be driven by Al Unser, is designed as a honeycomb aluminum tub, shown here without the concave wedge body. (Jim Forbes photo)

Photo above left shows downward sloping cockpit sides and dash panel sitting atop the cockpit sides, both features of a Type 56.



The newly-designed 4-speed gearbox case which is center-mounted in the Vel's Parnelli Jones-entered Indy car. (Jim Forbes photo)

More on: Parnelli's Team

(Continued from page 18)

Rubber Co. and Rislone.

The chief mechanic for the group is George Bignotti and the business manager is Jim Cook. The entire crew of 14 men will be well dressed in Indiana, too. A complete wardrobe for their off hour use—slacks and blazers—will be supplied by Botany 500, through their Los Angeles distributors, the Harris and Frank stores.

MANY CARS

The Indy cars were constructed in a separate facility here. The racing endeavors have a separate building and name—Parnelli Motor Car Co. Housed in this well-equipped shop are a number of open-wheeled racing cars. In the center of activity are the two new cars for Indy and the Lola 4-wheel drive machine. In one corner is the remains of the number 60 Lotus-Turbine that has never been repaired from its disastrous crash at Riverside Raceway last December. Also presently inactive are two Indy Brabhams. And in another corner are three USAC midgets, two of which ran at the recent Astrodome race in Houston, Tex., driven by the Unser brothers.

Jones and Miletich have high hopes for their California-built cars. The two men have labored all winter on the actual physical work involved in building the cars. And this is mostly midnight oil as their

days are spent in other business pursuits. Parnelli and Vel are not only partners in the racing business, but also in the large Ford dealership in Torrance that bears their names. Plus they have the local Firestone High Performance Center, and are the distributors of Firestone Racing Tires for the 11 western states.

Speedway Owner Has Many Other Interests

LAFAYETTE, Calif., May 12 — Anton "Tony" Hulman, owner of Indianapolis Motor Speedway since 1946, doesn't limit his interest to the annual 500-mile Memorial Day race.

Hulman is considered one of Indiana's more prominent business and industrial leaders and holds various capacities with several of the state's educational institutions and civic enterprises.

In addition to the Speedway, he is president of Hulman & Co. in Terre Haute, Ind., and the Coca Cola Bottling Co. of Indianapolis. Hulman & Co. was formed by his grandfather, and next to the Speedway, takes up most of his time.

He moved the entire bottling operation, purchased in 1965, to the Indianapolis suburb of Speedway in 1968. The plant is

MAY 31, 1969



Newest crew who will be first son, bo Miletich, F announcement

believed to be operation in roof.

Hulman's goes beyond racing. While

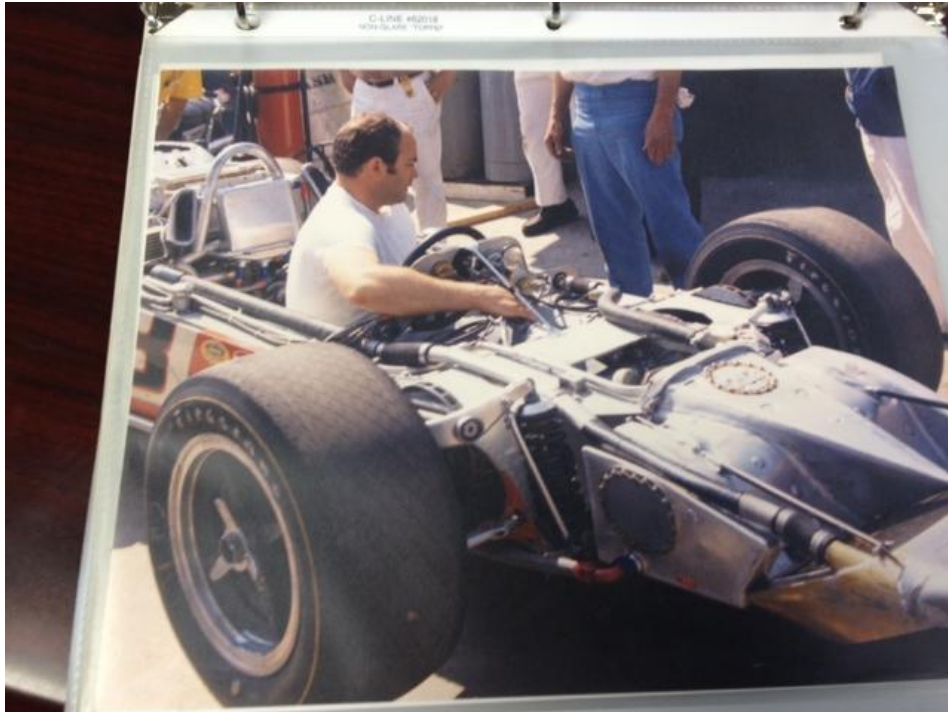
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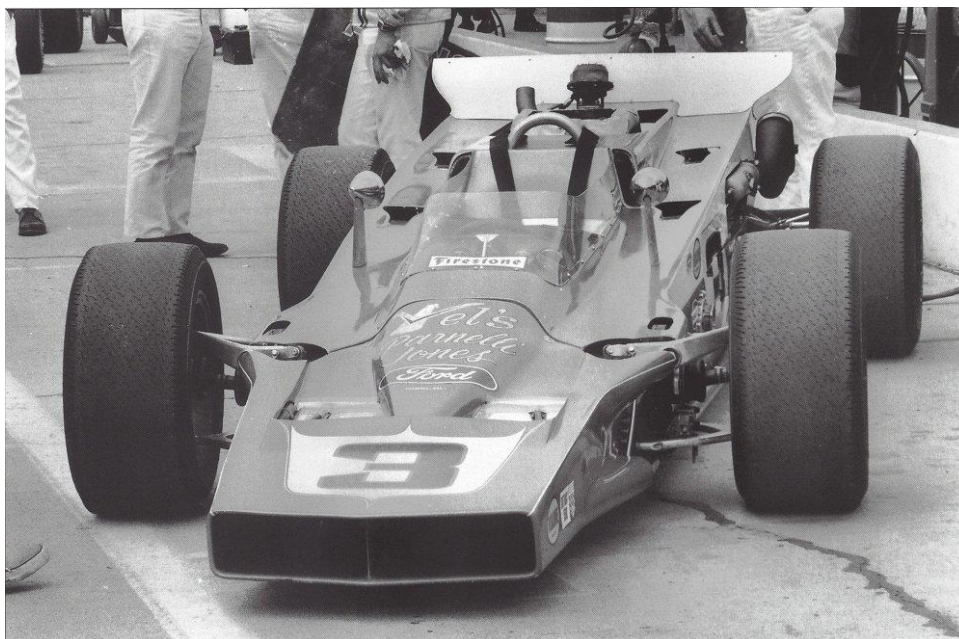
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The article makes reference to the 'remains' of the 'number 60 Lotus-Turbine that has never been repaired from its disastrous crash at Riverside Raceway last December'. However, it is open to interpretation what this means - it could have been a collection of damaged bodywork panels and components that were not reused on the 1969 car. Clearly the writer of this piece was unaware that the '68 turbine tub was the basis for the '69 car.

The 56-based chassis appeared in practice during the month of May (making its first appearance on May 12th) but was uncompetitive compared to the team's 4wd Lola and did not attempt to qualify for the race after its intended driver Al Unser broke his leg when he fell off a motorcycle at Indy and the team's other drivers, Joe Leonard and Bud Tingelstad, couldn't get the car up to speed.



This colour shot at Indy shows the unique right-hand side filler, sloping chassis sides dissecting the race number '3' and triangular bracing top and bottom for the dash plate – all characteristics of 56/1 and/or the Type 56 design.



A shot of the #3 car in the pit lane at Indy in 1969.



Another colour shot of the #3 car in the pit lane at Indy in 1969, with Bud Tingelstad at the wheel.

However, I believe the car did compete in two 1969 USAC races, each time driven, ironically, by Joe Leonard, the original driver of 56/1. Two almost identical 4wd cars were built – one based on the chassis of 56/1 with the turbo Ford for use on high-speed oval tracks and a second built in-house with a normally aspirated four-cam Ford engine, which was designed to be used for road courses. The turbo Ford car competed in the Trenton 300 on September 21st (where it was a DNF with suspension failure) and in the Bobby Ball 200 at Phoenix International Raceway, where it finished 5th.

The normally aspirated car may have appeared at Seattle International Raceway on October 19th, but it did not start the race. At the season-ending Rex Mays 300 at Riverside, certainly the team ran a four-cam-engined car, but it appears that it was the original 56/1 chassis, since photos show it to have the distinctive mirrors and livery of that car, plus the distinctive triangular Lotus dash mount. Either way, it did not finish due to engine failure.

The cars were not popular among the VPJ crew. Jim Dilamarter told me: *'I hated these pieces of crap because they reminded me of WW2 tanks, so I called one of them Sherman and the other Herman, which eventually stuck and soon that's what they were called within the team. In addition, my perplexity at why anyone would want to build something like that when we already had a world beater ex-FWD Lola in our stable, was beyond me and George Bignotti as well. But being good soldiers we did what we were asked to do. However, from the beginning it was evident to both George and I that these monstrosities would never, ever be competitive.'*



This photo shows the four-cam Ford-engined Vels Parnelli Jones entry at Riverside in December 1969, with driver Joe Leonard in the white overalls to the left of shot.

The photo above clearly shows a four-cam Ford-engined car. This should be the VPJ crude copy (as this was the car originally fitted with the four-cam engine) but comparison with the photos on the following page suggests that this is 56/1 (distinctive mirrors, positioning of the word 'Parnelli' on the nosecone, distinctive number on nosecone with white flicks, triangular dash brace, absence of aluminium trim tab on the nosecone).

Neither of the two Vels Parnelli Jones Racing 4wd cars raced again but they were retained by Jones until an auction of his cars and parts held in 1998 by Ashman Company.



Photo from the auction catalogue showing the Lotus 56-based tub (bottom) and the crude copy (top) which ran the four-cam Ford. The copy had flat chassis sides and a sharply raked wedge body, whereas the distinctive sloping chassis side profile of a Lotus 56 is clearly visible just to the right of the race number '3'. Comparison with the side-on colour Indy shot suggests that this is the same car.

At this auction, the turbo-Ford chassis (less engine) was sold to Doug Winslow of Westlake, Ohio, while the normally-aspirated chassis and all the spares (including two complete sets of transmissions) were sold to Bruce Linsmeyer of Avon, Indiana.



The normally aspirated VPJ 4wd car as acquired by Bruce Linsmeyer in 1998.

After the auction, Winslow (who had worked out from a close study of his chassis and photos taken in 1969 that he had the turbo car, yet wanted the four cam car) made contact with Linsmeyer and suggested a swap of chassis, in return for giving Winslow one of the complete transmissions, since he was otherwise unable to complete a rebuild of his car.



The VPJ copy (which ran the normally aspirated four-cam Ford engine) was a crude attempt to mimic a Lotus 56 chassis, with flat sides and a dash plate sunk in to the cockpit sides, rather than sitting atop them. It is shown here after Linsmeyer had bought it and before he swapped cars with Winslow.

Linsmeyer had wanted the Parnelli chassis he had bought to build a faithful replica of a Lotus 56, complete with a turbine engine, and so was attracted by the idea that this could even be an original chassis. He completed the build and today it is a working replica, although it does differ still in some respects from the original, mainly the lack of a genuine Lotus rear bulkhead and the use of an Allison turbine rather than the original specification Pratt & Whitney unit.

In the meantime, in 1976/77, when Parnelli Jones wanted Vince Granatelli to rebuild his Lotus 56, it was presumably easier to use a replacement chassis (either one of the STP copies or the incomplete copy tub built in 1969) than unpick and undo all the fabrication work that had been done to the original chassis to convert it to the 4wd turbo Ford format in 1969. Alternatively, the passing of time could have meant that the team simply lost track of which chassis was which and genuinely believed that the copy was the real thing and rebuilt that. Either way, the car was rebuilt with a non-original chassis that differs in a number of respects from a pukka Team Lotus-built Type 56.

The result is that we are left with two entities, both with a claim on the identity of 56/1. The question is – which car features the original chassis raced at Indianapolis in 1968 by Joe Leonard?

Lotus 56/1 - Identifying characteristics

Theoretically, the most obvious identifying characteristic of a car is its chassis plate. However, this alone cannot be taken as proof, as chassis plates are only riveted on (and therefore can be moved from one chassis to another) plus the technology exists to create very accurate and genuine-looking forgeries.

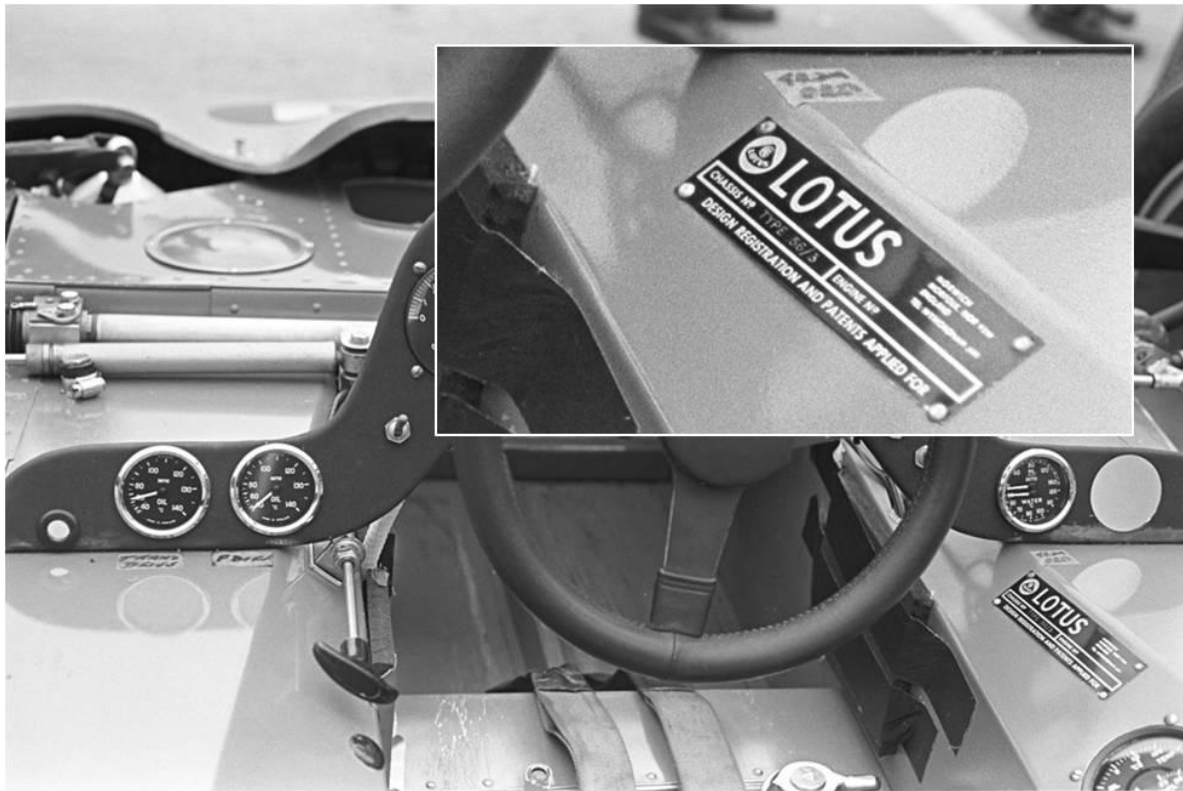
Additionally, it was commonplace in the 1960s and 1970s for racing teams to switch chassis plates around between cars so that they matched the customs carnets that the team had arranged. So, on its own, a chassis plate cannot be taken as proof of the car's provenance: instead, it needs to be seen as supporting evidence along with other identifying characteristics which are less easy to change.

The chassis plate on 56/1 was mounted in the same place as 56/3 but in a different location to 56/4. The photos over the page show the locations of the plates on the three cars.

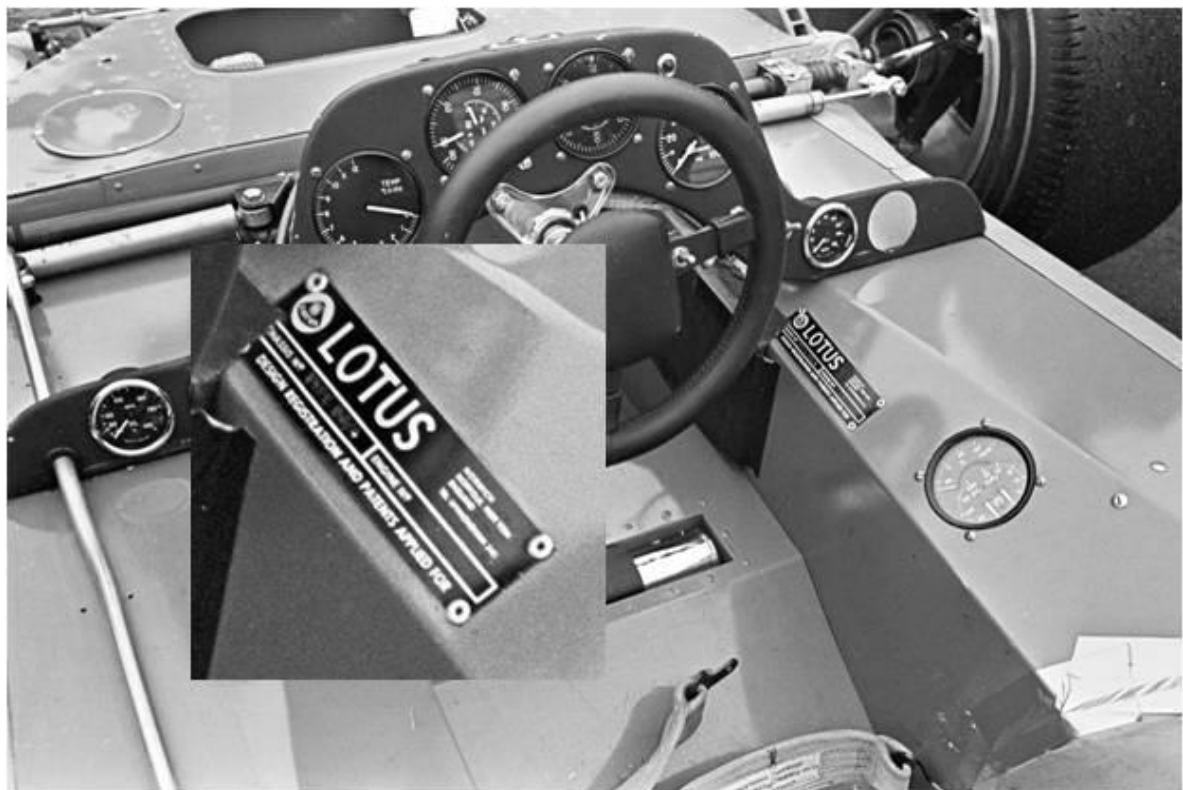
The chassis plate on the entity still owned by Parnelli Jones is almost certainly the original chassis plate, since the plate on the chassis owned by Bruce Linsmeyer was missing when he acquired it (although there were four rivet holes in exactly the place where the Type 56 plate was located).

Unfortunately, I have been unable to obtain a photo of the chassis plate of the Parnelli Jones car to confirm this, but my suspicion is that the plate was removed when the car was rebuilt as a Vel's Parnelli Jones car in 1969 and retained and later placed on the replacement chassis built for Jones.

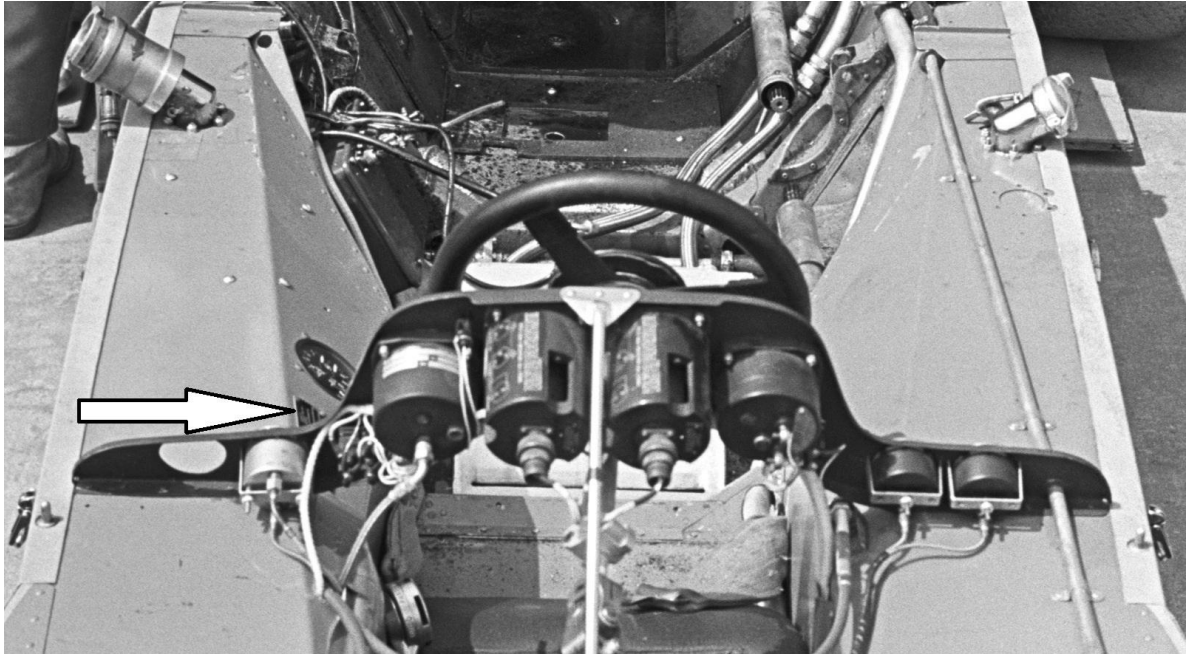
How can we be sure that Joe Leonard raced Lotus Type 56 chassis 56/1 and not another chassis? Fortunately, period photos exist clearly identifying Hill's #70 car as 56/3 and Pollard's #20 car as 56/4, while this is also the chassis associated with, initially, Mike Spence and later Joe Leonard, in records kept by Team Lotus Competitions Manager Andrew Ferguson, as described in his book, *Team Lotus: The Indianapolis Years*.



This photo shows the location of the chassis plate of the #70 Graham Hill car with the words 'Type 56/3' clearly visible.



This photo shows the unique location of the chassis plate of the #20 Art Pollard car with the words 'Type 56/4' just visible.



Relatively few photos exist which show the location of the chassis plate on 56/1 (we can tell this shows 56/1 because, uniquely, it has the fuel filler on the right-hand side of the car – left as we are looking at it) but it can clearly be seen to be in the same location as 56/3, parallel to the folded edge of the cockpit.

The other characteristic that one would expect to find evidence of on the chassis of 56/1 today is the unique fuel breather arrangement that it ran in the race, with one Monza filler on the right-hand side of the car and two fillers on the left – one by the driver's left shoulder and another further back.

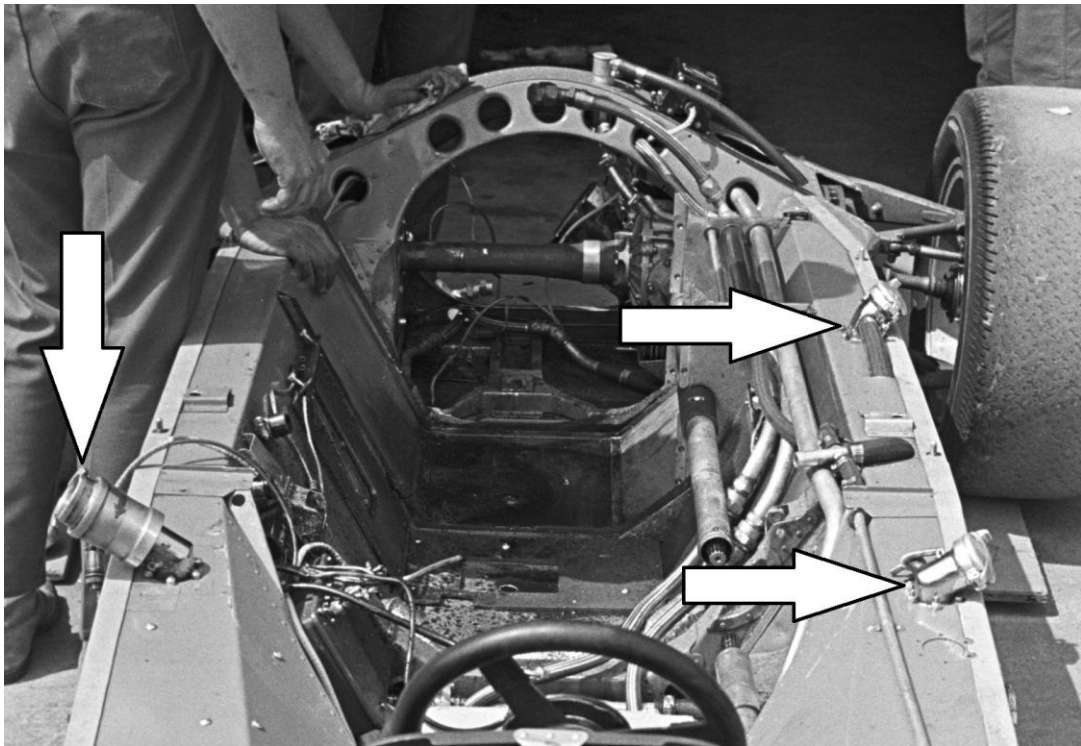
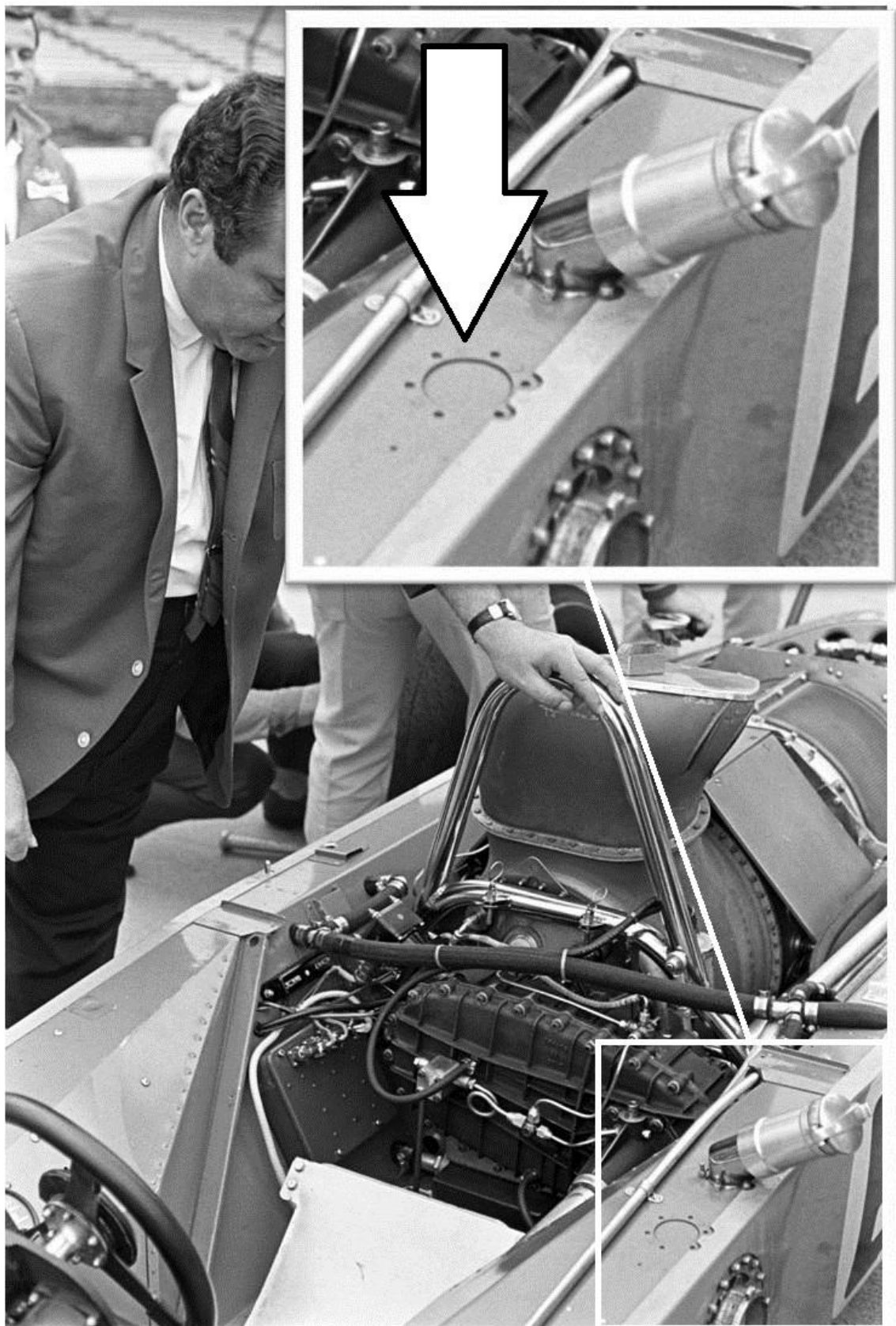


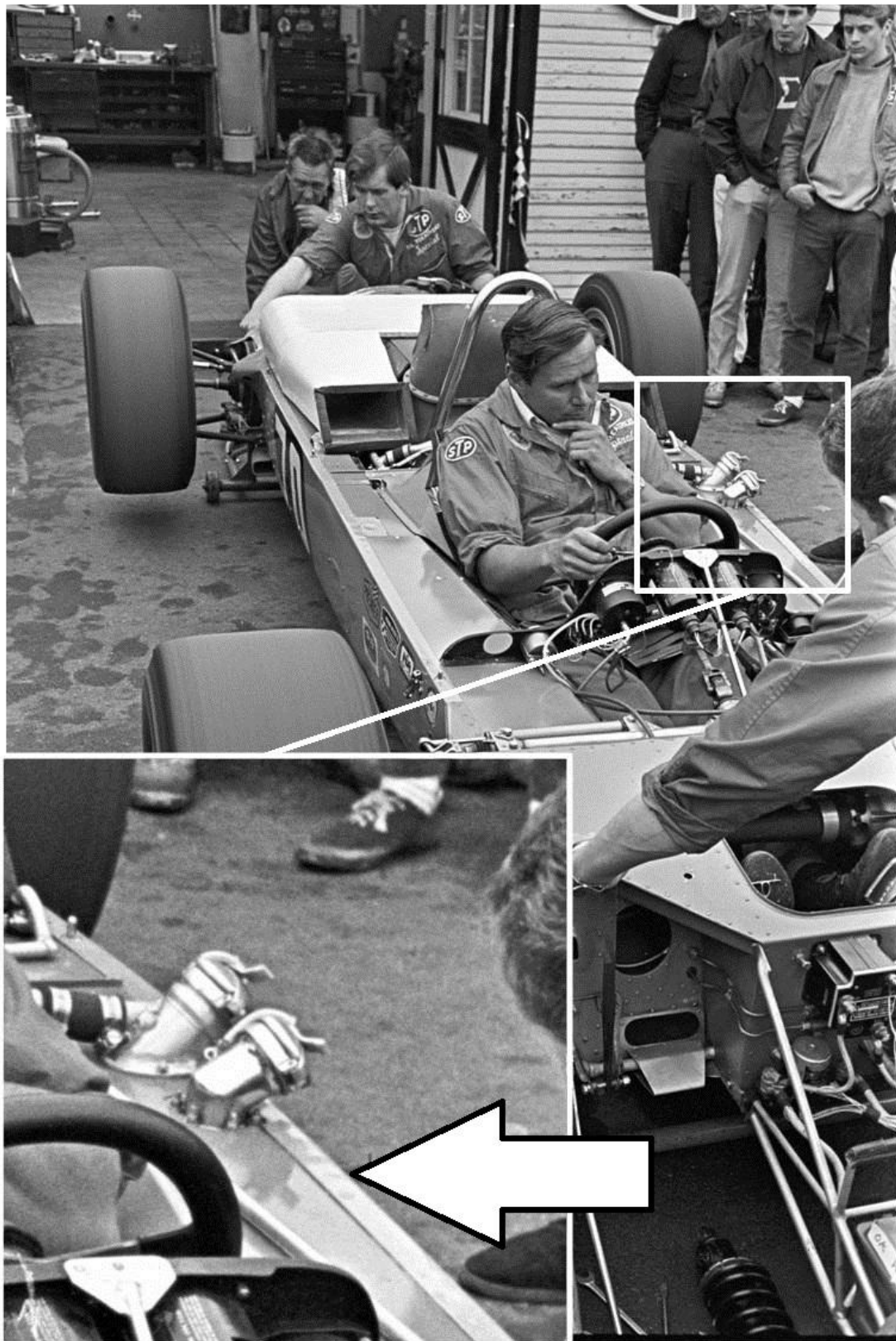
Photo taken at 1968 Indy 500 showing unique fuel filler arrangement on 56/1 (arrowed left) with two left-hand side Monza fillers arrowed right and a single filler on the right-hand side (on the left in this photo).

There are also several other identifying characteristics that are unique to 56/1. The most significant of these is visible on the chassis just forward of the fuel breather by the driver's left shoulder – a small hole that has been blanked off with six holes around it. This looks as if it was the initial position for the Monza fuel filler cap/breather.



Shot of 56/1 at Indy in 1968 showing blanked-off hole with six small holes around it (arrowed in the blown-up inset section) unique to this chassis. This shot was taken during the month of May before the team installed the second fuel breather on the right-hand side of the car.

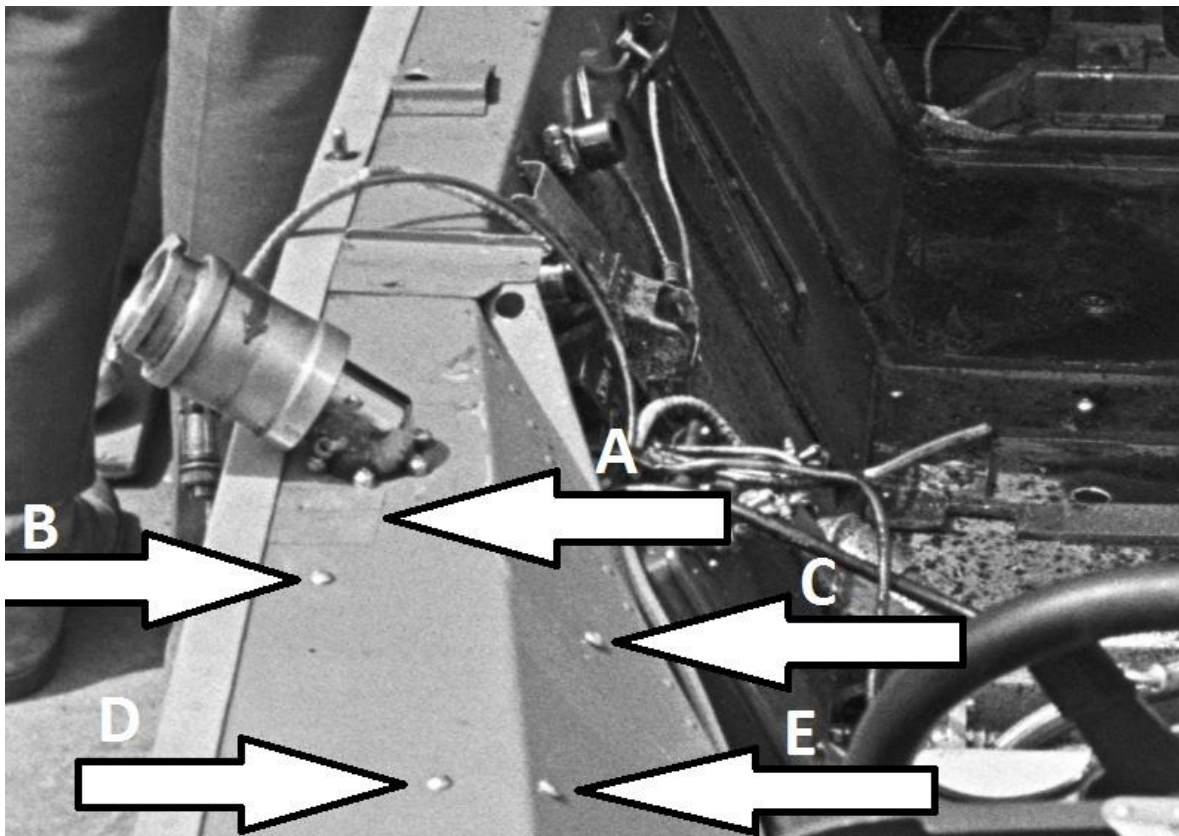
For comparison the photo below shows the same area of 56/3.



The blown-up inset box shows (arrowed) that 56/3 did not have the same blanked-off hole as 56/1.

I do not have a photo showing the same area of 56/4 but for reasons which will become clear, I do not believe this to be significant and I very much doubt that this feature was to be found on this, the last of the chassis built, as it looks like a modification made to the first prototype chassis.

Additionally, there are certain features visible on the period photos of 56/1, such as holes in the cockpit sides, which one would expect to find in the car today if the chassis was original. The most distinctive of these are the patterns on the right-hand side of the inner cockpit skins. What appears to be a hole that has been taped or plated over is visible just in front of the fuel filler, then in front of that is another rivet, with a further rivet down on the folded section, then there are a further two distinctive rivets close together further forward, towards the chassis plate.



This photo shows taped-off or plated-over hole (A); domed rivet (B); second domed rivet (C); third and fourth domed rivets (D) and (E) in distinctive pattern.

Similarly, there should be two small holes just forward of the breather which were for a bracket holding a pipe in place which ran through a hole in the left-hand side of the dash panel and then diagonally across the top left surface of the tub alongside the driver's arms. It is shown clearly in the photo below. Additionally, a further single hole is visible just forward of the blanked off plate.

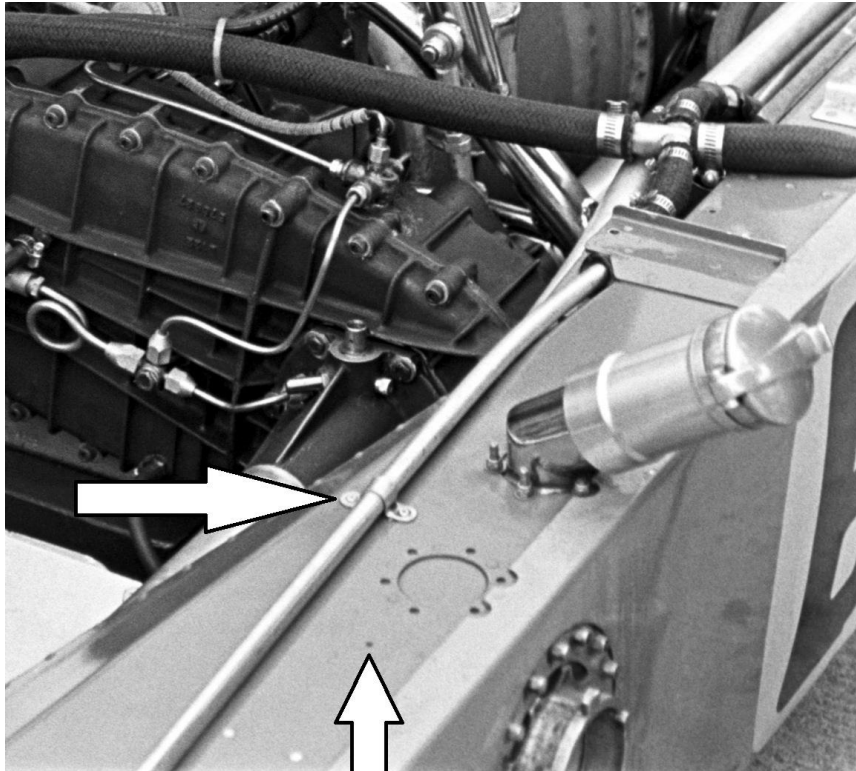
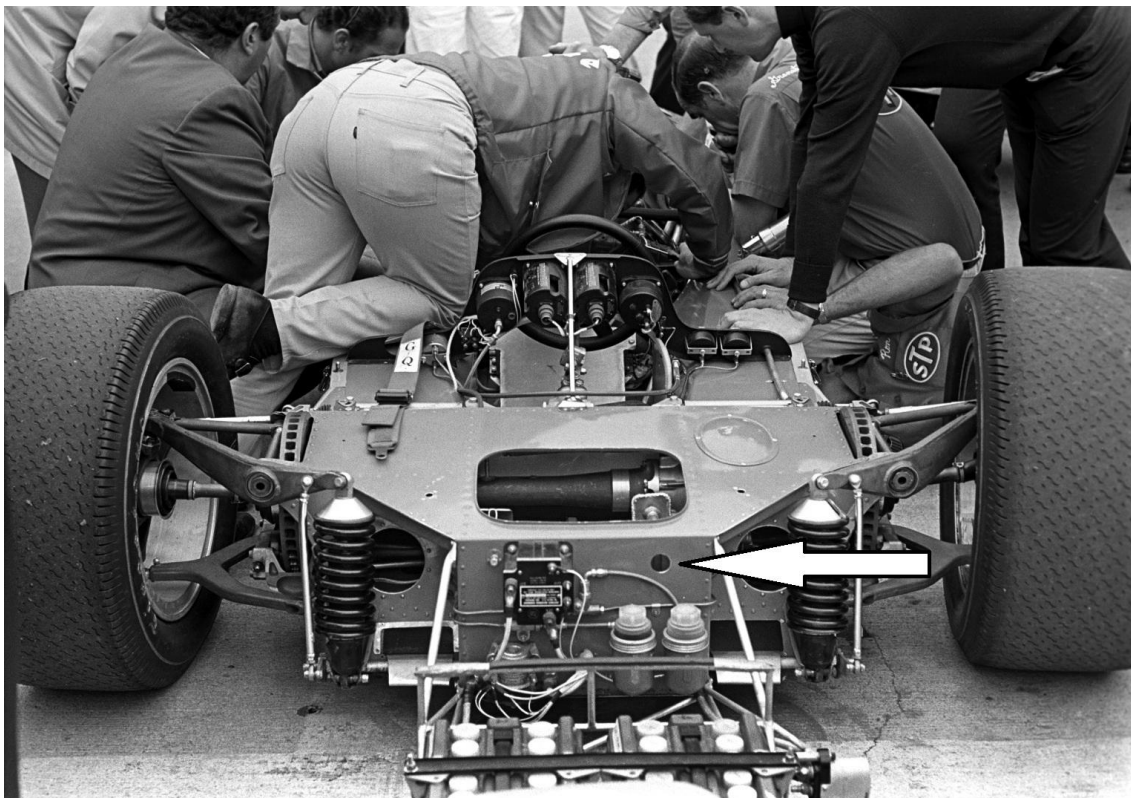


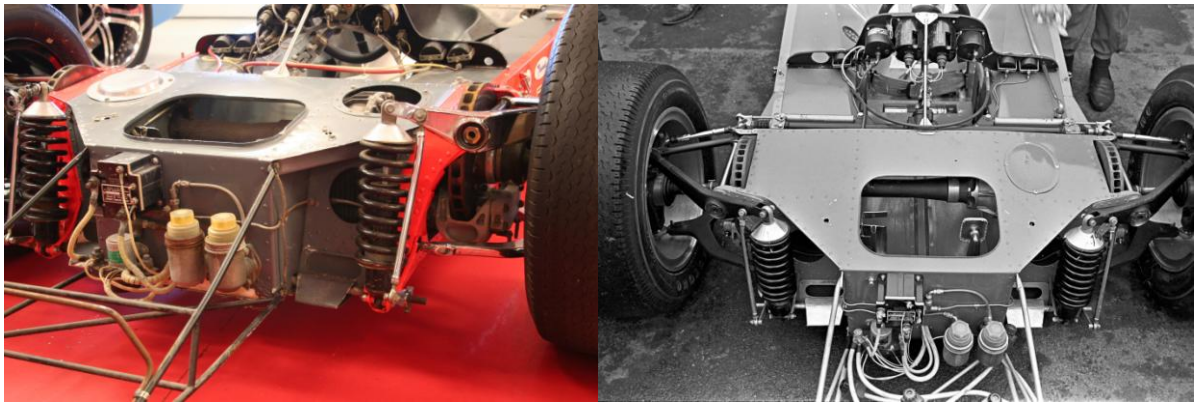
Photo showing routing of pipe on 56/1, plus distinctive single hole forward of blanked-off hole.

Finally, chassis 56/1 was the only one of the four cars which had a hole on the front surface of the footbox.



Distinctive hole in front surface of footbox of 56/1 is arrowed.

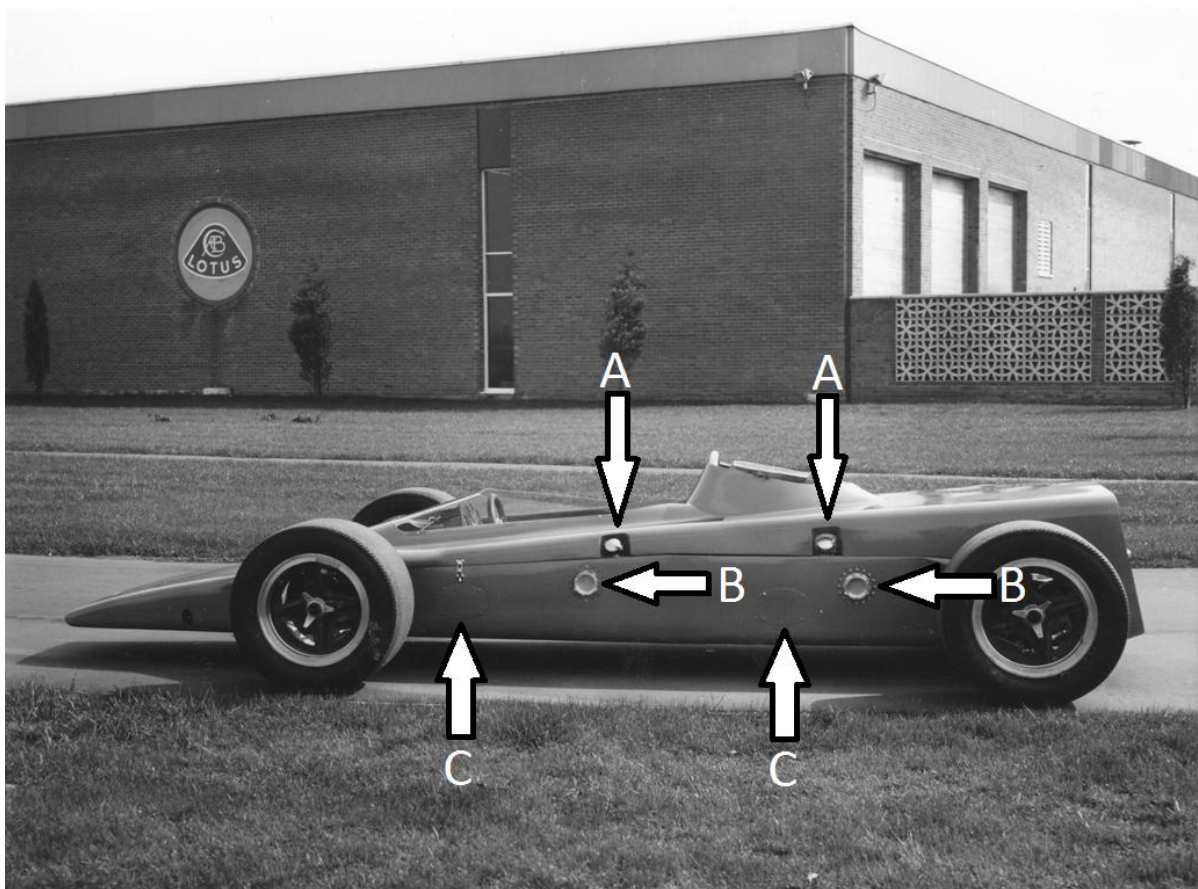
For the purposes of comparison, the footboxes of 56/3 and 56/4 are shown below.



The footboxes of 56/3 (left) and 56/4 (right). The shot of 56/3 is a present-day shot, I have not been able to source a period shot of the front footbox of this car.

Other identifiable characteristics of genuine Lotus 56s

The style and positioning of the dry-break fuel couplings (used to attach the fuel hoses during in-race refuelling) and access hatches (used by the mechanics to insert the rubber bag fuel tanks into the tank bays on the Lotus 56s were also very distinctive.



General side profile view of the right-hand side of the Lotus 56, showing location of fuel filler caps (A), the dry-break fuel couplings (B) and the access hatches to the fuel tank bays (C).

The Lotus 56 design called for two Avery-Hardoll dry-break fuel couplings, both of which were mounted on the left-hand side of the car, to facilitate refuelling from a tank behind the pit wall at Indianapolis. These were positioned just fore and aft of the two Monza filler capped fuel breathers, at an identical height to one another, that is to say if you drew a line between the two of them, it would be parallel to the ground. The Avery-Hardoll couplings were secured in place by 16 bolts on an outer ring, with the actual coupling held in place by a further nine bolts.



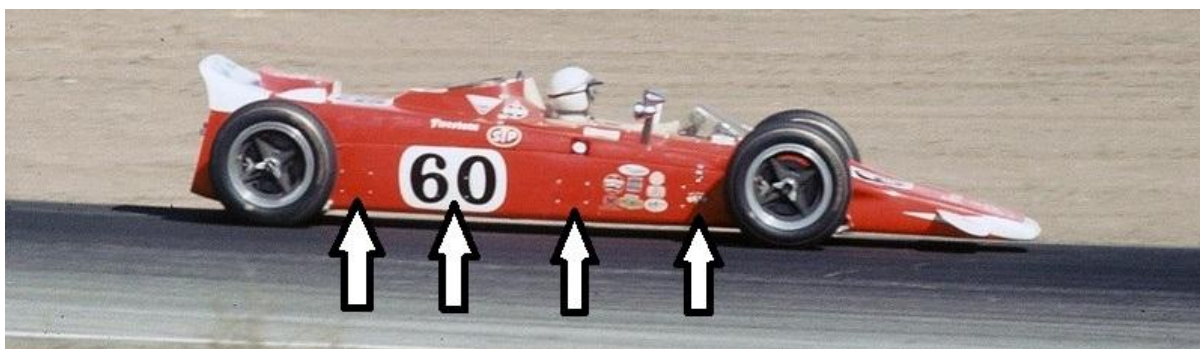
Several different views of the Avery-Hardoll dry-break fuel couplings used on the Lotus 56. They were all secured by 16-bolt fixings.

The access hatches for the fuel tanks were held in place by four screws. There were two access hatches on the left-hand side of the car – one just behind the front wheel beneath the clip for the upper body section and the other just fore of the rearward dry-break coupling and Monza filler. Like the dry-break couplings these were at an identical height to one another in that if you drew a line between the two of them, it would be parallel to the ground.



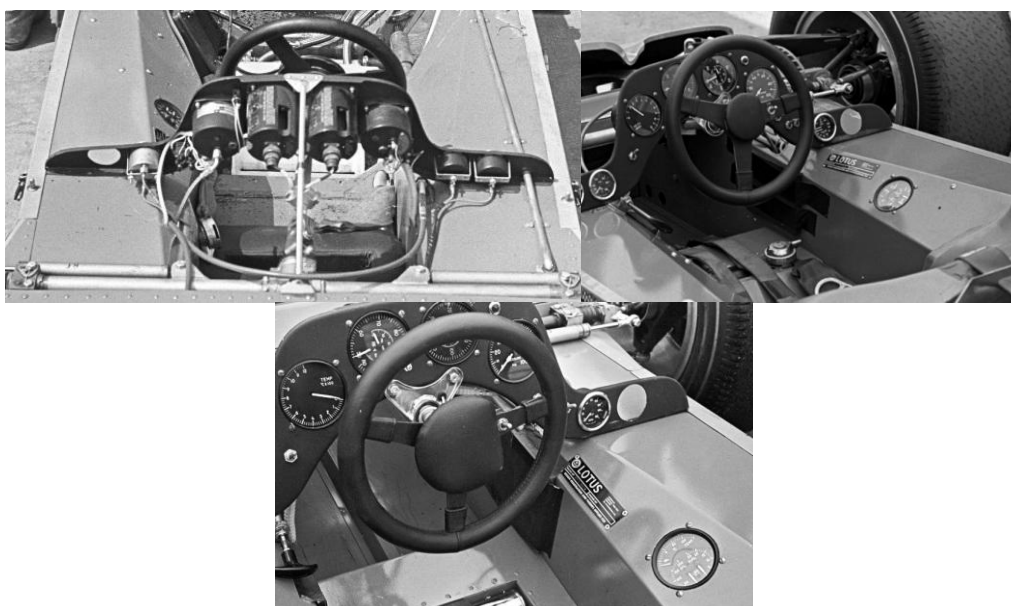
This photo shows the oval shape of the fuel tank bay access hatches with their four screw fixings

On the right-hand side of the car there were a further three access hatches of a similar format to, and at the same height as, the hatches on the left-hand side of the car.



This photo (possibly a rare shot of Mario Andretti at the wheel) of 56/1 at Riverside in November 1968 shows the location of the four right-hand side fuel tank bay access hatches, as well as the unique right-hand side Monza fuel filler cap.

Another clear characteristic of all of the 1968 Indy 500 cars were the gauges mounted on the inner right-hand surface of the cockpit.



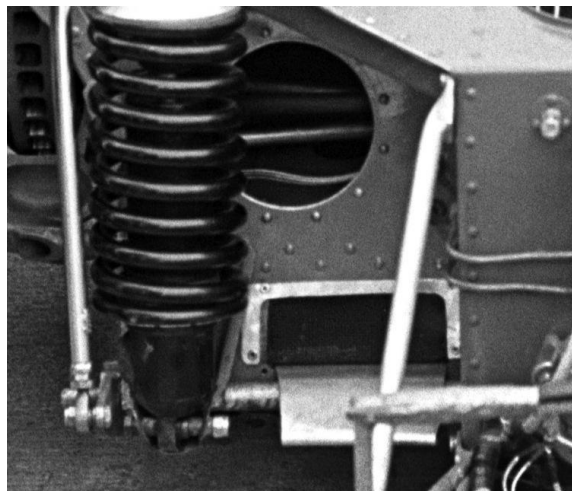
Period photo of 56/1 (top left) shows gauge; 56/3's gauge is shown top right, while 56/4's gauge is shown bottom.

Finally, there are other elements of the car which one would expect to find on a Lotus-built 56, although on their own they would not guarantee its identity or that it was a genuine car. This includes a distinctive method of bracing the dash panel to the front footbox. At the dash end, it was fixed by a triangular plate and three rivets. At the footbox end, it was also fixed by an angle triangular plate and two rivets.



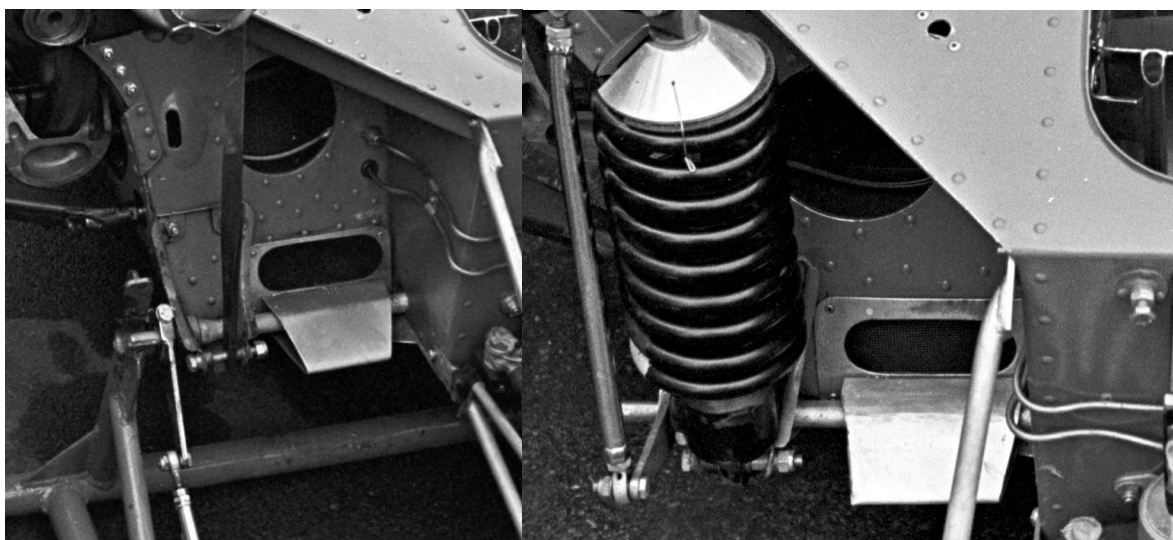
Lotus-built 56s feature triangular plates at both ends of the brace between the dash plate and the footbox. This shot shows 56/1 but all works cars had the same fitting.

The layout of the front corners of each car, just inside the dampers, also varied.



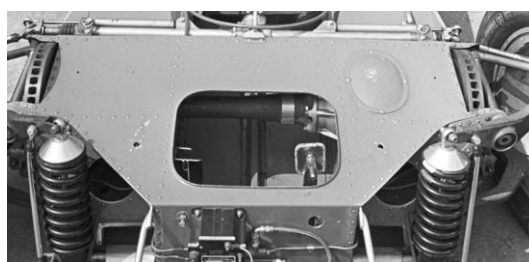
This shot shows the layout of 56/1, with an oblong vent reinforced by a narrow band of aluminium.

For the purposes of comparison, the same features on 56/3 and 56/4 are provided below.



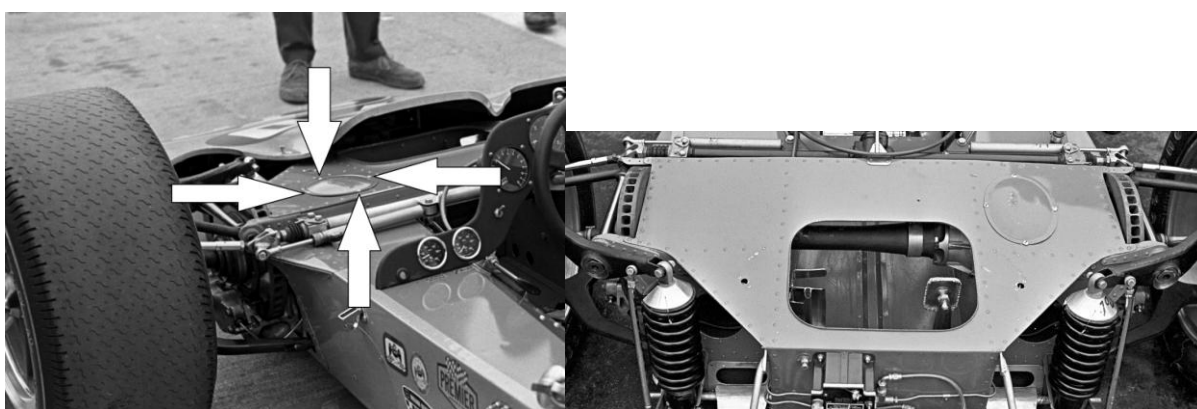
These photos show the front right-hand panel of the footbox on 56/3 (left) and 56/4 (right) each with their own distinctive design, different from one another.

Additionally, the Lotus 56s had a single removable cover over the ZF final drive on the top surface of the footbox.



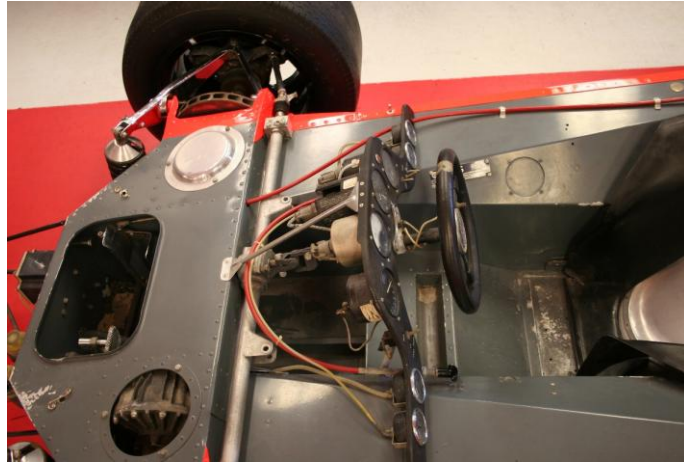
The oval final drive cover on the top surface of the footbox of 56/1.

For the purposes of comparison, the same features are shown for 56/3 and 56/4.



Oval four-bolt fixings for the final drive covers of 56/3 (left) and 56/4 (right).

Subsequently, when in STP ownership, 56/3 gained two circular access hatches, although it is unclear exactly when the second hatch would have been fitted. It is possible that this could have been specified by STP when the car was rebuilt following Hill's Indy 68 crash.



This photo shows the unusual plain aluminium cover on the non-standard access hatch on the right-hand side of the footbox. Note dash panel brace fittings – three rivets where it meets the dash panel and two rivets where it is attached to the front footbox.

The 1969 STP normally-aspirated four-wheel drive cars featured this 'double round access hatch' layout: the most plausible explanation is that there may have been plans at one stage to run 56/3 in 1969 with a normally aspirated engine (indeed, it is possible that it did run in this form), hence it was converted to the same layout.

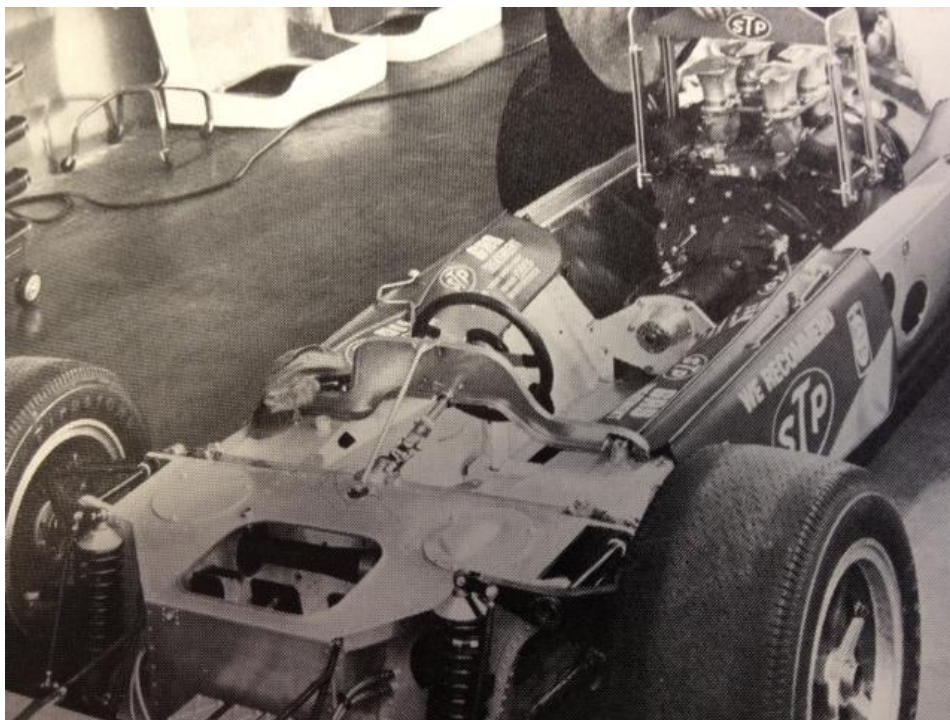


Photo of one of the two 1969 STP four-wheel-drive cars being prepared for the season, showing the two round three-bolt fixing access hatch panels on the top surface of the front footbox. The footbox also appears to be plain aluminium rather than stove-enamelled grey as per Team Lotus practice. A crucial additional difference is the mounting point for the dash panel brace where it is attached to the top surface of the front footbox: the STP-built/modified cars had a single bolt fitting, whereas Team Lotus-built cars had a triangular fitting secured by three rivets.



Photo by Pat Brollier

Storm-tossed on a sea of change, invaded by foreign mercenaries, iced with suspicious conservatism, Indianapolis is still the one to win. Preparations take months and then there are two tests: Phoenix (above) and Hanford. Funny, after all the cammer-Fords, turbo-Fords and turbo-Offies, George Follmer (No. 62) won in Arizona with 319 Bartz Chevy on 20 percent.

Photos by Lester Nehamkin



ANDY GRANATELLI

The Chairman of the Board, Andy Granatelli (left), ended two years of turbine controversy by opting for a 318 Plymouth pushrod V-8. Developed by Chrysler engineer Pete Hutchinson (above, on right) and Keith Black, Hilborn-injected engine would be campaigned in much reinforced Lotuses of '68. Covering all bases, STP has eight cars total, including such luminaries as Andretti, Rindt and Hill. Machinery ranges all the power spectrum except Novi, much to Chrysler's chagrin.

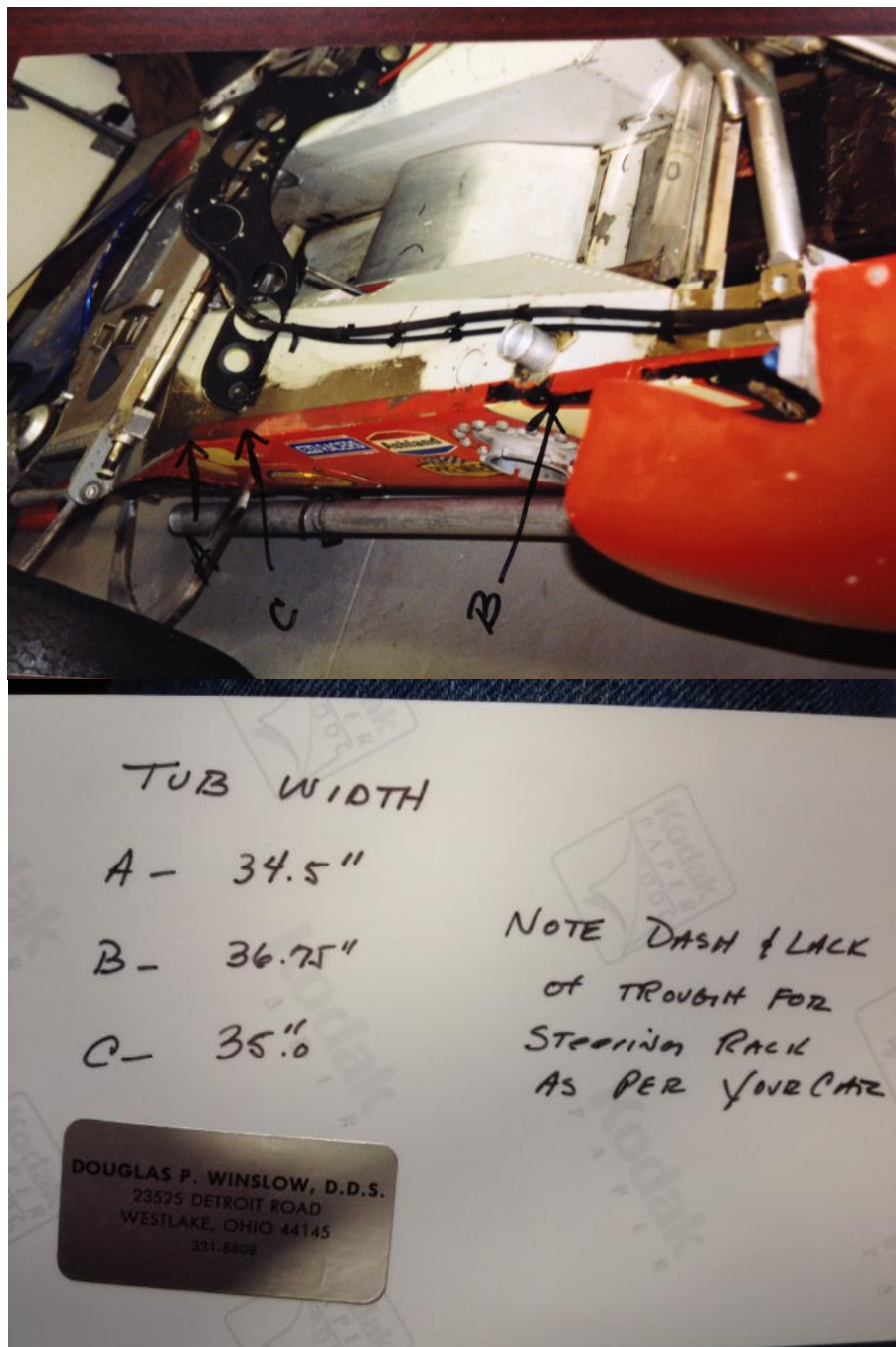
94 MOTOR TREND / JUNE 1969

A page from the Motor Trend 1969 Indy preview. The photo bottom right, again appears to show a car with two round access hatches fitted in to the top of the footbox but which otherwise looks very much like a Type 56 chassis, including the hole for the gauge on the inner cockpit panel, and the distinctive oval-shaped rear bulkhead. The gauge hole would tend to suggest that this is 56/4 having undergone some work at STP, including perhaps the fitting of new side panels. Note, the cars are described as 'reinforced Lotuses of '68'.

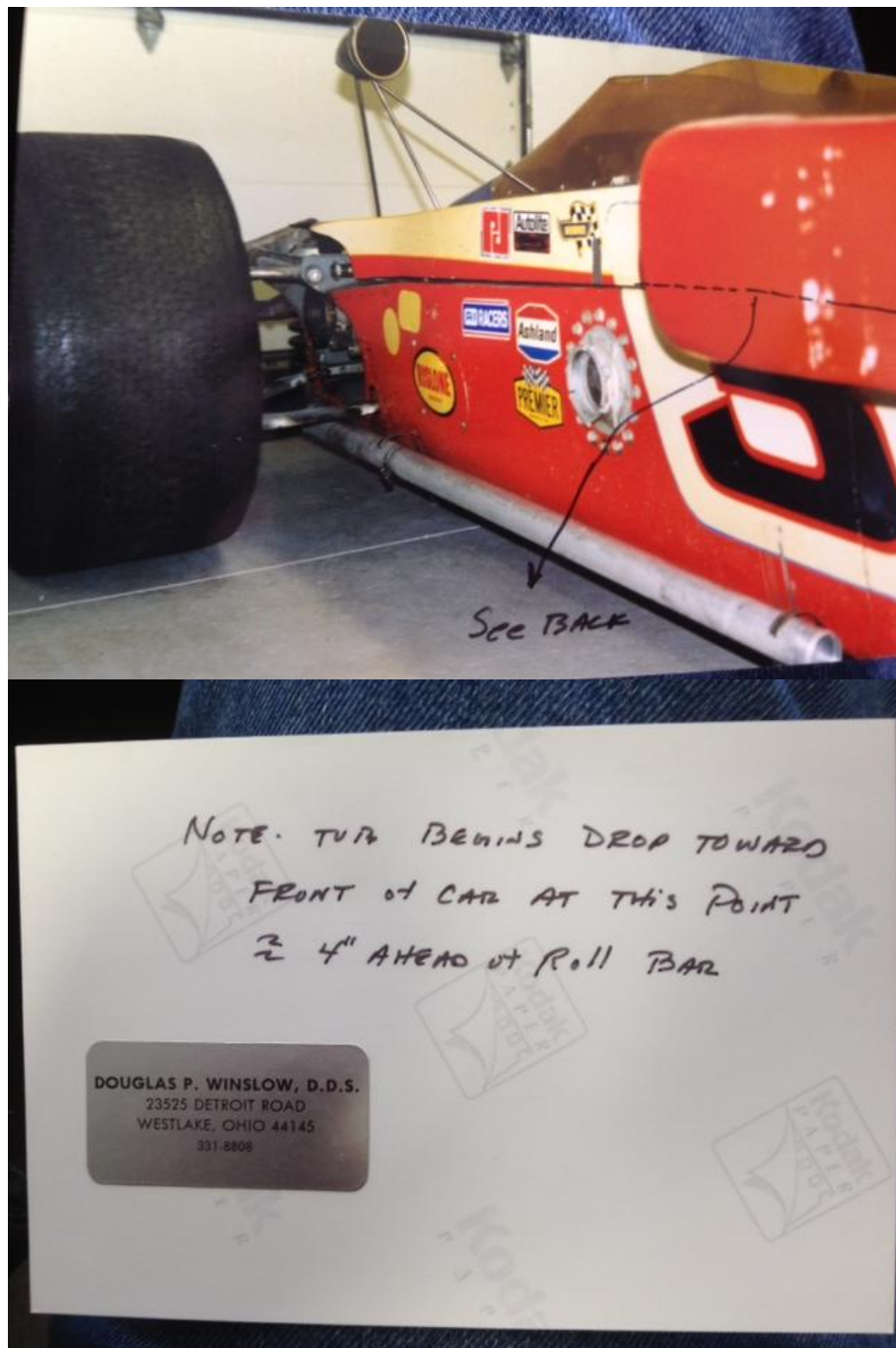
The Linsmeyer chassis characteristics

There are a number of characteristics which in my opinion conclusively prove that the chassis bought by Bruce Linsmeyer from Doug Winslow, which Winslow acquired from the Parnelli Jones auction, is 56/1.

This section uses a combination of photos taken by Winslow when he received the car and by Linsmeyer, before, during and after the restoration/rebuilding process which he undertook in order to produce a running turbine-powered car.



The first photo sent by Winslow to Linsmeyer identifying the chassis as being that of a Lotus 56.



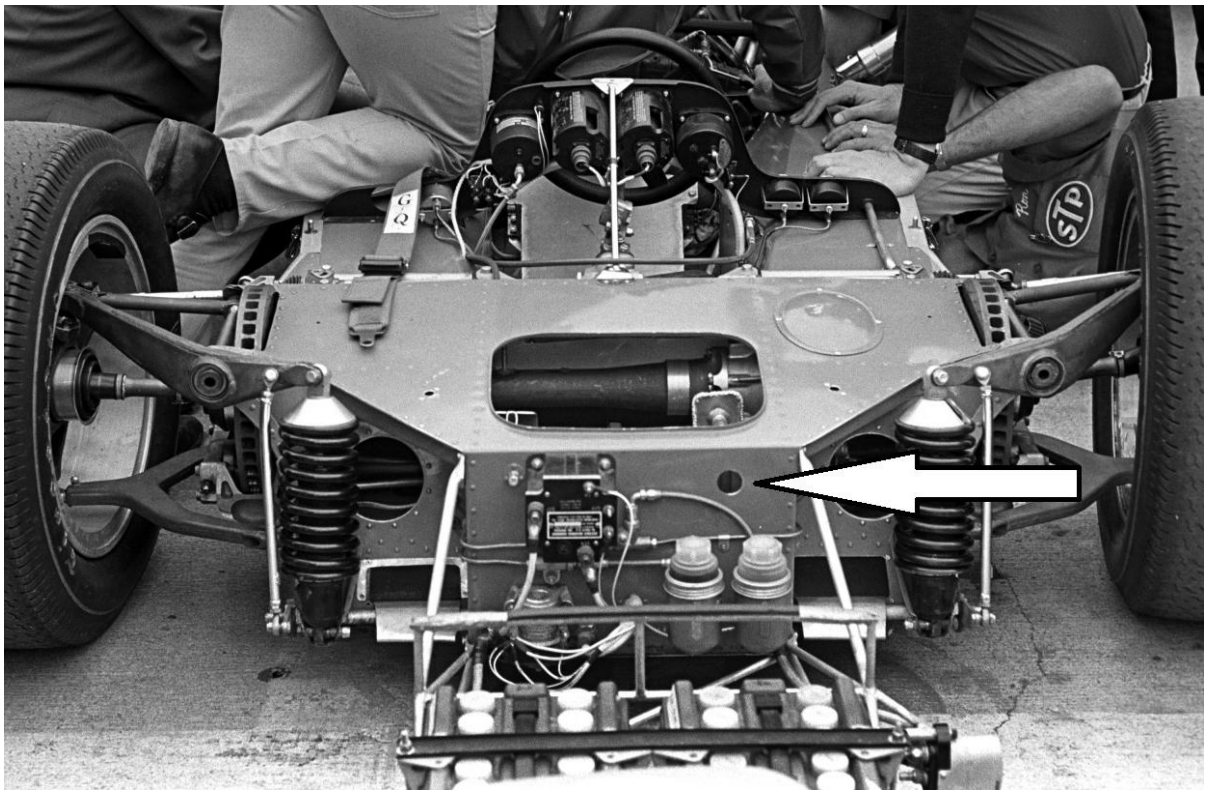
Second photo sent by Winslow to Linsmeyer identifying the chassis as that of a Lotus 56.

These photos are significant for a number of reasons. The tub bears a strong resemblance to a Lotus 56, with its forward-sloping chassis sides, as well as the positioning of the dry-break fuel couplings and access hatches for the tank bays.

However, it has clearly been modified at some stage, as there are also features which are not consistent with the car as raced at Indy in 1968.



This photo shows the front footbox area of the car when it was received by Linsmeyer, although it is considerably different to photos of 56/1 taken at the 1968 Indy 500 (see below). Visible are the triangular fitments for the dash fixtures – three rivets where it fits to the dash plate and two where it fits to the footbox.

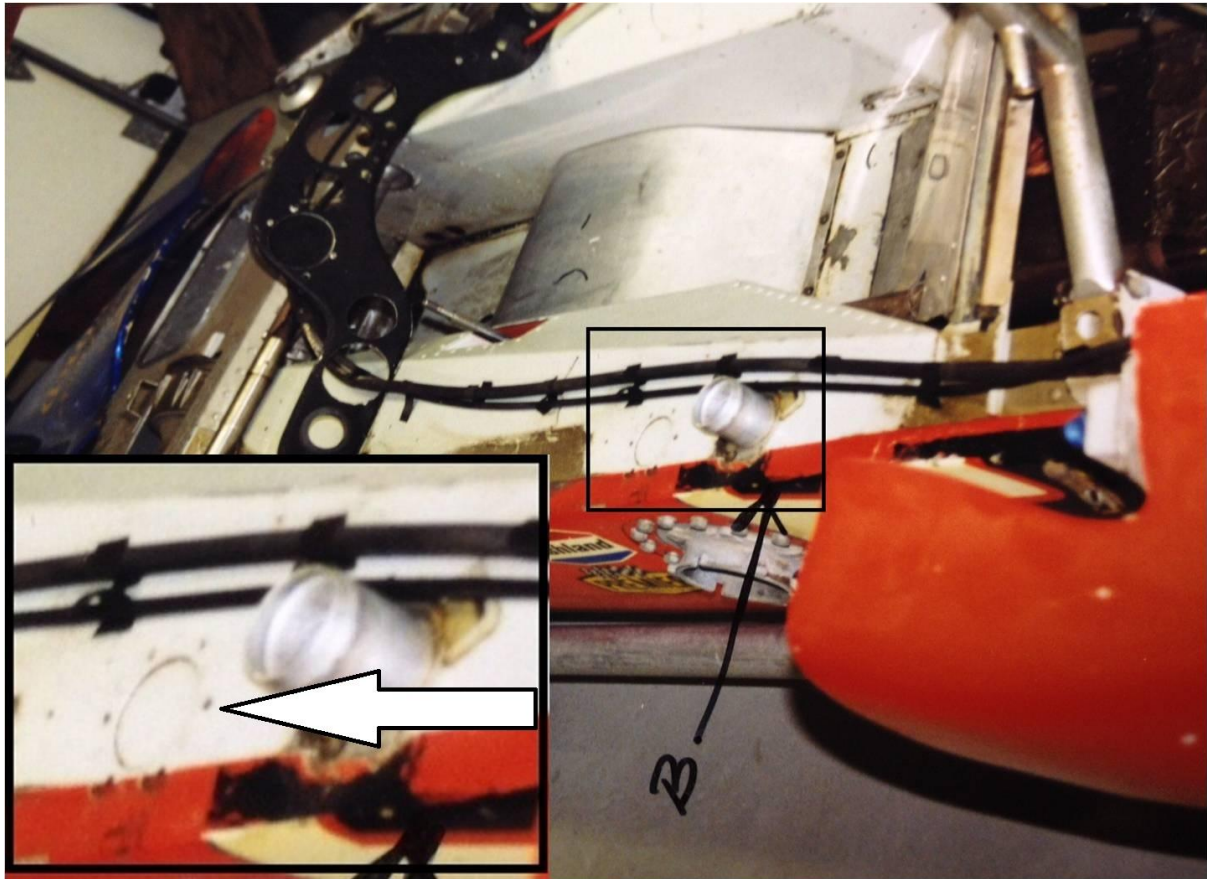


56/1 at the Indy 500 in 1968

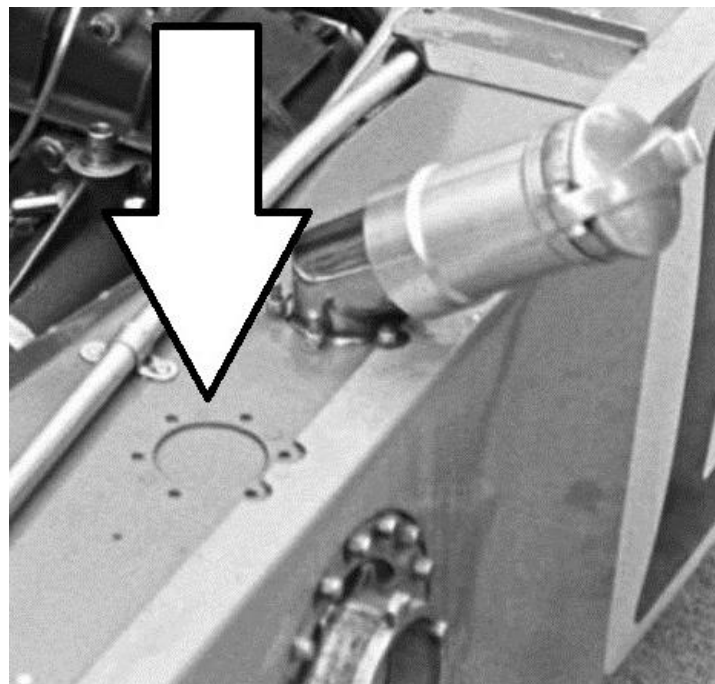
Differences apparent compared to 1968 are the positioning of the large cut-out in the top surface of the footbox, the rivet patterns on the top surface, the lack of a hole in the front face of the footbox, the absence of the reinforcing plate shown in the Indy 200 photos, the position of the two forward-facing holes just inside the front dampers, the size and position of the cooling slots below those holes. The dash plate is also different in terms of the number of holes for instruments.

The most likely explanation of these differences are that the footbox area was replaced or rebuilt during the construction of the 1969 4wd turbo Ford chassis, either as a result of damage sustained in the crash at Riverside or for design/engineering reasons.

However, in my view, these differences are outweighed by several significant features present on the Linsmeyer car which are clearly visible in 1968 shots of 56/1.



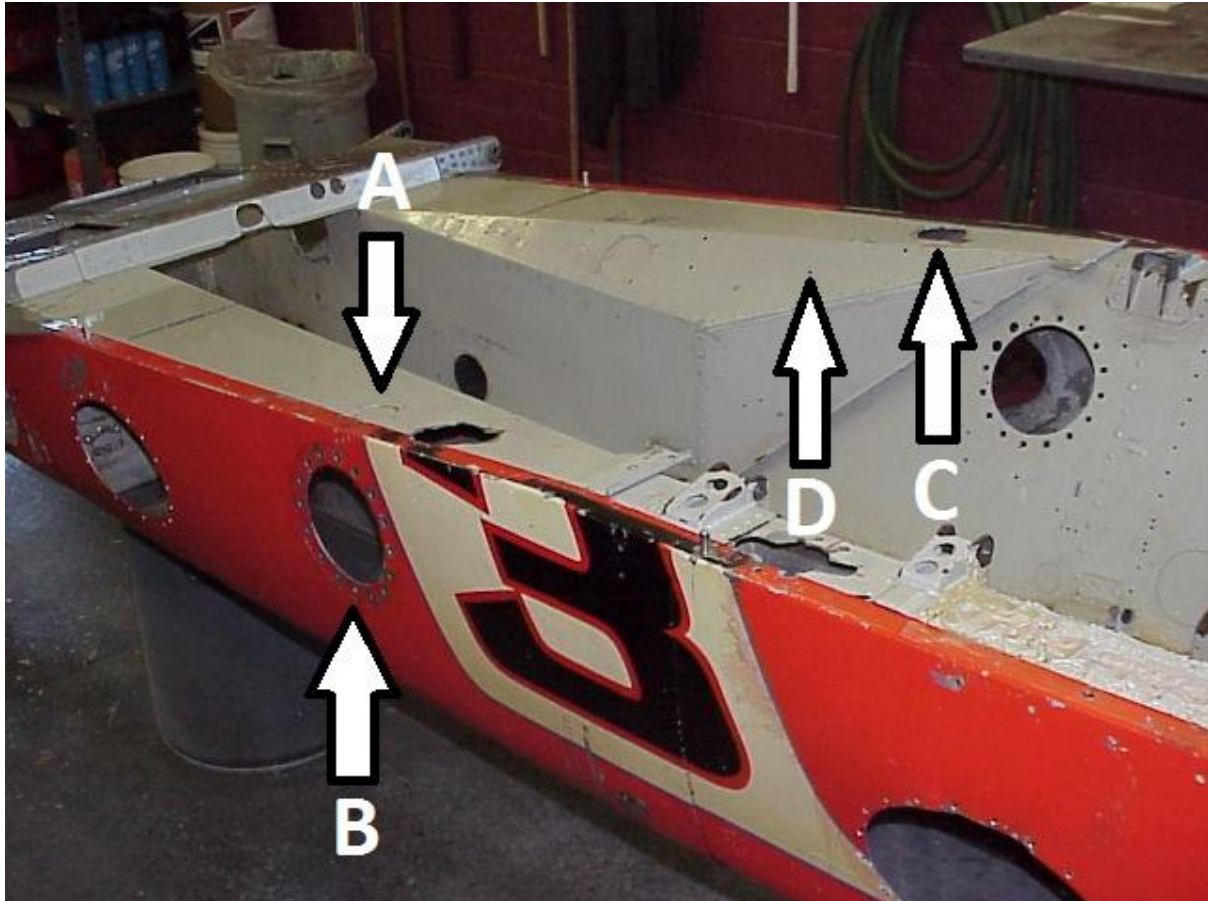
Boxed area shows the blanked-off hole (shown in enlarged box) with six smaller rivet holes just to the left of the fuel filler unique to the chassis of 56/1.



The same location on 56/1 at Indy in 1968.

The most significant of these is the small blanked-off hole with six rivet holes. This is a feature which is unique to the chassis of 56/1 and clearly shown in the 68 Indy shots.

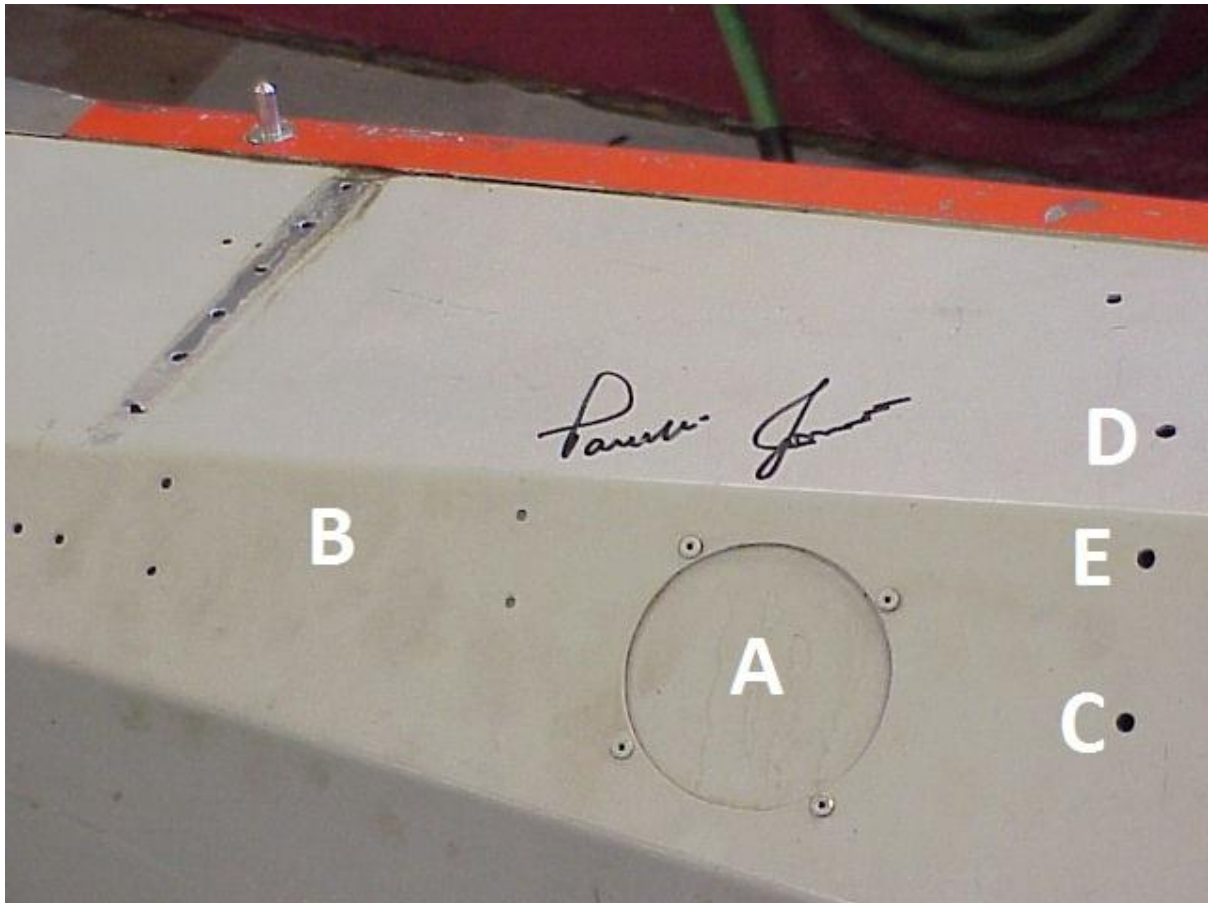
In my opinion, this feature alone is sufficient to conclusively identify the chassis owned by Linsmeyer as Joe Leonard's 1968 Indy 500 chassis Lotus 56/1. It is so distinctive and it is also extremely unlikely that anyone making a copy of a Type 56 chassis would bother to incorporate such a feature in the chassis for no reason, since it does not appear to have served any engineering purpose, other than perhaps being the original location for the filler on the prototype chassis, which was moved at some point and became the default location for it on all subsequent cars.



Another view of the Linsmeyer chassis after it had been stripped of components.

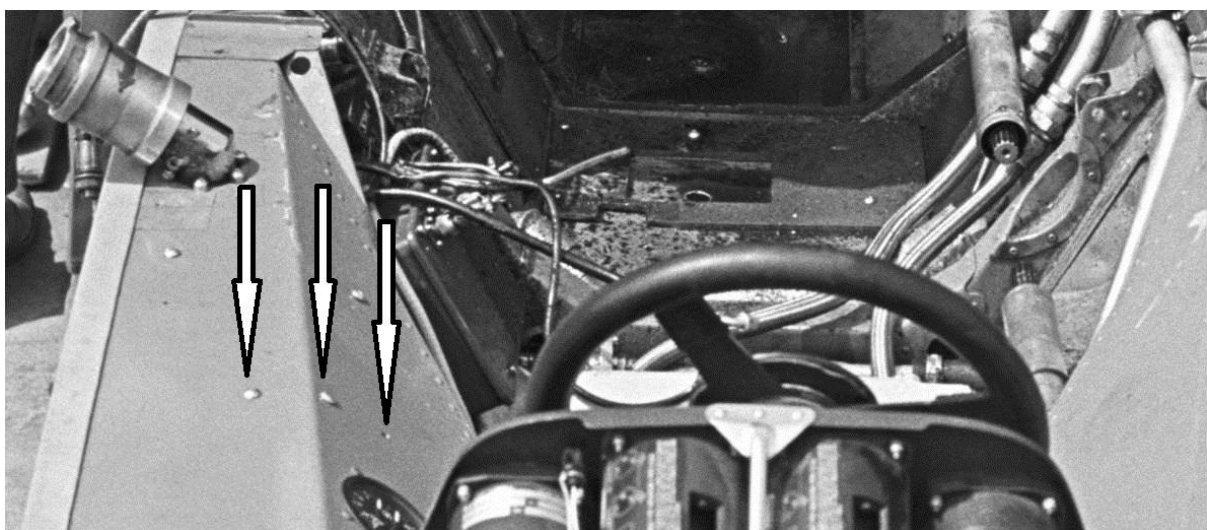
The key features from this photo are as follows:

- The blanked-off hole with six smaller holes is again visible in this shot (A).
- The hole for the dry-break fuel coupling (B) has 16 rivet holes, as per a Type 56.
- The hole for the right-hand side fuel filler (C) is a unique characteristic of chassis 56/1.
- The hole in the inner cockpit panel (D) is clearly visible in the shot from Indy 1968.
- The holes in the side-skins for the fuel tank access hatches are in the correct location for the design.



A close-up of the right-hand side inner cockpit panel, with distinctive holes.

This photo shows the blanked-off hole for the gauge that was fitted in the inner cockpit panel of the three Lotus 56s that competed in the 1968 Indy 500 (A). To the left of it are four holes in the shape of a rectangle where the Team Lotus chassis plate would have been fitted (B). The rivet hole (C) to the right of the blanked-off hole for the gauge and holes D & E are visible in the photo below.



Holes C, D and E shown at Indy in 1968 on 56/1.

The blanked-off hole for the gauge which was fitted to the three Type 56s which ran at Indy in 1968 is clearly visible in the shot above. This is also still evident today on chassis 56/3 (see photo below, right) while it is also present on the Lotus 56B Formula 1 car (see photo below, left), which was derived from the Indy car, reportedly built up from the wrecked chassis of 56/2.



The blanked-off gauge hole in the tub of the 56B/1 Formula 1 turbine car (left). Interestingly, the absence of holes for a chassis plate (which was mounted on the opposite cockpit panel on this car) could suggest that it was not originally one of the original four '68 Indy cars but a newly-built chassis. 56/3 (right) still features the blanked-off hole today.

The holes to the left of the blanked-off gauge hole also point strongly to a Team Lotus chassis plate having once been fitted there. The position of these holes is exactly as per 56/1 and 56/3 in the period shots from 1968 and it is extremely unlikely that VPJ would have had a chassis plate of identical proportions and in the same place as the Lotus item.



Holes for dry-break fuel couplings and fuel tank access hatches are in the correct location for the Lotus 56.

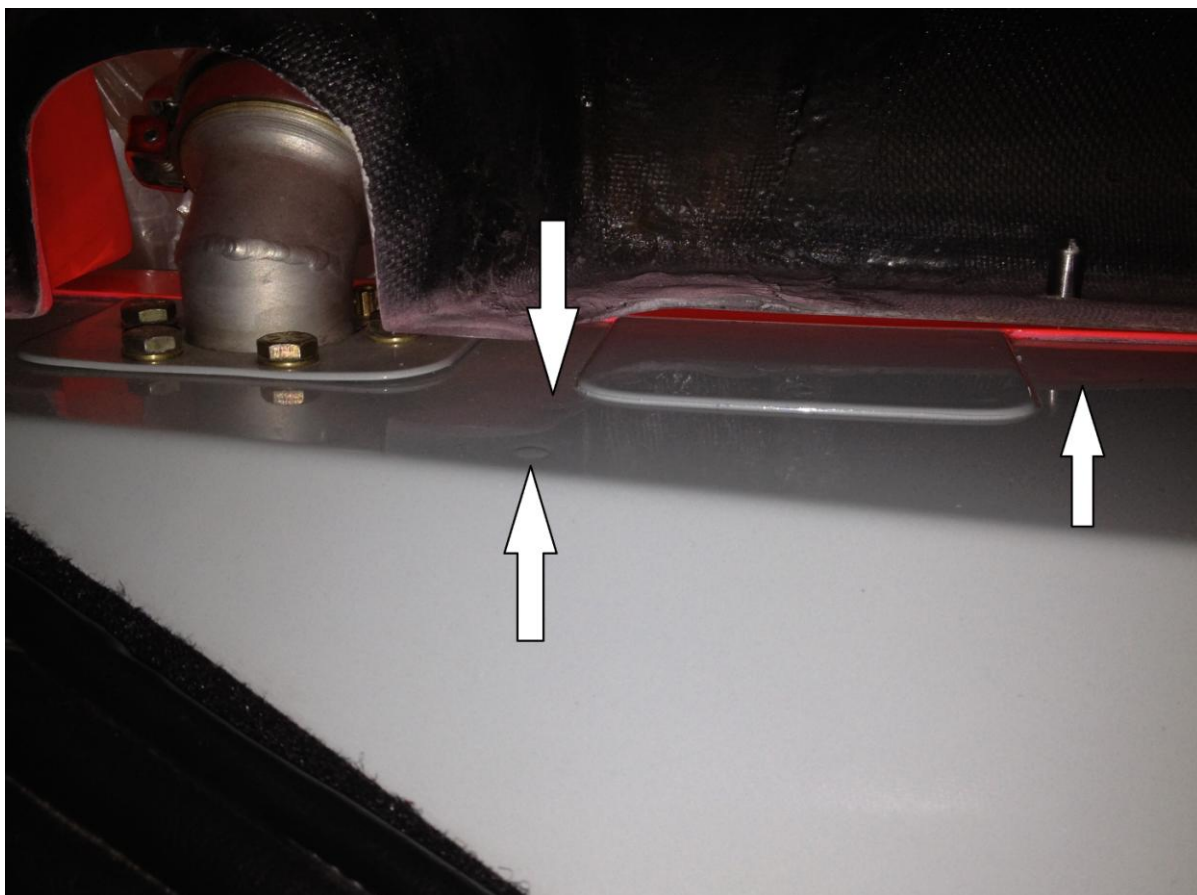
The holes for and positioning of the fuel tank bay access hatches in the left-hand side skins are also in the correct location for a Lotus 56, each being in line horizontally with the other and in the correct fore and aft locations.

It is also apparent that, at some point in the build process for the '69 Parnelli 4wd car, the original oval rear bulkhead of the Type 56 chassis was abandoned and a flat-topped rear bulkhead fitted instead. This is likely to be for packaging reasons, either for the turbo Ford or towards the end of the year, when the car was fitted with the four-cam Ford.



This photo, taken during the restoration process, shows the right-hand side skins of the car with the correct four fuel tank access hatches.

Similarly, the holes in the right-hand side skins for the fuel tank bay access hatches are correct in number (four) and in the correct location and are all horizontally aligned with one another.



I believe this photo of the Linsmeyer car today just, faintly, shows the same holes (albeit filled in) arrowed in the photo below.

Although restoration has almost obliterated these features, it is just about possible to see the distinctive hole forwards of the blanked-off hole in the photo above which is also visible in the photo below, as well as the two holes for the bracket locating the pipe shown in the same photo.

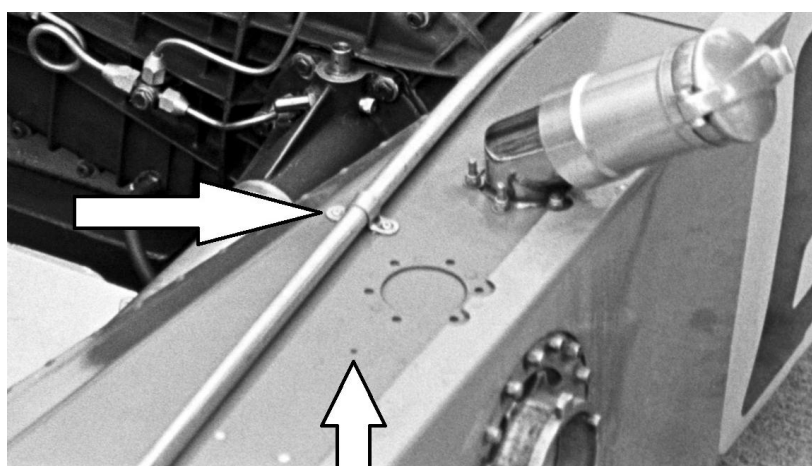
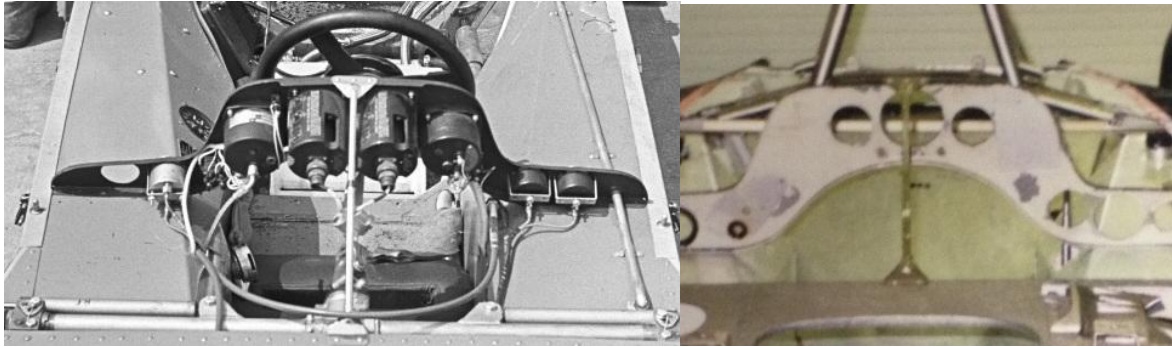


Photo of 56/1 taken at Indy in 1968 showing two more distinctive holes.

Finally, the triangular mountings for the dash plates on the Linsmeyer car are also consistent with a Team Lotus design, with the two-rivet fixing to the top surface of the footbox clearly visible, together with the three-rivet mounting on the dashboard.



Although the dash panel has been replaced, the distinctive Lotus dash brace was retained by the Vels Parnelli team when they rebuilt 56/1 into their 1969 4wd challenger.

Historical note

It should be noted that, during Bruce Linsmeyer's restoration of the tub of 56/1, some of these characteristics that enabled this identification have been covered up or tidied up for cosmetic reasons. For example, the small blanked-off hole with six rivet holes around it has been covered by a plate, while some rivet holes have been filled in. However, these features are still retained under the covers and could be revealed again should any new owner wish to do so.

Linsmeyer, also had some extra length let in to the tub to accommodate his height. This involved the addition of several new panels to extend the footbox, which are visible in the photo below.



This photo shows the work required to let in extra panels to the front footbox of 56/1 during restoration to accommodate Bruce Linsmeyer's height.

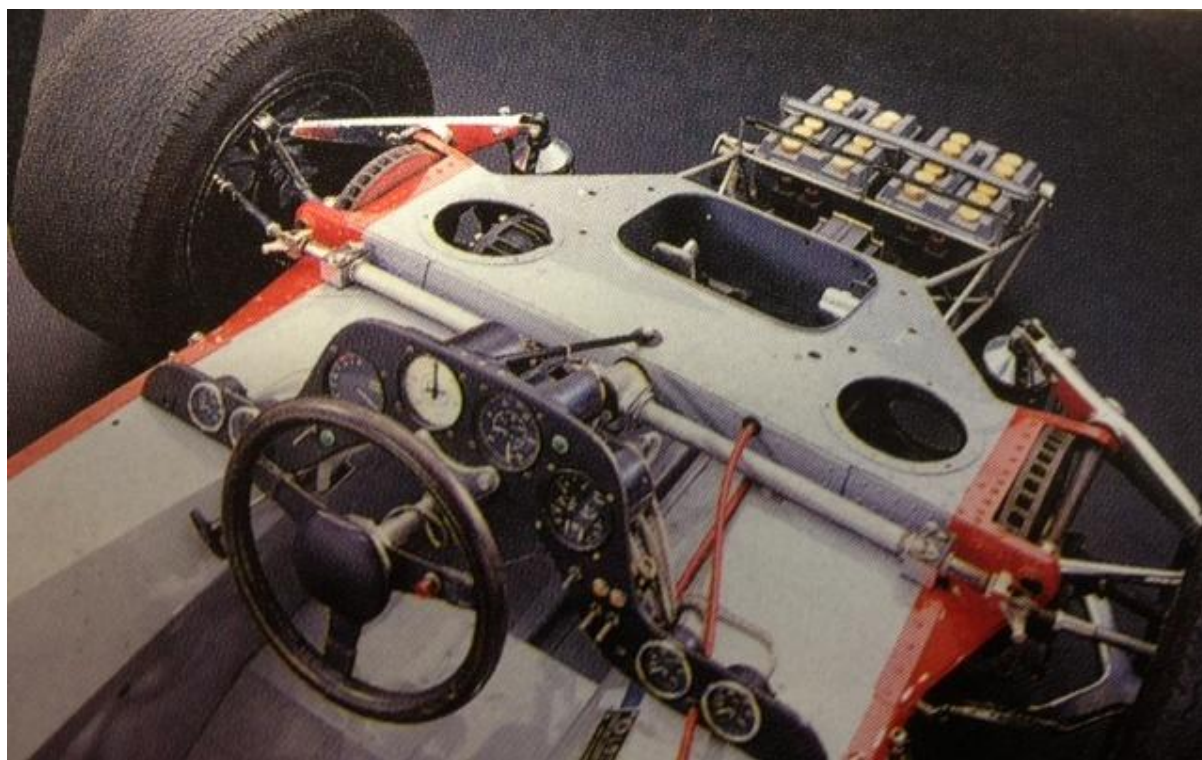
Additionally, it would appear that, although when the conversion of the chassis of 56/1 to turbo-Ford power began, it still incorporated the distinctive rear Lotus bulkhead (as shown in the photo from Motor Trend on page 33), this was at some point removed or adapted to accommodate the different engine unit, since by the time the chassis reached Linsmeyer, it had a flat rear bulkhead, as per the photo on page 63.

Finally, the car has been fitted with an Allison turbine, rather than the original Pratt & Whitney unit, therefore is not 100% consistent with the original design in this respect either.

The Parnelli Jones chassis characteristics

Having highlighted the identifying characteristics of the four original Lotus Type 56 cars built in 1968, I must address the car until recently owned by Parnelli Jones and demonstrated by him at the 2011 Goodwood Festival of Speed. This is now owned by the Indianapolis Speedway Museum.

Finding detailed photographs of this chassis has proved extremely difficult. However, from the limited number of shots, plus external photographs of the car, it is possible to highlight some significant differences to the original 1968 cars.



This photo, which appeared in the July 1996 edition of Racer magazine, shows circular access hatch holes in the top surface of the footbox and a single-bolt fixing for the dash brace.

The Jones/IMS chassis features two access hatches, both circular (rather than the single oval hatch on the '68 Indy Type 56s) on the top surface of the front footbox. Interestingly, the only other car to have this feature is 56/3, which could lend weight to the theory that these two cars were the ones campaigned by the STP team in 1969 USAC racing, or at least that the STP team had planned for the possibility of using 56/3 in 1969. If you refer to the photo on page 55 from Motor Trend's 1969 Indy 500 preview, it shows a car with two circular access hatches.

The Jones/IMS chassis also features a single bolt fixing where the dashboard brace meets the top surface of the front footbox and it also meets the footbox further forward than on the original Type 56 design. This feature is clearly visible on the STP car in the bottom photo on page 54.

Also missing from this shot is any evidence (such as bracketry etc) of the steering damper that was fitted to all three cars at the '68 Indy 500. This can be seen on photos of all three cars on page 53. For the purposes of comparison, the photo of 56/3 at the top of page 54 shows the brackets, even

though the damper is no longer in place. Interestingly, the photo at the bottom of page 54 also seems to show the brackets for the damper, indeed these seem to be dark rather than plain aluminium, which would suggest that it shows 56/4 being revised for the 1969 season. Unfortunately, I have been unable to gain access to detailed shots of the car I believe to be 56/4, in the IMS museum, to confirm whether it still retains this feature.



Photo of the cockpit of the chassis demonstrated by Parnelli Jones at the 2012 Goodwood Festival of Speed.

Crucially, there is also no sign of a blanked-off hole where the gauge for the 1968 Type 56s was mounted in the inner cockpit surface.

This should be visible around two inches to the right of the chassis plate but is not. All three of the Type 56s raced at Indy in 1968 had this feature and this is clearly visible in period photos.

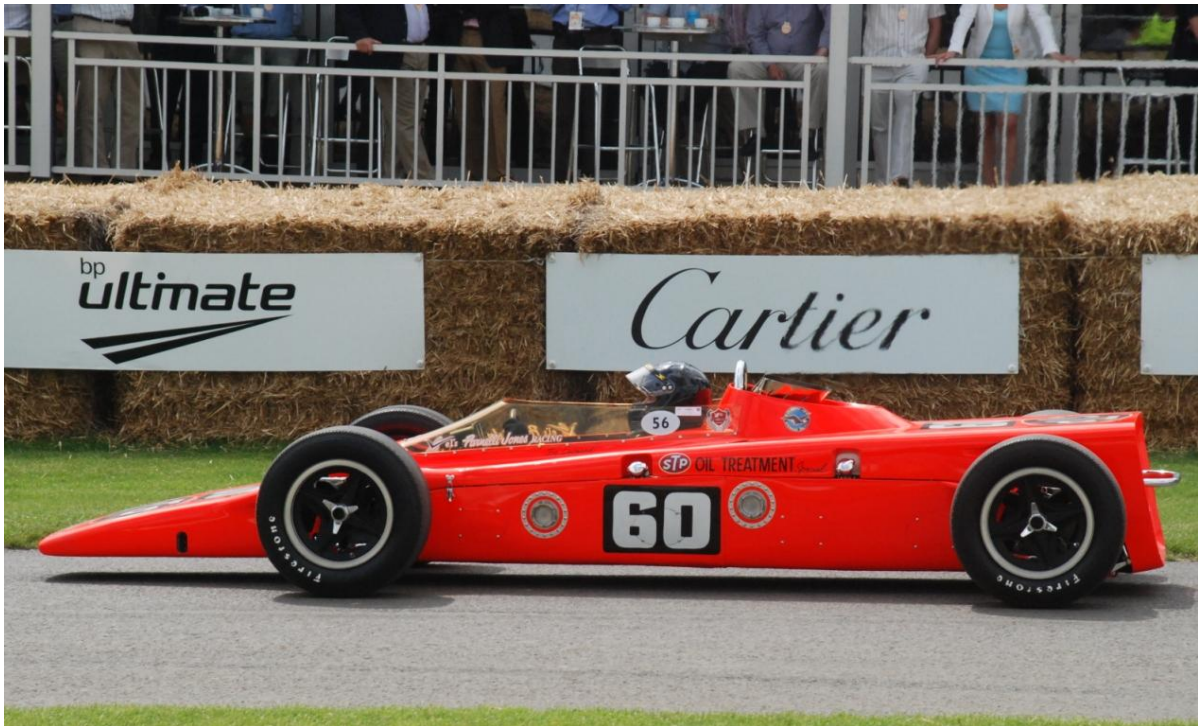


Photo taken at 2011 Goodwood Festival of Speed, showing STP 1969-style 18 rivet hole dry-break fuel couplings not horizontally aligned with one another and four (not two as per Type 56 design) fuel tank access hatches.

The Jones/IMS chassis also features the side skins as raced by the STP team in 1969, with 18 rivet hole dry-break fuel couplings which are not aligned with one another horizontally and four fuel tank access hatches in the left-hand side skin, not two as with the original Type 56 design.

It should be noted that Vince Granatelli acknowledged that the car had an incorrect left-hand side skin but explained this by saying that the side skin was too badly damaged in the December 1968 Riverside crash to be repaired and that he had to use one of the side-skins they had made up for the 1969 cars when he rebuilt it in 1977.



Another photo taken of the car demonstrated by Parnelli Jones at the 2012 Goodwood Festival of Speed, showing the right-hand side.

The right hand side of the tub appears to be correct, in that it features four fuel tank access hatches. However, crucially what is missing is the right-hand side fuel filler which was unique to chassis 56/1 and was visible on that car throughout the season when it competed in 1968.

Because of the lack of availability of further detailed shots in the public domain, that is all that can be concluded about the Jones/IMS chassis. What is clear from this evidence is that there are a number of characteristics which are not consistent with an original Type 56 Lotus Indy car.

Given the characteristics of the chassis, I would have to say that, in my opinion, it is most likely to be an STP-built copy of a Lotus 56 chassis as raced by the Granatelli's STP team with Plymouth and Offy power in the 1969 USAC Championship.

One final question remains: Why did Parnelli Jones sell-on the original 56/1 chassis at his 1998 auction? I think the only logical explanations are either that, when he went to have the car restored in 1977/78, he and/or Vince Granatelli realised that, having hacked about the original to build the 1969 4wd turbo-Ford engined, car, it would be too much work to undo all that conversion work and that it was easier to start again with a new chassis altogether, or at least a copy and Granatelli was able to provide such a copy, as he had the Plymouth-engined Lotus 56 copy that had been built for the 1969 season.

The advantage for Jones was that, at the time, he still owned the original, so the continuous history was preserved. There is no doubt that Parnelli Jones and now the IMS owns an entity that lays claim to the continuous history of Lotus 56/1 – it is just that the chassis currently in the car is not the original one. In my opinion, the original chassis is the one now in the ownership of Bruce Linsmeyer.

Conclusion

In this document, I hope I have demonstrated that there are a number of different features of the car presently owned by Bruce Linsmeyer which together (some of them even individually), I believe help to prove that this is the chassis (albeit now in slightly modified form) raced in the 1968 Indy 500 by Joe Leonard.

Taken on their own, some pieces of evidence might not be convincing enough but when combined, they amount to a convincing case to support the argument that the chassis is that of a 1968 Lotus Type 56 turbine and that it is, indeed, Type 56 chassis 56/1.

Appendix

People contacted during research

Andy Granatelli, owner of the STP team

Vince Granatelli Junior, 1968 STP chief mechanic

Ron Falk, STP crew member

Jim Dilamarter, Vels Parnelli Jones crew chief

Clive Chapman, managing director, Classic Team Lotus

Dick Scammell, Team Lotus Indy section chief mechanic

Fred Cowley, Pratt & Whitney project manager, 68 Indy 500

Hywel 'Hughie' Absalom, Team Lotus Indy section mechanic

Bill Cowe, Team Lotus Indy section mechanic

Arthur Birchall, Team Lotus Indy section mechanic

Jim Pickles, Team Lotus Indy section mechanic

Doug Garner, Team Lotus Indy section mechanic

Car dimensions

Car dimensions (as reported in Autosport, April 5th 1968)

Length: 14 ft 2 ins

Wheelbase: 8 ft 6 ins

Height: 2 ft 8 ins

Width: 6 ft 3 ins