

University of Wales Trinity Saint David

Wales institute of science & art



PRIFYSGOL CYMRU

Y Drindod Dewi Sant

UNIVERSITY OF WALES

Trinity Saint David

The development of the Honda NSX & how it changed the supercar industry.

Motorsports engineering Beng (ACHA5004)

William Colin Townsend

(2405263)

Date (09/08/2024)

Contents page

1. Introduction

2. The beginnings of the NSX and the development

3. Where these developments are seen in cars today and what the NSX had influenced.

4. What happened to the NSX and where it is today.

5. The end.

Introduction

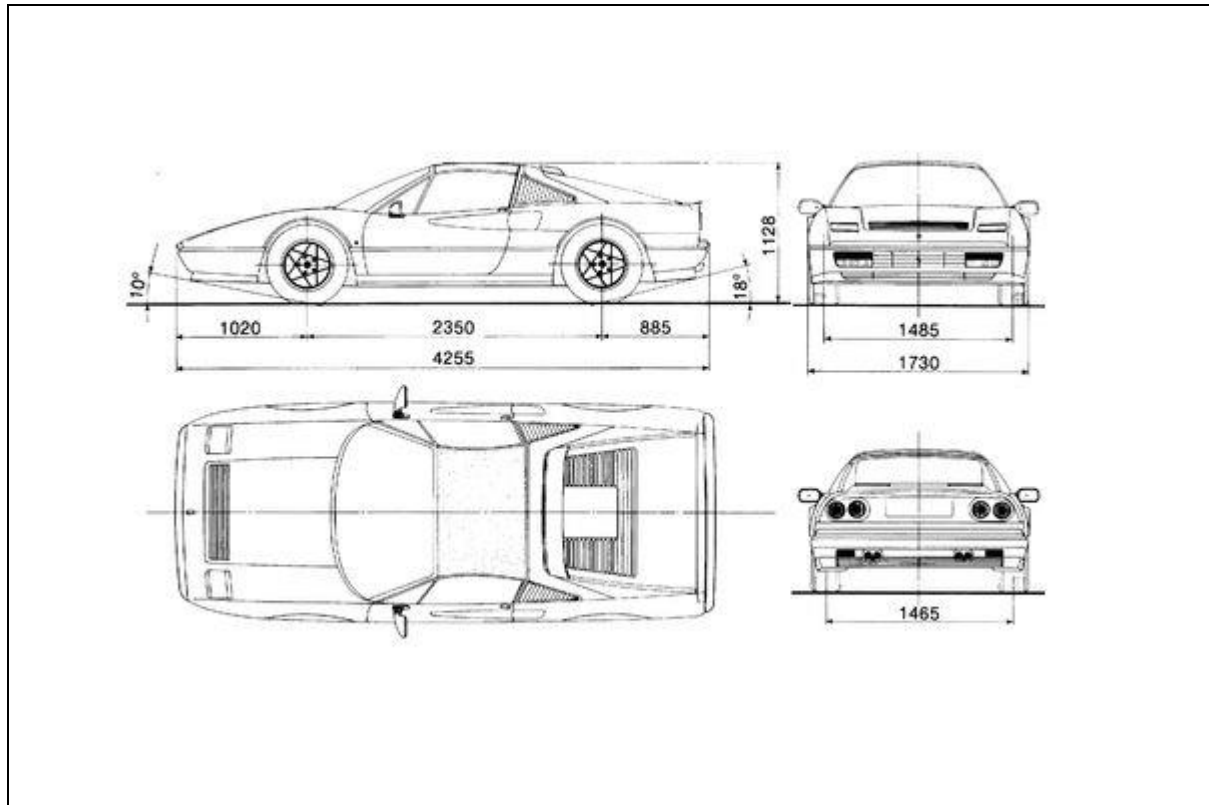


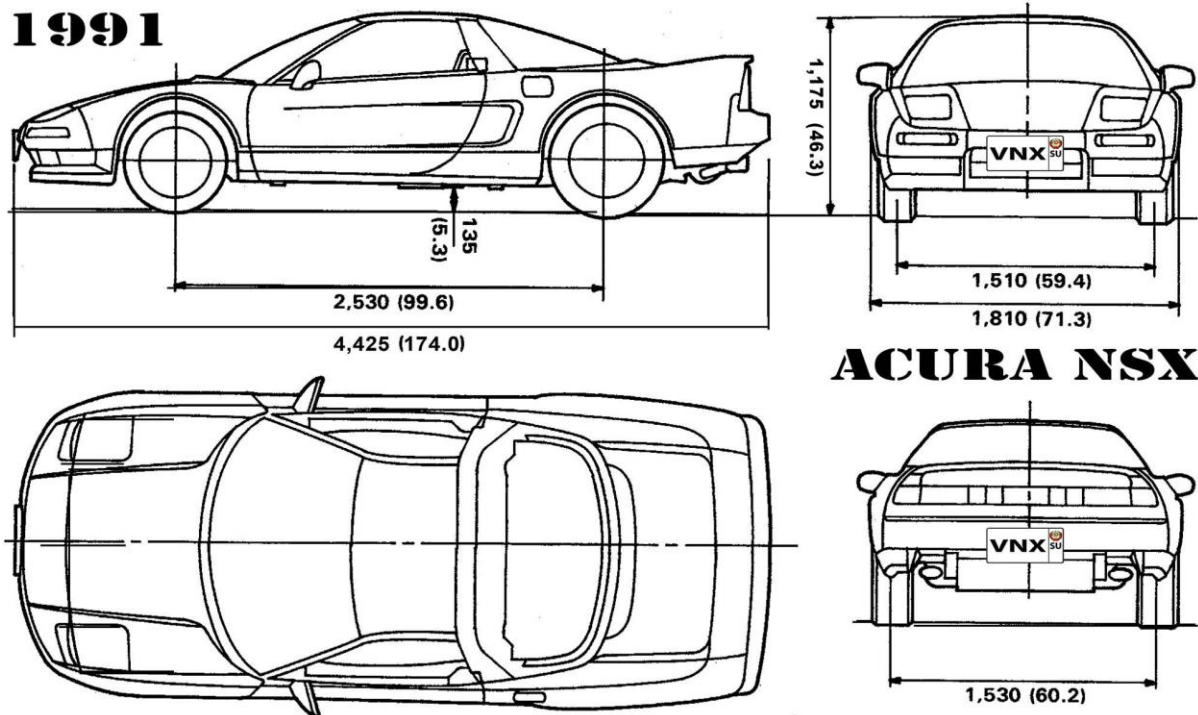
Figure 1 Ferrari 328

Table 1

Table 1 Comparing the stastics of the nsx to the ferrari 328 i

NSX - Ferrari 328	No. produced	Engine size	Weight (KG)	Top speed	0-60 (secs)	Mpg	Cost
NSX	18,685	3.0l V6 N/A	1365	168 mph	4.7 secs	22- 23	£55,500
Ferrari 328	7,412	3.2L V8 N/A	1263	166 mph	5.3 secs	16 – 23	£85,000

1991



ACURA NSX

Fig 2, Honda NSX

The beginnings of the NSX and the development.

The original Honda NSX didn't start with racing or beating super cars in mind, it began with a 1970 Honda city AA.

CITY TURBO II



Figure 3, Honda city

, however the engineers had changed the car moving the engine and accompanying components to the rear of the car and noticed improved weight distribution and corner cornering capabilities. This sparked the engineers to design a midship super car (for the time however still very quick today). During the development of the NSX there was a problem, weight reduction. This was achieved as the engineers travelling on the worlds fastest train while trying to come up with a solution realised the train was made out of aluminium, unlike the common material used in cars steel aluminium is lighter, easier to work with and doesn't oxidize unlike steel which promoted its longevity, Honda was also the first ever to make the worlds first full aluminium monocoque car produced. Accompanying the brand new chassis was a brand new 3.0L V6 however this got a unique system comparable to Alfa Romeos more modern multi jet system this engine had a system called VTEC only planned for 4 cylinder engine applications, VTEC stands for variable valve timing & electronic control, this to keep things basic held the engine inlet valves open for longer pushing in more fuel and air into each piston stroke allowing for a bigger reaction and hence fourth more power out of the engine which is why this was a necessity for what was to be Hondas first supercar this system also contributed to the cars success in acceleration and top speed however this isn't where the Honda's true success was founded in its tight chassis, suspension dynamics and tuning which was also aided by the legendary Senna who test drove the NSX and gave handling tips which the engineers took very seriously spending 6 months taking the car apart and putting it back together as well as introducing the use of super computers specifically a crays super computer used to enhance the aerodynamics of the car and the suspension tuning which is what lead to the NSX's sharp &

high performance characteristics. One of the other things that lead up to the Hondas development and it wasn't anything to do with super computers or new technology, the engineers at Honda also used statistics. They built up a graph with all the cars they were trying to beat with cornering performance and acceleration being put onto a graph and discovering that this created a positive gradient line of performance. They then added an F1 car to this graph and discovered it sat at the bottom right of the graph, the engineers goal was to push the NSX as far out of this line and as close to the F1 car as possible and succeeded, this use of statistics to create a goal, the use of good engineering, the manufacturing methods, computing and tuning as well as experienced staff created the final result we saw in the 90s

Where these developments are seen in cars today and what the NSX had influenced. Firstly this particular Honda in its specific scene the sports / super car scene introduced the idea of having a high performance vehicle that was not only reliable enough to drive on a daily basis unlike most high performance cars which required constant maintenance and upkeep the Honda was reliable, it also didn't rust which made it more appealing being the first super car you could race and win on Tuesday then drive it back home the same night without issue. Secondly the NSX brought proof a super car could be comfortable, the Ferrari 328, Lamborghini Countach, these vehicles took clutched teeth and skill to clutch into gear where as the Honda was smooth and comfortable, something very unusual in that specific car industry. Over all compared to super cars of the time the Honda NSX was comfortable, easy to drive, cheaper than its competitor by a large margin, reliable and not touched on but compared to most the NSX was easy to see out of making this car over all good for specialised and every day use. Where this is seen in cars today? Something that needs to be mentioned is that these 'luxuries' weren't commonplace before the NSX. In todays cars especially sports and super cars we can see the influences today whether it's the new Porsche, Lamborghini, Ferrari, McLaren, this Honda has influenced all corners of the car market, The McLaren F1 the worlds fastest naturally aspirated hyper car still to date references the Honda nsx as the direct inspiration, the influences were also almost instantly seen after this car was produced, instead of throwing more cylinders or litres to an engine to make their car go faster all these companies (except for Porsche which I mentioned) had to improve their cars, make them easier to drive, a reason to justify the

price of the car especially as Honda was beating them at their own game making faster cars for less money. On top of these examples there are major and minor things to include, stronger components like clutches and gearboxes as well as improved designs became a necessity as struggling to change gear was no longer acceptable as a new standard had been introduced, the design of the car also improved not just for aerodynamics but for things you wouldn't think of for example the visibility which was majorly improved compared to other cars it was compared against, you could easily park this car or work through traffic which was oddly difficult for previous manufacturers.

What happened to the NSX and where it is today.

The NSX unfortunately eventually lost at its own game, manufacturers with more influence and financial backing learned the lessons from their failures and competitors, the next Ferrari was their best yet being faster than anything the world had seen, Lamborghini fixed their issues, their cars became smoother to run, easier to clutch and more reliable and this eventually resulted in less interest in the NSX, it became an aging chassis that had been beat at its own game, Honda tried to revive the NSX with a V6 hybrid however this car was 4x as expensive compared to its predecessor, it was actually slower on a track and the car didn't have the means to justify its price tag and the NSX line has since been quite however the NSX NA1 today (the original) can still be picked up for its original price around £50,000.

Conclusions.

Despite the fact that this car had lost its stand on the podium and the general public had lost interest, this car is still remembered for pioneering the modern standard of sports and super cars we see today, this car revolutionised the use of different materials especially light weight materials like aluminium, this car also proved that a good sports car doesn't have to break the bank nor does it have to be unreliable or hard to drive, the NSX also pioneered tuning technology cementing that good engineering & tuning were worth more than money couldn't buy a better car, and this ethos was actually the making and undoing of the NSX, despite the fact that the NSX line has been all but finished the original NSX stands as a testament to history, a car that beat Ferrari and Lamborghini at their own game and forced the car industry as a whole to rethink everything, redesign everything, the NSX set a new standard and this standard is still maintained today, when looking at the performance cars today you will always see some influence of the NSX in one way or another.

6. References list

1. Fig 1, Ferrari 328 [Download drawing Ferrari 328 GTS Phaeton 1985 in ai pdf png svg formats](#)
2. Fig 2, Honda NSX [Acura NSX 1991 Service Manual](#)
3. Fig 3, Honda city [1:24 Honda City AA Turbo II 1985 | AOS-054802 | Aoshima](#)