# THE INSIDE TRACK

In the twenty plus years I've been reading internet posts and articles in Standard-Triumph club magazines from around the world, I occasionally come across a comment from a Triumph enthusiast owner attesting to the fact that the commission (aka chassis or VIN) number his car is numerically a few hundred numbers off the start or finish of his car's model production run. Sadly, these people all fall into the


*LEFT - The very last Spitfire down the line.* *RIGHT - The same car at the Gaydon Museum.*

same trap, because they assume all cars were built in commission number sequence.

The fact is, they weren't – and I'll come to the reasons why later in this article.

Not so long ago, there was an article in a Sunday newspaper here in the UK, claiming the last Spitfire down the line at Canley had gone to France – and was still there.

Moreover, the owner – pictured alongside his splendid example in whatever shade of green his car was painted, left the reporter in no doubt that regardless of what anyone else had to say on the matter, his car WAS the last Spitfire 'down the line.'

But in the British Car Museum at Gaydon in England, there's a rather smart Spitfire Hardtop in Inca Yellow, with only 1800 odd miles on the clock and also with some convincing provenance. That's the last one 'off the line' as well, and there's abundant photographic evidence, together with eye-witness reports, that this car really was the true 'last one off the line.'

So what about the Frenchman? Surely he has some evidence as well?

Of course he has!

His car's provenance is behind a trimboard in one of the doors. On it, is a chinagraph statement that proclaims *"the last Spitfire down the line."*

I've got a sneaky feeling there's a date too – though I wouldn't like to put money on that statement..

So, on the face of things, either the Frenchman is wrong – or Gaydon is wrong.

After all, you can't have two cars both being the last to come 'off the line,' can you?

Well, as a matter of fact, you can – because the key question here is that no-one has ever seemed to ask, is this.

"Which line?"

Let's face it, both cars probably went down the same line**s** – but at different times and at this point, it's appropriate to define 'the lines' – and in order of use.

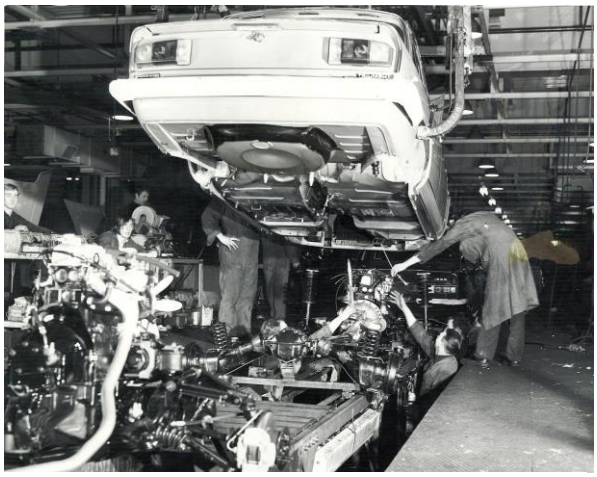
The reality is that all our cars actually went down several lines, and not just one. To further muddy an already cloudy picture, they regularly did not proceed through the factory in commission number sequence as so many people seem to think. Depending on the model under review, one or two of those lines weren't even at the Canley plant!

The **Body Line** was where all the unpainted tinware in the forms of scuttle, body panels, bonnet, boot lid etc were welded and bolted together. The body was then dipped in a fluid to prevent early corrosion and then painted in a white undercoat that was tolerably resistant to early atmospheric corrosion. These body plants were at Swindon (near Oxford), Tile Hill (Coventry), Speke (Liverpool) and even for very early Heralds, at Hall Green in Birmingham. At that point, the finished 'body in white' was moved to wherever the factory was located that would complete the build process.

The **Paint Line** was (fairly obviously) the paint shop at Canley, Speke, Solihull or Cowley and on finally coming out of paint, the raw but now painted car body was allowed to cool down for twenty four hours after spending a long time in the high bake paint oven.

Focusing now on Canley, the **Trim Line** (sometimes known as *Pre-Mount*) was the next port-of-call where most of the bits and pieces that went into the body itself were fitted. Things like some interior trim, the instrument panel, wiring looms, electrical assemblies, hydraulics, pedal boxes, windscreens and some body glass. This is where the French Spitfire received its identity of 'the last one down the line' because that is where the body glass and door trim board was fitted.

On reaching the end of this line, one part of the assembly process was over and the car was hoisted upstairs into the body storage area of the main Assembly Hall – better known to everyone as 'The Rocket Range', loaded onto an electrically powered wheeled 'dolly' and parked on a criss-cross of tracks resembling one face of a Rubik Cube. This huge 'marshalling' point was where the production computer would move the 'dolly' left or right, backwards or forwards, according to which particular body already loaded on the 'dolly' was required 'downstairs' at some imminent juncture.



*'Hello Final Finish' – a Triumph 2000 saloon comes down through the hole in the floor to meet its running gear.*

But here the body stayed, until another 'dolly' on a conveyor cradling the engine, gearbox, rear axle and transmission shuddered into view about thirty feet below. At that point the fully trimmed body upstairs, marshalled itself automatically towards a big hole in the floor, through which it was lowered on a double-inverted 'U' frame, to finally mate up with its mechanical assemblies – downstairs, on the main production line.

The **Mount** and **Final Finish Line** (for this was two lines in one) was where the various operations took place to bolt everything of the two 'halves' together, so that a finished car drove itself off the end of the line, into the water test – and out of the factory to a vehicle transit park.

At that point – and ONLY that point – was it deemed as built and finished.

A date stamp would be put on the production 'tally' card and it is this date that today appears from a microfilmed original on your Heritage Certificate. Only then was the car deemed to be "off the line" and this term refers only to **Final Finish**. And it was in the very early stages of Final Finish that the Gaydon car was photographed and it was definitely, irrefutably, absolutely the LAST Spitfire to go off it. At the time, several people are recorded as having looked back into the distance to see if another one lurked – and it didn't.

So what about the Frenchman?'

Although I can't prove it – and I doubt anyone can at this late stage, I'd wager his green Spitfire really was the LAST one down the **Trim Line** and for no other reason that this is where the door trimboard - that covered up the hastily scribbled chinagraph testament, would have been written.

And all this in its own way proves another point.

*Focus the headlights. One of the very last operations on Final Finish before the car went through the Water Test and on to the Rolling Road.*

Contrary to popular opinion, cars were not built in the same colour progress they followed while in the paint shop, they certainly weren't built in model groups and they definitely weren't built strictly in Commission number sequence! I visited the main assembly track on many occasions to check on the build progress of a particular car and a check of the commission number was the only way to identify the car I was seeking. Within any given model, the commission number order of a Spitfire, GT6 or whatever model in my focus, was never consistent. The numerical build order was all over the place with later numbered cars often well ahead of those with earlier numbers and the differences between them could be considerable. A typical snapshot of production on any day of the week on Final Finish would reveal a line of disparate models and colours slowly creeping along the same conveyor.

There were so many variables, so many interlinks, so many caveats that contributed to this mish-mash and the untangling this mass of numerical spaghetti really does require a computer.

That's exactly what Standard-Triumph had - and while some have been known to expostulate that it wasn't the first computer used for mass production and at the cutting edge of using computer technology for vehicle manufacture, it was pretty damned close to it!

If it wasn't, it begs the question why so many visitors from other companies, such as Volkswagen, Daimler-Benz, Renault, General Motors and Ford in Detroit, as well as some inscrutable Eastern Oriental gentlemen from somewhere called Toyota and Honda, dropped in on their travels.

There were many more from other companies who came as well.

So, let's try to make a start and serialise the process and take some of the more important procedures - and reasons why - into account.

We start with the premise that a car is obviously the sum of a very large number of its parts – and not all of them are made by Standard-Triumph. In fact, a very large number were made by a plethora of different and highly specialised suppliers.

The objective of making almost anything for profit is to manufacture it in the largest possible number of units, because by so doing, you gain the economies of scale and can wind down the unit cost of each component because those same components are being purchased in volume.

The first danger is to assume all the components are the same - or nearly the same.

Again, they're not!

In ultra-simplistic terms, the three TR6's in line astern halfway down Final Finish may look the same to the casual observer.


*The front of the Engineering Division and Drawing office at Fletch North. Part of the immediate pre-war development of the Aero One factory site.*

They're all red, they all have wire wheels. Two have Michelin XAS tyres, one has Goodyears, Two have overdrive, one does not. Of the overdrive cars, one is going to the States, the other for the UK. Two are right hand steer, one is left. Two have Lucas injection and one has twin Strombergs. The American car also has white flasher lenses at the front and red at the rear. Inspection of the production decals in the engine bays will also reveal differences and not just in the wording. Whole labels are different and heaven help the employee who, in a moment of inattention, puts the wrong label on the wrong car! A little later - and almost at the end of the line, one of these cars will be fitted with a hardtop and no softtop, while the other two will have soft tops, one in white with reflective stripes, the other in Black without stripes because the destination market does not require them as part of the specification.

Those items – and the relatively few customer determined features additional to the territorial specs laid down by various national homologation bodies, will have been co-ordinated several weeks earlier by the computer in a department called Production Control. Even more curiously, the various components that make up these cars were probably several tens of miles away from the factory some 48 hours earlier – and for one very good reason.

They weren't wanted 48 hours earlier.

Other components for other cars that were on the track at that time *were* needed – and if they failed to appear, the car was (if possible) built without them! However, you can't deliver an incomplete car to a customer and this means that at a later stage, someone had to contort themselves to fit the missing part(s) to the car when they were eventually delivered. This would mean the vehicle was left in a small section at the end of Final Finish, known the 'the hospital' – or it was moved outside to an adjacent location and to the windscreen would be a large red sticker proclaiming **SHORTAGES**. Underneath the sticker would be list of the components that were missing

If a factory is producing 300 or more cars a day, that's 300 (or more) times unknown thousands of individual components – and in anyone's book, that's an awful lot of kit to have to pick up and put down – especially when you don't need it and you don't have somewhere convenient to put it. Space at Standard-Triumph was always at a premium because the whole factory site including all the buildings, offices, machine shops, car parks, roads and playing fields was a tad under just one hundred acres!

Today, there is a buzz-term for this supply process – J.I.T.I.M. or 'Just In Time Inventory Management'. Supermarket chains are quite good at it because all their check-out bar-code scanners are continuously dumping data into the CBOS – Customer Based Ordering System – and J.I.T.I.M. is a pre-requisite skill and system for anything produced and sold in large numbers.

In those now far-off days, J.I.T.I.M. was acknowledged and practised and the policy was refined to a point that Standard-Triumph's bought-in componentry rarely exceeded the number of parts needed for perhaps two or exceptionally three days of production. Many will acknowledge this was probably sailing the ship a little too close

to the wind but in the event of a supplier strike, the factory could easily exhaust its stock of hyper critical parts for that supplier within 24 hours.

What's the difference between a part and a hyper-critical part? The lack of a hyper-critical part was little more than a £ symbol with a varying number of figures behind it – representing the large number of people who, for a very long time, were all busily engaged in fitting the part that should have been there, but wasn't - and the loss of sales revenue because the cars could not be despatched and invoiced.

*Triumph 'Big Six' saloon bodies freshly delivered from Pressed Steel in Oxford await their turn to go into paint.*

Production Control was arguably the only department at Standard-Triumph with far-reaching 'clout.'

Production Control called the shots and without the computer continually measuring and monitoring the in-flow of components for different assembly processes in different places, at different times and in a way that all of them arrived at the right place at the right time – the result would have been unmitigated chaos.

A study of the list of the principal departments – while not exhaustive – adequately highlights the fact that Production Control had a very long arm into many different departments, for different reasons and at different times.

But how did it work?

From a vehicle production standpoint, the car was reduced to the sum of its parts. In other words, 'Leo' (the production control computer) was programmed with the exact number of components – by production part number that went into any given model as a 'base' model – and right down to the last nut, bolt and washer! However, each individual market had territory specific variations such as lights, speedometer, steering position, engine types, final drives, wiring looms, spring rates, shock absorber pressures et al; all these variations were activated by 'triggers' within the computer, so that as soon as the key punch operator keyed in a specific market such as UK or USA or Germany or wherever, 'Leo' programmed that car to have parts in the 'base' car model – if they did not vary – but also UK / USA / Germany / wherever specific items. As wildcard examples, all cars for Sweden had to have zinc plated hardware fasteners and not cadmium plated alternatives. Equally, cars for Italy required a separate orange warning light to inform the driver the lighting circuits were energised. Also, cars for Italy required a completely different wiring loom because it was a mandatory requirement specified by Italian Construction and Use regulations to have a minimum of twelve electrical fuses. Certainly a novelty for several models which had no fuses at all!

Exactly the same thing happened for all other markets. For France, it was – among other things, yellow dip right headlights, laminated windscreen with left hand steering, kilo speedo and an instruction book in French. As an aside, the UK was just as daft and the Post Office never changed its specifications for years on small vans. The rear doors had to have a swinging bar with a padlock on it AND an ordinary Yale-type front doorlock, as found on most houses, as additional security! The fact that the vehicle was already fitted with a satisfactory combined handle and doorlock was irrelevant.

Going even further, The London Carriage Office specification for London taxis (the infamous Black Cab) was even more draconian and resulted in a vehicle that was

very different in build detail to the FX4 taxi that could ply for hire in any other UK town or city. Long after London had said goodbye to horse-drawn cabs, if you looked inside the boot (trunk) of a London taxi, you'd find a large type of coat-hook screwed to the back of the rear seat backrest panel. This hook wasn't for the convenience of driver or passenger having somewhere to hang a coat, but simply somewhere to hang a large net of hay for the horse – that obviously wasn't there.

It took *years* for the London Carriage Office to update their specifications – and when it did, among many other things, it actually included the approval for the vehicle to be fitted with an AM/FM radio for driver convenience. Prior to that approval being granted, a radio was illegal – even though a radio for communicating with base to find another fare was perfectly acceptable!

Sometimes, the law really is an ass!

*A 2000 Estate car nears the end of Final Finish*

Anyway, back to Standard-Triumph.

As each new order from the Home or Export sales departments were keyed in, 'Leo' was building up an immediate inventory of every single component each car would need when it came to be built and it was at that point that the cars eventual commission number was allocated. But it's also here that another aspect many have not appreciated came into play. Standard-Triumph had twelve overseas assembly plants that built cars from CKD (completely knocked down) and SKD (semi knocked down) kits. Each of those assembly plants had their own one or two digit identifier as the commission number prefix that was in the same numerical commission number series. Taking a TR4A as an example, you could see:

CTC 12345 DL (UK market but to be built in England)
CTC 12346 LDL (US market but to be built in England)
1 CTC 12347 DL 'O' (Germany but to be built in Belgium)
CTC 12348 LDL 'O' (US market)
1 CTC 12349 LDL (France but to be built in Belgium)
2 CTC 12350 DL (Malta but to be built in Malta)
4 CTC 12351 DL 'O' (New Zealand to be built in New Zealand)
CTC 12352 DL 'O' (UK market but to be built in England)

So, while the numbering itself was sequential, it did NOT require the car to be built in numerical sequence. The commission number was allocated long before the car even existed and was only determined because of the order to create a car came into Production Control. All this data was transmitted to the Purchase Department for orders to be placed on outside suppliers and at very regular intervals – usually twice daily. Not only did the orders detail the number of individual items needed, but the timing of when they were to be delivered. The delivery deadline was inflexible. Certainly, the factory held small buffer stocks of certain parts, but by no means all of them – so if there was a supplier strike or raw materials shortage which affected delivery to Canley, the problem tended to go exponential and the ripples across the pond became ever more serious.

So what magic piece of paper set the ball rolling?

It was called a P.I.D. – Production Indent Docket and if my memory doesn't fail me too much, it went like this:

Date: 16th April 1965
From Dept: **EHD** (Export Home Delivery)
Car model: **TR4A**
Completion type: **BU** (Built up meaning to be built in Coventry)
Order No: **4567**
Type: **LMX** (Left hand steer, miles speedo, export)
Market: **USA**
Importer: **Genser-Forman Inc** via STNA, Leonia, NJ
Deadline: **IM WKNO0** (immediate, week number zero)
Body Colour: **SIG** (Signal Red)
Int. Trim: **BLA AM** (black ambla)
Line fits: **CWW, OD**, **BLATO** (chrome wire wheels, overdrive, black tonneau)

The emboldened digits were the 'triggers' to Production Control that once keyed in to 'Leo' defined the car down to the last nut and bolt.

**EHD** meant the car was top priority for UK delivery to the US client who would be in Europe on vacation and it was slotted into the first available build schedule, six weeks downline of today.

**TR4A** meant the car model, so this told 'Leo' to identify all the parts for a 'base' TR.

**4567** was the unique identity to the body, engine and commission numbers that were allocated as soon as the order was keyed.

**LMX** meant left hand steer, miles speedo, export market. Note - in 1965, you could specify any variation of steering, instrumentation and market, so these were further triggers to tell 'Leo' to definitely equip the car in this manner.

**USA** was the next trigger to change all the 'base' model components to those specified only for the US market

**IM** meant 'build it immediately and **WKNO 0** meant Week Number Zero – an internal instruction that I want it now-now.

**CWW** another trigger that reminded 'Leo' to order chrome wire wheels with octagonal knock-on spinners rather than the common eared spinners for the UK and other markets. It also put a threaded spike in the boot floor as the spare wheel anchor and not a plinth with a welded nut for a disc wheel.


*The former Home and Export Sales block at Aero One*

And that was it!

At any time of the day and especially at the end of it, Standard-Triumph knew exactly what components it would be needing at various points on the line on any given date between now and eight weeks hence - and virtually at any given time. It knew the line-loadings in terms of the model mix and this was by no means constant and for reasons we will see presently. Hopefully, you can now understand more easily that not only was the exercise highly detailed but it was also extremely volatile. Today, we talk glibly of computer errors and more often than not, a computer error is nothing more than an

operator error – in other words, the human factor. In many businesses, human error can be absorbed without too much or any disruption and as far as possible, 'Leo' could cope with this too – providing the lovely 'Jo' about whom I cannot write for fear of offending the 'snowflakes', the 'woke' brigade and the 'politically correct' among us.

But with all the programming in the world and fail-safe systems at every point along the way, forward schedules, specified times for delivery etc etc – what happens if there is enforced human intervention?

Something really helpful like a strike?

It didn't really matter whether the strike was at the factory making the cars, or the suppliers making the bits to go in them – the result was the same. Things very quickly had to stop, because if they didn't, the synchronisation of vehicle build to component supply – and vice-versa, fell out of bed big time. Anyone who clearly remembers the industrial relations strife of the post-war years up to about 1980, will also clearly recall typical early evening TV news programmes.

> *"Workers at several Coventry car factories were laid off today following an industrial dispute at one of the motor industry's major suppliers in Birmingham. A spokesman for Standard-Triumph* (probably Robin Penrice, Morley Faulkner or Simon Pearson) *commented that this lay-off has come at an unfortunate time. It is not known how long this dispute will last but the spokesman indicated it will probably be at least a week before production can be resumed. This means a loss of at least one thousand five hundred cars, worth approximately one point five million pounds."*

Those broadcasts were so typical of the times in which we lived that they were no longer interesting news. Another strike, more lay-offs, no income, no mortgage paid, iron rations for the children et al. But were only Standard-Triumph and the delinquent suppliers the only ones laid-off?

Quite often, No.

For every worker in a car factory, there were at least seven more working for suppliers – and they got laid-off as well – with similar penalties of a pecuniary nature.

'Never mind,' people would say, 'they'll make up the losses as soon as they get back to work, idle b******s."

Sure, they did make it up – but at what cost?

It was an unbelievably horrendous cost – and for one part of the business in particular. Exports.

Quite apart from the fact that cars for export markets represented exceptionally valuable foreign exchange earnings, there was a very nasty sting in the tail if the labour relations scene in anyone's factory went a bit pear-shaped.

To evaluate this 'phenomenon,' it's necessary to side-track for a while into something called L/C's and 'payment at sight against documents.'

For decades, perhaps even a century or two for all I know, the accepted form of payment for a large consignment of whatever is made in one country for use in another country, is met by a piece of paper called a Confirmed Irrevocable Letter of Credit. Once it's issued, it can't be easily cancelled (if at all) and it's effectively a payment guarantee issued by one bank (representing the car importer) to another (the car manufacturer) which basically says *"if the supplier of the goods presents this document to our branch in Coventry between the 8th March and the 8th of April 1969 with documents to prove that our order calling for 325 TR6's, 130 Spitfires and 75 GT6's covered by order number 1234 are shipped to Boston in the period to meet the dates shown above, we'll give you the money shown on this form."*

It's a copper-bottomed guarantee of payment – but there are snags.

You know you can get the money during the period of the stated dates, but to do so, the cars must have been built and despatched to Liverpool / Hull / Southampton /

London or wherever for a ship. Consequently, you have to find a ship leaving England for Boston between those dates. When you do find the ship, you book the cargo space. This is on a wing and a prayer because you've probably already had the order for these cars for a month. However, you won't have put those cars into production, or booked the shipping space, because you hadn't received bank advice that you'll be paid for them! But by and by, the banks get their acts together and the L/C is issued. Everything is hunky dory, you indent the cars for production and in such a way that ideally they'll come straight off the line, into the ship and off to the US of A. The weeks pass. Production Control has set things up in such a way that the cars will be built in time – and then there's a strike, or several strikes in rapid succession. Because the strikes have disrupted production, everything gets delayed and the last cars for order number 1234 don't get built until 6th April and the ship left Liverpool a week earlier. Mind you, they ***would*** have been on the ship if there hadn't been a strike, but……

Hmmmm.

To make matters worse, the L/C does not allow for a partial shipment and you're stuffed on that one as well – so what to do?

*TR6's moving slowly downwards off Final Finish towards the water test and the rolling road.*

You get the cars off site and take them down to a disused World War Two airfield near Evesham and leave them there until the bank has got back to the issuing bank and said *"kindly extend the L/C until ……."* That takes time and it also costs a great deal of money because banks never do anything for nothing. Then you discover there isn't sufficient space on the next ship for Boston in line with the revised terms of the re-issued L/C.

Deep breath and a quick glance in the mirror in the Gents Restroom to see if your hair really will be all-over grey by tomorrow.

Eventually – and of course, the cars get shipped.

But at what cost?

Several days lost production on cars for all markets, additional costs in labour for rectifying cars that got built with shortages of parts, paying non-unionised staff to sit at their desks doing not a lot. Furthermore, there are many hundreds of delayed cars still awaiting payment through a new Letter of Credit and sitting on a disused airfield for several weeks longer than was planned or foreseen. In today's money, those cars were worth at least £5 million and probably more – so the day to day crucially needed working capital on that original Letter of Credit and its subsequent cash-flow, were truly hammered.

As the more astute accountants are known to say*, "profit is mostly an opinion but cashflow is a fact!"*

But the Production Control computer had to take all this sort of mess into account. When work could resume, everything – but everything, had to be recalculated, re-timed and re-scheduled – until the next time the human factor raised its ugly head.

In those days, Standard-Triumph, like all the other motor companies had a massive dependency on exports to many markets – but the potential volatility of that dependency was unbelievable.

It's now time to have a look at how Production Control handled things when Joe and Josie Public had bought their car and discovered after driving it for a few thousand miles, that one or two things had gone wrong when they shouldn't have.

Even after a lifetime in this business, I'm still not too sure where the cut-over point is situated in the determination that a given level of warranty failure is acceptable - and how far it has to go, before it becomes *un*acceptable.

Without doubt and even today, warranty claims analysis is tracked with bloodhound thoroughness by Service and Engineering Divisions - and it has to be for a number of different and fairly obvious reasons. The Work Study people are also active in continuously monitoring manufacturing and assembly processes to satisfy themselves, as far as possible, that the job is being done properly. I think it's fair to say that the mass-production of almost anything, has to be a compromise between the highest level of quality and the lowest level of costs in making your widget. As unit output increases, unit costs will fall but the corollary is that unit defects, by increasing the volume of finished units, tends to increase. Plotting the intersect of those two lines of decreasing cost and increasing defects can be something of a black art. It can also become an all-consuming headache of mammoth proportions when the bean-counters are bearing heavily down, watching things like a hawk and forever complaining that the costs are too high.

But back to Joe and Josie, our valued customers.

Their car is one of several thousand other vehicles that has the same or a similar complaint. The problem is further compounded when this level of failure is entirely unforeseen and, to make matters worse, no-one can understand why it's occurring or what is causing the failure. There's no reason why it should occur. It didn't happen on the prototypes and there's no evidence of inferior design, poor raw material quality or poor workmanship in the assembly process. Prototypes would be driven to a state of almost total destruction to uncover flaws – and none could be found, anywhere. The cars would then go on sale and be bought by little old ladies who drove at 30mph – and faults started to manifest themselves in bewildering array!

At times like this, the load on Engineering and Service to find the cause of the fault, implement a rectification and carry it out is horrendous. For as long as the fault remains unsolved, Production has no alternative but to continue building cars with one or more known but as yet unsolved problems. All this impacts adversely on the dealers, the Press get to hear of it and a bad reputation is a sure-fire and very adjacent result. Mk 1 Stags quickly earned this undeserved disdain and by the time the cooling and cylinder head distortion problems were finally resolved with the Mk 2, and the delinquent buyers in Purchasing who caused the problems were kicked out, it was getting very difficult to encourage a buyer to part with his money for a Stag of any type or colour in any market where the car was on sale.

An understandable dilemma but so tragic for such a delightful car.

Propshaft vibration on Heralds, Spitfires, GT6 and Vitesse/Sports 6 in particular, was another eternal problem area, but this subject does not need to be revisited.

Eventually, the cause of the failures experienced by Joe and Josie is identified – and never before time. The remedy is such and such and the modification requires an amendment of processes. Almost certainly, they will be costly and involve a number of different procedures. In this hypothetical case, it is a raw material and machining issue that requires a change to an improved type of raw material (which inconveniently is more expensive), there has to be a change to the jigs and tools used in the machining process and there may have to be a modification in the way the finished component is required to get on with its neighbours.

None of this can take place until all the sums have been worked out, the suppliers consulted and a revised procedure established with Engineering, Production, Quality Control and Inspection. Once that is done, the revision is rubber-stamped by Engineering, Parts Division starts provisioning for the modified component and the Service Division starts to type out the Dealer Bulletin advising the modification which

has to be made retroactive and will result in a vehicle recall – at no charge to the customer.

But the other simultaneous key issue is at exactly which car does the change become effective in production?

This is where Production Control has to do some very accurate crystal ball gazing and state the commission number of the car model in question where the modification will become a part of normal build procedure – and that is by no means easy.

But this whole exercise has already cost a mint of money in its determination and resolution. The result is the ‘halo’ cost of the car (sum total of the value of the components used in its manufacture, plus the direct labour costs to build it) has broached the maximum value agreed by management. This ‘halo’ cost is critical and can only be allowed to increase under very exceptional circumstances. This is not one of those circumstances and the ‘halo’ cost has to be reduced to its original level. This may mean re-evaluating the whole cost of all components used, or identifying alternative manufacturing methods to reduce assembly costs or buying another part from another supplier at a lower unit price – and there are many other options too.

This process is effectively continuous in its application on a day to day basis and by its nature, demands the utmost flexibility in getting the ‘halo’ cost back to its original level. By one means or another, this is achieved but as the process becomes ever more refined, it’s Production Control who is ensuring it happens.

But heigh-ho, tomorrow will come and there’ll probably be more of the same – or *almost* all of the same to keep us occupied in sorting out another hastily woven web of confusion – so another day, and hopefully - another dollar.

So, in conclusion, if your car’s commission number is numerically close to the start or finish of a production run of the same model, do not try to convince yourself that this is actually what happened. Numerically you could be several hundred cars way out of line!