

A Twin Cam Elite

Doug Fraser

The Lotus Elite has held a special appeal for me since the early 60s when I first saw the mind-bending “Beware of the Lotus-Eaters” advertisement. I managed to briefly own an Elite in 1971 but, being in my 20s and with two young children, an Elite was not the most practical vehicle and I sold it. However, I never lost interest in the Elite and seized the opportunity to purchase another when I saw an intriguing ad in *Hemmings Motor News* last November.

This particular Elite captured my attention for several reasons: it was a project of about the right magnitude, it appeared to be complete, and it had a Lotus Twin Cam engine in it. In the advertisement, the seller was suggesting that this could be the “missing” pre-Lazenby, twin cam Elite. However, I figured that 50 years was probably enough time for the previous owners to figure this out and, if it really was this car, they would have known it and would be saying so.

Although this possibility was intriguing, I would have bought the car regardless, as I liked the idea of the Twin Cam and felt comfortable with the Ford-based engines, having made my living building Formula Ford engines many years ago.

The engine number

The big mystery about #1559 was the engine number listed in the Warren King ledgers. #1559 was shown as having been delivered with engine number “31.” However, the Climax engine numbers were all in the 9,000 – 10,000 range and the twin cams at the time were in the low hundreds. So, it seemed that the number 31 must have been a mistake. Furthermore, the engine number of the twin cam installed in the car was LP326.

1554	9171	ELC 919	9/3/61	Elite Cars
1556		ELC 1060	22/2/62	Dutchess Auto Co.
1557	9175	ELC 914	2/11/61	Elite Cars
1558	9569	ELC 2012 EK 50066 EC 51774 EK 51027	5/12/61	W. L. ...
1559	31	RK 50346	19/12/63	R. T. ...
1560	9104	ELC 1222	1/1/62	P. M. ...
1532B	10813	ELC 1206	13.6.63	Span Inc.
1532C	10832	ELC 1219	24.7.63	Lotus Sales Int.

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Some research

Shortly after agreeing to buy the car, I spoke with Bill Hallandal, who owned #1559 in 1991. He bought it from Joe Charette, a friend of his, who had imported it from England in 1970. Bill said that the car had been a “factory test mule,” which was interesting, but didn’t explain the odd engine number.

I didn’t realize at the time just how interesting it would turn out to be.

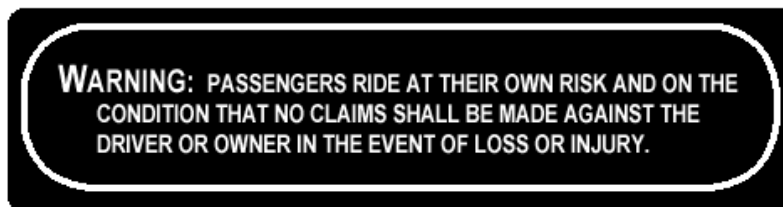
Delivery

On November 23, 2016, Lotus Elite #1559 arrived in Fairlee Vermont.

One of the first things I did after unloading it was to check the engine number. I could not see anything on the R/H engine mount where Ford blocks are usually stamped but, using a mirror, I could see the number “LP326” stamped in the back of the cylinder head.



As I continued to examine the car, other interesting anomalies began to emerge. The Lucas taillight assembly that I assumed had been absent-mindedly left by the shift lever was wired to an oil pressure switch on the engine and the thing that looked like an event plaque near the taillight contained this message:



The differential mount

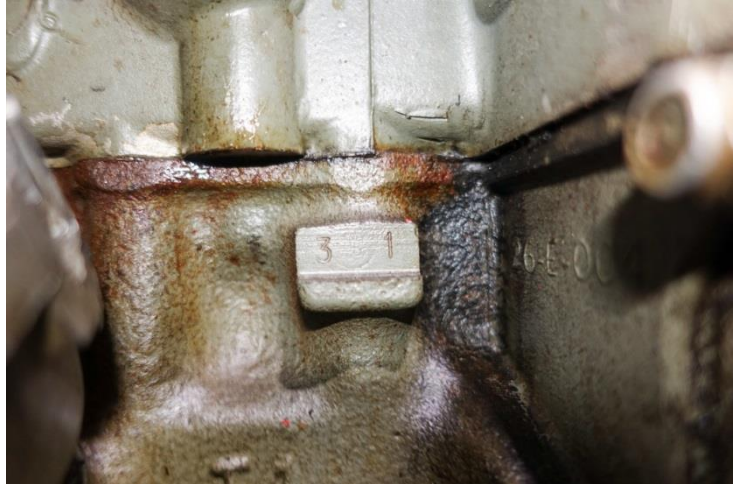
A big discovery came after moving #1559 into my workshop and jacking it up: the differential was mounted differently than any Elite I’d ever seen. It was in a steel sub-frame suspended in rubber.

The sellers never mentioned this, and I wondered if they’d noticed. More about the unique differential mounting shortly.

The Engine number

The big breakthrough came as I began to dismantle the engine compartment. After removing the Webers, I discovered the number “31” stamped into the side of the engine block!

Apparently, when the car left Cheshunt, being unable to discern any other number stamped into the engine block, they had recorded the ‘31’ as the engine number!



Company Car

The Warren King list shows that #1559's Chassis-Body Unit (CBU) was delivered to Cheshunt sometime before December 1961, however the car wasn't delivered to a buyer until December 1963. This raised the question: what was #1559 doing for two years at Cheshunt?

The last page of the Warren King ledger is said to be a list of remaining inventory requested by

9	FK		1372 F	ELC. 710, 711, 712 27/2/60
6	X CBU		1559 CC	
2	FK		1526	

Colin Chapman. In that list, #1559 is shown with the designation “CC.” Based on this and the other two chassis numbers with the “CC” designation, it most likely stands for “Company Car.”

Was #1559 an experimental engineering vehicle? Could it have been the first twin cam?

Return of the Elite

The best-known description of the first twin cam Elite is in the article *Return of the Elite* written by Nick Brittan for the January 1968 issue of *CAR* magazine.

The article is primarily about the twin cam conversion done by David Lazenby in 1967. However, Brittan also mentions that there had been a previous attempt at a twin cam installation in an Elite.

In his article, Brittan quotes Colin Chapman as having said: “Get an Elite kit delivered to Team Lotus after lunch. Get a twin cam from production and deliver that to Team Lotus. They’ll open



the bonnet, lower it in, cobble together whatever needs cobbling - then we can see what we're doing." Brittan goes on to say, "Five days later the first twin cam Elite was on the road and running fast."

In Chris Harvey's book, *Lotus: The Elite, Elan, Europa*, Harvey says that the first twin cam Elite was built "in a matter of hours."

Could #1559 be that car?

A subtle but significant clue that the twin cam installation in #1559 was rushed are the three 5/16" x 4" UNC bolts shown in the two photos.

The oil pump was moved 2 3/4" out from the block to avoid interference with the steering column, and it required longer bolts. If you look carefully, you can see that these bolts were fabricated by welding shorter bolts together! ...or perhaps they shortened bolts that were too long. Either way, they didn't (or couldn't) take the time to order the correct length bolts.

They must have been in some kind of hurry!



The differential mount

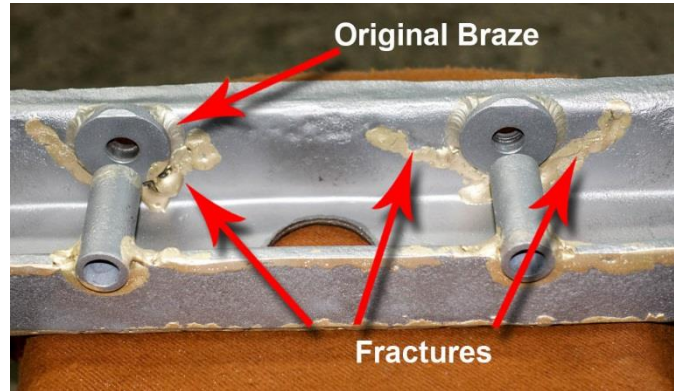
Miles Wilkins, in his classic book *Lotus Twin Cam Engine*, says:

"Other interesting work carried out at Cheshunt included a one-off redesign of the Elite rear suspension based on a Jaguar rubber system (this was done by Brian Luff in 1962) ..."



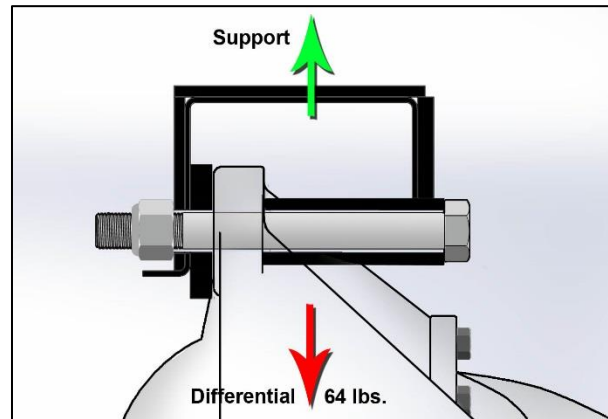
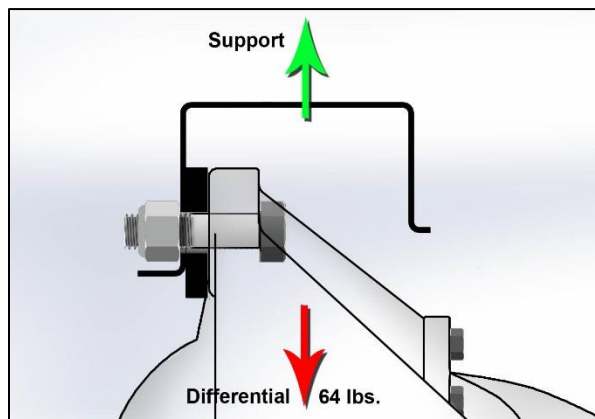
This could explain the unusual differential mounting in #1559.

But there was a problem. The mount appeared to have been fabricated from 1/4" steel. After looking at the photos, Nick Adams, the Lotus 23 registrar for the Historic Lotus Register and an expert in early Lotus cars, noted that there was *no way* Team Lotus would ever have used 1/4" steel plate to construct *anything*.



The answer emerged after cleaning the grease, rust, and paint off the mount. It was originally fabricated from 16 GA sheet metal, and it had failed! It was subsequently beaten back into shape (you can still see the hammer marks) and reinforced with 1/8" steel which made it look like it was made of 1/4" plate.

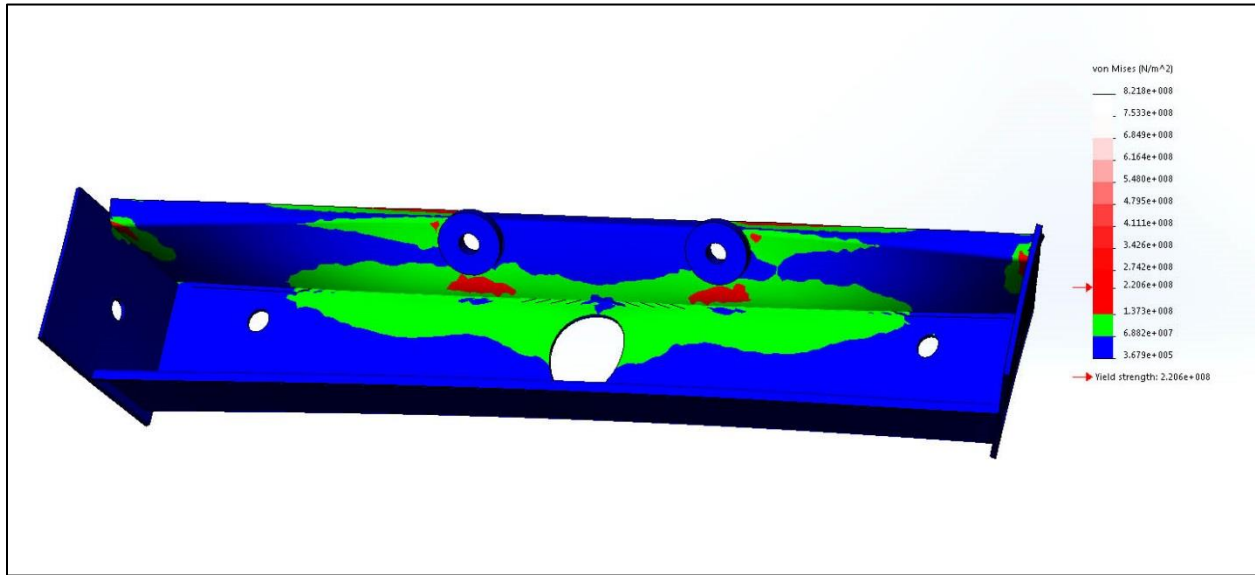
The failure and repairs can be seen in the photo. The thick washers were part of the original fabrication and were brazed to the sheet metal with considerable skill (and probably a gas-fluxer). The repairs and reinforcing were cruder and done with a different brazing alloy which is a darker color. Thick metal plates were brazed to the front, top, and back surfaces of the original structure, and the two tubular supports were added at the front.



Callen Votzke, the Design Fellow at the Thayer School of Engineering at Dartmouth College, performed an analysis of the original mounting structure and concluded that it would have lasted only a few miles – if it went that far.

Had Colin added too much lightness?

This could also explain the liability disclaimer plaque. To paraphrase it: “You can’t ride shotgun in this car unless you promise not to sue us when the rear end falls out.”



The image shows the areas of maximum stress in red and exaggerates the distortion in the structure due to the forces imparted by the differential.

The Transmission

The transmission fitted in #1559 is a Ford 2000e “ultra-close ratio” (2.51, 1.64, 1.23, 1:1) with alloy bellhousing and tail shaft housing. These were fitted in the early Elans but originated in the Cortina Rally Program.

What’s with the monstrous idiot light?

The answer might be the oil pump drive. Instead of using one long shaft to drive the rotor when they spaced the oil pump out from the block, they’d machined a tab and slot into the mating ends of the shaft



If I were driving a vehicle with this wimpy appendage driving the oil pump, I’d want a huge warning light too.

New Engine and Transmission

Most articles that describe the experiments with the differential mounting and the twin cam engine say that the car was not successful and was ultimately dismantled. It is also possible that the engine fitted in the early experiments was a 1498cc, which is another reason it might have been retired.

Consequently, we assume that #1559 remained at Cheshunt for some period of time without a drivetrain.

It is known that after Elite production ended, Chapman wanted to liquidate all the remaining cars that could be made salable, so it would have been logical that #1559 was ultimately fitted with a new drive train and sold.

The extensive CBU modifications required for the Ford transmission mount would have made it impractical to put a Climax engine back in the car, so the shortest route to selling the car would have been to re-install a Ford drive train.

The #1559 chronology supports this. The engine block for the twin cam was cast on May 9, 1963 and the casting date on the main transmission case is June 5, 1963. The cylinder head is stamped April 30, 1963, and the car left Cheshunt on December 19, 1963. I don't know how long it takes to go from raw castings to a running vehicle, but it's clear that the engine and the transmission in #1559 were installed shortly before it was sold.

In his last book on the Elite, *The Lotus Elite*, Dennis Ortenburger talks about the twin cam cars, saying: "There is some evidence that one or two others were built at the works. One car may have pre-dated the Lazenby effort as an experiment to see if a twin-cam-engined Elite might generate some cash flow in advance of the Lotus Cortina project."

Elite #1559 left Cheshunt with twin cam engine number "31" three and a half years before David Lazenby did the twin cam conversion on Elite #2001, so everything points to #1559 as having been that car.

Missing History

There is still a frustrating gap in the history of #1559. According to King's list, the car was delivered to "R. J. Fuller" on December 9, 1963. It was imported into the U.S. by Joe Charette in 1971.

Where it was between leaving the factory and being exported is unknown. The only clues are "R. J. Fuller" and the 1964 Northhamptonshire registration number ABD 789B. Unfortunately, efforts at locating R. J. Fuller have not been successful, and the UK archives don't have any record of the registration number.

With thanks to Nick Adams, Jim Goodman, Kirk Lockwood, Mike Ostrov and Callen Votzke for their valuable input.

We invite you to visit our Elite blog at www.lotuar.com