

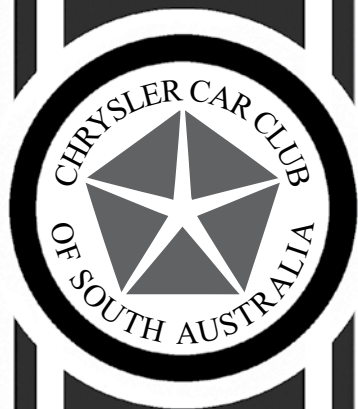


Torqueback

OFFICIAL MAGAZINE OF THE CHRYSLER CAR CLUB OF SOUTH AUSTRALIA



1969 Dodge Charger Daytona
1970 Plymouth Roadrunner SuperBird



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CHRYSLER CAR CLUB OF SOUTH AUSTRALIA INC

Torqueback

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The Chrysler Car Club of South Australia Inc.
PO Box 240
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WARNER BROS. SEVEN ARTS INC



G'day. Welcome to the next instalment of Torqueback. In this issue we'll be looking at a Mopar everyone of us know well, although unfortunately we hardly ever get to see one in real life, those winged warriors – the Daytona and the SuperBird.

Enter the Atomic Age – when automotive designers in the late 1940s and 50s began styling cars in reference to space rockets and supersonic airplanes. New and better metal fabrication technology appeared, as did new materials such as plastics and fibreglass, so the lines of our humble car began to change. Designers went nuts, experimenting with some cool new making powers, influenced by all the symbols and design motifs of a new 'modern' age. Fins reminded us of wings, chrome grills echoed the art deco pillars of skyscrapers, and taillights were fashioned to look like jet engine exhausts. But most of these wings and cones were purely decorative, serving no other purpose really than ornamental.

Almost a decade later however, many of those sharp edges and points would actually turn out to make a huge difference to the performance of a car. Once the science of *aerodynamics* – which was by then realising its full potential in aeronautics and spaceflight – was finally taken seriously and adopted by Detroit. By the late sixties, when America was in the middle of massive social upheaval with Flower

Power's 'Summer of Love' deflating to the Vietnam War, the Space Race became a distraction – and it was now well and truly on between the east and west. Similarly, aerodynamics would soon be at the centre of another kind of technological competition at home – in the world of muscle cars and stock car racing. While the widespread use of bodykits to improve a car's performance was probably still several decades away, Chrysler once again proved its innovation was way before its time.

Two special Mopars in particular – variants of the cagefighting 1969 Charger and the 1970 Roadrunner – were invested with aerodynamic science, making them look as science-fiction as any flying machine striving to break the sound barrier at the time. Ironically, today these musclecars look like something out of our own Mad Max, although it seems not many actually got to our shores. So I hope that this magazine before you can at least introduce you to these very exotic Mopars.

Before I go, a couple of housekeeping matters. I'd like to thank my good mates from *HemiSixpack* for helping me out with content for this issue: **Gordo** from the Regals Car Club, **Andrew Lax**, **Dave Wayfarer**, **Jordan Pantsios**, **Pete Knowles**, **Justin Manno**, **Pete Clifford**, **Brett Goodridge** and **Phil Bryant**. I also need to apologise for and correct



a couple of little typos from our previous history issue. I now believe the fourth All Chrysler Day in 1993 was actually at Pasadena for a second year (according to the poster anyway), before it moved back to Camden in 1994 – which I think was then 'the notorious year the fences disappeared'. And one more small mistake in the Timeline on page 11. TJ Richards first began his business in 1885 – not '1855' as I titled it – when he would have only been five years old! He wasn't that bloody clever.

D'oh! Sorry, but I'm only human... Anyway, I hope you really enjoy this issue!

– Dave H



adrian brien automotive

PRINCIPLE SPONSOR OF THE CHRYSLER CAR CLUB OF SOUTH AUSTRALIA



Greetings to all of you out there who have such great taste to be fanatics of the coolest cars that have graced the earth.

I must admit I am a little bit more upbeat now that the All Chrysler day has some fresh new beginnings for 2012. There will no longer be problems with money hungry parking inspectors taxing your wallet in the form of parking fines while you attend the All Chrysler Day 2012 at the new venue – Urrbrae High School. The club has scratched around for what we

believe to be suitable venues for many years now and especially the last four months. I was so frustrated by getting knockbacks and lame excuses from great ovals as to why a car show could not be held on their particular oval / facility – “the cars will crush the grass” , “the oval will take months to recover after that”, “it’s too soon after the last event – the grass will need to be hand manicured and wrapped in cotton wool” – I tell you I am sick of the negative stuck up %^#*\$% tossers out there that dislike us car enthusiasts.

Oh, and the other most common knock backs was cricket, soccer, hockey, satanic voodoo rituals, grass blade counting competitions and automobile-hating war dance practice!

Did I mention there were other great venues that didn’t have fences? Well we need fences to operate All Chrysler Day – to control gate access and to keep the car enthusiast hater’s association at bay as they march around the venue in their angry mob waving their fists at us.

Now that is off my chest, for now I will be happy to invite you to the new venue Urrbrae High School. Almost double the size of Lockleys Primary School

oval, huge on-site parking for about 200 spectators vehicles, disabled/elderly parking real close to the main facilities, a large gymnasium for us to use and decent toilets. Quite a few shady areas as well, I might add.

The cruise shall be held on the Saturday evening just following the BBQ – I cannot wait for that already. Rumour has it that there is a convoy of cars coming from interstate this year – I sure hope that is true!

I would like to point out that I have tried my best to get an event of some type up and running where the cars can be put on a track and driven for an afternoon in conjunction with the All Chrysler Day weekend. Unfortunately I keep running into obstacles and dead ends. It is my dream to have an event part of the show weekend where I can see just Chryslers on the track and no brand X cars. Each year I see dozens of powerful cars at the show and wonder to myself – gee that must sound nice or I reckon that would go pretty fast on the track. Do I give up and admit defeat? Will a driving event ever be part of my favourite weekend in each year?

Cya on the road.
Raddy

Although not many actually ever made it to our shores, today these musclecars look like something out of our own *Mad Max*.





Welcome to my first report for Torqueback.

I am **Di Hastwell**, your new secretary, taking over from Cathy, who has written the secretary report for some years. I'd like to thank Cathy for the smooth handover, and looking forward to working with everyone.

Our Vice President **Hugh Mortimer** will be also be writing a report here in Torqueback, but we'll be alternating. First up, it's my turn..

I have been with the Chrysler Car Club of SA for many years now and boy has it grown. When my husband **Chris** and I joined in 1997, the general meetings were held at the Gleneagles Reserve clubrooms at Seaton, where all members sat at a single table.

Now, we are over three hundred members strong. We have met a lot of Chrysler enthusiasts and have done lots of car cruises, weekends away, and many enjoyable evenings at various pubs and restaurants which have become part of our club calendar.

My everyday drive car is a VK Dodge ute. We found her in the riverland, and it was not a pretty site. There were bullet holes in the rear quarter and left side front door, mice had made a comfortable home in the hood lining, and the front seat was packed full of carpet squares upon carpet squares for padding. The right side front foot well had also been punctured and bent by a tree stump, whilst being used for spotlighting trips – the only thing she had going for her was there was not a lot of structural rust!

So, with a new new coat of paint, front suspension, engine and transmission rebuild, plus a power steering conversion and total re-trim of the interior, we bought her back to life – where she is today – my “Bute Ute”.

Well that's about all from me now.

So with Xmas just around the corner, we would like to take this opportunity to wish you all a Merry Xmas and



Happy New Year for 2012, hope to see you at the All Chrysler Day.

Travel safe in your Mopars.

– Di



• Just over five hundred Daytonas and just under two thousand SuperBirds were ever produced for the street. So unfortunately there aren't many genuine articles around anymore.

ROCKETS FROM THE ATOMIC AGE



Ancestors of the VH Valiant here in Oz, the Charger and Roadrunner were built on the Chrysler B platform, which was the basis for rear-wheel drive Chrysler cars in the States from 1962 through 1979, and the front-wheel drive Eagle Premier / Dodge Monaco 1988 through 1992. All of the B-body cars in a given model year for either make were built upon the same chassis. However, the outward design differed between makes.

The Plymouth B-body series ultimately comprised four cars with nearly identical outward appearances (differing only in trim package, drive train and accessories). These were the Belvedere, Satellite, GTX and Road Runner. With its shark-nose and wing, the Superbird was the only Plymouth B-body that looked really any different from the others. There was more diversity in the outward appearance of the Dodge B-body series. The Dodge models based on the B-body were the Coronet, Super Bee and the Charger. The Daytona of course was simply a Charger also with an extended nosecone and high-mounted rear wing.

The **1969 Dodge Charger Daytona** and the **1970 Plymouth SuperBird** were created for the single purpose of putting Chrysler across the finish line first on America's stock car tracks. Due to the factories' recognition of racing as a valuable marketing tool, racing was becoming big business in the late 1960s. It was generally understood that a win on the track often lead to a 'win' in the dealer showrooms when the public came to buy the 'same' car that won at the track. And because NASCAR rules required that bodies and motors be homologated through a minimum street car production quota, the amazing aero warriors also graced the streets that led to the tracks where their racing brethren performed.

These were monster cars - the Superbird weighed over 1700kg and was 5.6 metres long - but they also had the grunt to match their dimensions. The street Superbird was available with 440 and 426ci V8 engines developing over 300kW (SAE gross) – and these boasted compression ratios of up to 10.5:1 with what can only be described as wild cams! Performance was as quick as a 14.3 second quarter and the estimated 0-60 mph (97 km/h) time was just 5.5 seconds. Top end? Well, on the racetrack these were genuine 320 km/h machines, while the road-going versions were variably credited with a max speed of 210 - 260 km/h.

Just over five hundred Daytonas and just under two thousand SuperBirds were ever produced for the street. So unfortunately there aren't many genuine Daytonas and Superbirds around anymore, and subsequently very few have made their way to Australia. According to the Mopar community on *Hemi6Pack*, and what can be gleaned from a number of Dodge Charger forums on the net, there are possibly only four genuine Superbirds and only two real Daytonas currently living in Oz and NZ.

There is an orange SuperBird in NSW which frequents Chryslers On The Murray. There is also a second Hemi orange SuperBird from Windsor in country NSW which was imported here last year. A metallic blue SuperBird, restored by the famous Matt Morris Restorations in Pennsylvania, was imported into New Zealand a couple of years ago. The CCCSA's very own Rick Trembath recently shipped a Petty blue SuperBird here to little old Adelaide too, which will be undergoing a complete restoration. Strangely, numbers of SuperBird replicas in Australia are less. The only one of note is a Petty blue SuperBird clone with a black roof and black lettering which was recently completely finished and unveiled at a show in Victoria. This car regularly appeared at Chryslers On The Murray (without the vinyl roof and with white lettering) in the last few years as it was being restored.

A recently arrived Daytona now resides in Central Victoria. It's progress is currently being chronicled on the Dodge Charger forum. There is also reportedly a second real Daytona, a dark green one, owned by a US auto importer in the Gold Coast. Daytonas are rare, even in the States, so it's logical to assume that there would be more replicas than the real McCoy's here down under. Word has it that there are five respectable Daytona clones – one in Narabri, two (incomplete) in Brisvegas, and one (kept quiet) in country NSW.

The famous red Daytona from the Australian movie "Running on Empty" is the only Daytona ever to be converted to right hand drive. With its incredible back rubber, polished steel wing and the words MAXIMUM

A couple of lethal weapons that could almost be stablemates.



WEDGE along its back end, she was bought from a little old lady in the US, to be brought down under and converted over. After being a movie star, it appeared in Street Machine in 'June 86, before it was repainted Ford Taurus blue and sold (after asking 140K for it in Unique Cars in June 2002) back to the US for 65K (wow!), where it is still RHD.

The yank purists on the Dodge Charger forums seem infatuated with this now 'unusual' car with an 'unusual history'. Her current proud owner blogged:

"The wing was taken off the car to make room for the other three vehicles that were crammed into the container. The Daytona was on the makeshift second level sitting on planks! It was a real nail-biter unloading the car that even required the use of a forklift. We drove the car across L.A. at rush hour on a Friday afternoon to get the car to my buddy who handled the shipping's house in Garden Grove, California. It's funny the odd looks a wingless right hand drive Daytona got on the L.A. freeways from some people while others were completely oblivious to it. If you look closely... you will see another one of the Daytona's modifications to bring the car up to Australia's laws. This pic was snapped as the left turn signal was blinking. Australian law requires that all cars have amber rear turn signals so the center section of the Daytona's taillight was cut out and a amber lens sectioned in. It looks very different at night seeing an old Charger with amber rear turn signals. as, their wipers go the other way as well to make a clear sight line for the driver."

"Back in the day when the Daytona was exported to OzLand, Australian law required a 78% sweep of the driver's viewing range by the wipers. Apparently, the way it is met that 78% criteria. Today, that number has been bumped to 88% and would have required changing the wipers around. Exporting a vehicle 25 years or older to OzLand makes it exempt from requiring ANY types of modifications but all of the newer vehicles that are exported need to also have their wipers converted over. Pretty interesting stuff huh?"

Importing any car either to or from the US can be stressful at times, period – let alone such a sought after collectible such as this. In the US it seems they even get a bit dark when they hear how these iconic US musclecars have found their way to the southern hemisphere. As such there are a number of interesting stories of ploys and "secret missions" to get these babies out here, such as removing the wing to disguise it as a regular Charger or Roadrunner hidden beneath other goods, or driving it around asphaltly carparks and on dirt tracks to 'devalue' it just before it goes into the shipping container. Our own Rick Trembath has recently gone through this excruciating process!

So the Winged Warriors are as special a sight here in the States as they are here in Oz – whether they are authentic or replicas!



(Above from left to right)
The famous Daytona from the Aussie flick "Running On Empty" is the only known RHD aero Charger in the world. She was red and black in the movie, with a polished stainless steel wing and some perhaps not-so tasteful wheel arches and outrageous rubber at the rear - what size do you reckon those tyres are... 465 r60's? They might even be 15's! Sadly, after it was nicely reinvigorated with a deep blue and white colourscheme, the car was sold back to the US where it remains a curiosity to Daytona purists today.

(Above)
Down under today, any winged warrior is a rare but sensational sight. One beautifully restored original Hemi orange Superbird - which has regularly lined up at Chryslers On The Murray in previous years - was recently joined by another fantastic Hemi orange authentic. Now there will be double the attraction of interest, trophies and cameras.

(Right)
After a number of tantalising appearances during various stages of its arduous rebirth in recent years, this spectacular Petty blue Superbird clone was finally revealed complete at a show in Victoria recently.



winged warriors

THE BEGINNINGS

The Dodge Daytona and Plymouth Superbird were the only true 'legal' production cars in NASCAR Competition when comparing the 1969 Ford Talladega and the Chevy Mystery 427 from 1963. The manufacturers knew the importance of "win on Sunday, sell on Monday" and stretched the rules or the truth, if necessary.



Chrysler's 426 Hemi motor joined the NASCAR fraternity in February, 1964 at Daytona, permitting Chrysler cars to dominate the race. The 426 Hemi was state-of-the-art (at least within the confines of the NASCAR rules) in 1964, and had the potential engineered-in for significant performance gains in the future. The 426 Hemi would serve Chrysler's NASCAR efforts well for a decade, living up to its potential and in the process establish its legendary reputation.

As the 1960s progressed, and even equipped with Hemi-powered cars, it became clear to Chrysler that they couldn't rest on their laurels if they wanted to visit victory lane regularly. Because the 426 Hemi was already the 'ultimate' racing motor, it made sense to look at other methods to get more speed - and thus more victories - from the cars. Improving the aerodynamics of the cars proved to be a logical and cost-effective choice, especially since wind tunnels large enough to effectively test cars were becoming more common.

Chrysler's success in 1967 was stunning, primarily due to the efforts of one man, Richard Petty. In his Hemi-powered Satellite, Richard won 27 of 49 races, including ten in a row. Ford was determined not to allow a repeat performance in 1968, and had prepared two new offerings for the '68 season, the Ford Torino and the Mercury Cyclone. Powered by 427 "tunnel port" wedge motors, these bodies helped tip the balance of power to the Ford camp. 1968 saw 27 victories for Ford and 21 victories for Chrysler.



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It was no secret that Ford was developing even more aerodynamic platforms for the '69 season (the Talladega for Ford and the Cyclone Spoiler H for Mercury). The '68 Dodge Charger was one of the most appealing designs of all time - except to the air that it passed through! The recessed grill trapped air and created turbulence, and the rear window created a low-pressure area which effectively lightened the rear end of the car. Translation - the car was slow and hard to handle at higher speeds. This body style would be no match for the even sleeker '69 Talladegas and Cyclone Spoiler Hs, especially when powered by the new Ford Hemi, the Boss 429.

The '69 season saw an improved Charger, the Charger 500, take to the tracks. Its grill was nusen, WIC me rear wmuuw was reworkeu. t ne car was faster, but still not fast enough to contend with Ford's offerings. It was clear very early in 1969 that something even more radical would need to be done to keep Chrysler in the hunt. The car pictured here is the 3/8 scale Dodge Charger 500 model used by Chrysler in wind tunnel testing of various Charger configurations, a process which was methodically and rigorously carried out.

The 1969 Dodge Charger Daytona shown here debuted mid-season at Talladega. The result of a huge amount of wind tunnel testing - in a time when such a development approach was largely unknown to NASCAR racing - it was essentially a Charger 500 with an extended nose to lower the stagnation point and a huge wing mounted aft to apply downforce to the rear tyres. The aim of the package was to both reduce drag and improve downforce - the banked ovals on which the cars raced allowed the attaining of very high average speeds and so drag reductions were unusually important for a racecar. The Daytona was the first example of an over-the-top aero homologation special, and remains one of the most impressive ever produced. The car was also successful, winning almost

a quarter of the races in which it participated during less than two full seasons on the NASCAR super speedways.

Plymouth's attempt at NASCAR domination culminated in the production of the 1970 Plymouth SuperBird. Plymouth's '68 Road Runner was aerodynamically poor, and things became even worse when Richard Petty opted to race a Ford rather than pilot a boxy Plymouth in '69. Richard scored ten victories in his new Ford ride, including a victory in the last race he drove it in at Riverside, California. This made it abundantly clear to Plymouth that if they wanted Petty back in a Plymouth (and they wanted the all-time winningest NASCAR driver back very badly), they would need a car which Petty felt was competitive, and thus the SuperBird was born.

The Plymouth SuperBird won more races in fewer appearances than its winged sibling the Daytona, bringing home eight of Plymouth's 21 victories in 1970. The Plymouth was considered a great success, although ironically, Bobby Isaac won the 1970 Grand National Championship driving a Dodge. Richard Petty finished fourth, due to a serious crash at Darlington which sidelined him for several events.

It is estimated that about 40 racing Daytonas and 20 racing SuperBirds were built during the winged car era. All Daytonas were based on already existing chassis that had Daytona sheet metal "hung" on them. SuperBirds were built from a "body in white" bare chassis shipped from the factory to the car builders. Only a few racing winged cars survive today, and they are found primarily in museums. It appears that about 550 street Daytonas were produced, with over 300 surviving to this day. The street Plymouth SuperBird was produced in larger quantities, with about 2,000 having been manufactured and about half that surviving today. And if you'd like one in your garage, be prepared to pay up to US\$65,000 for the most desired of





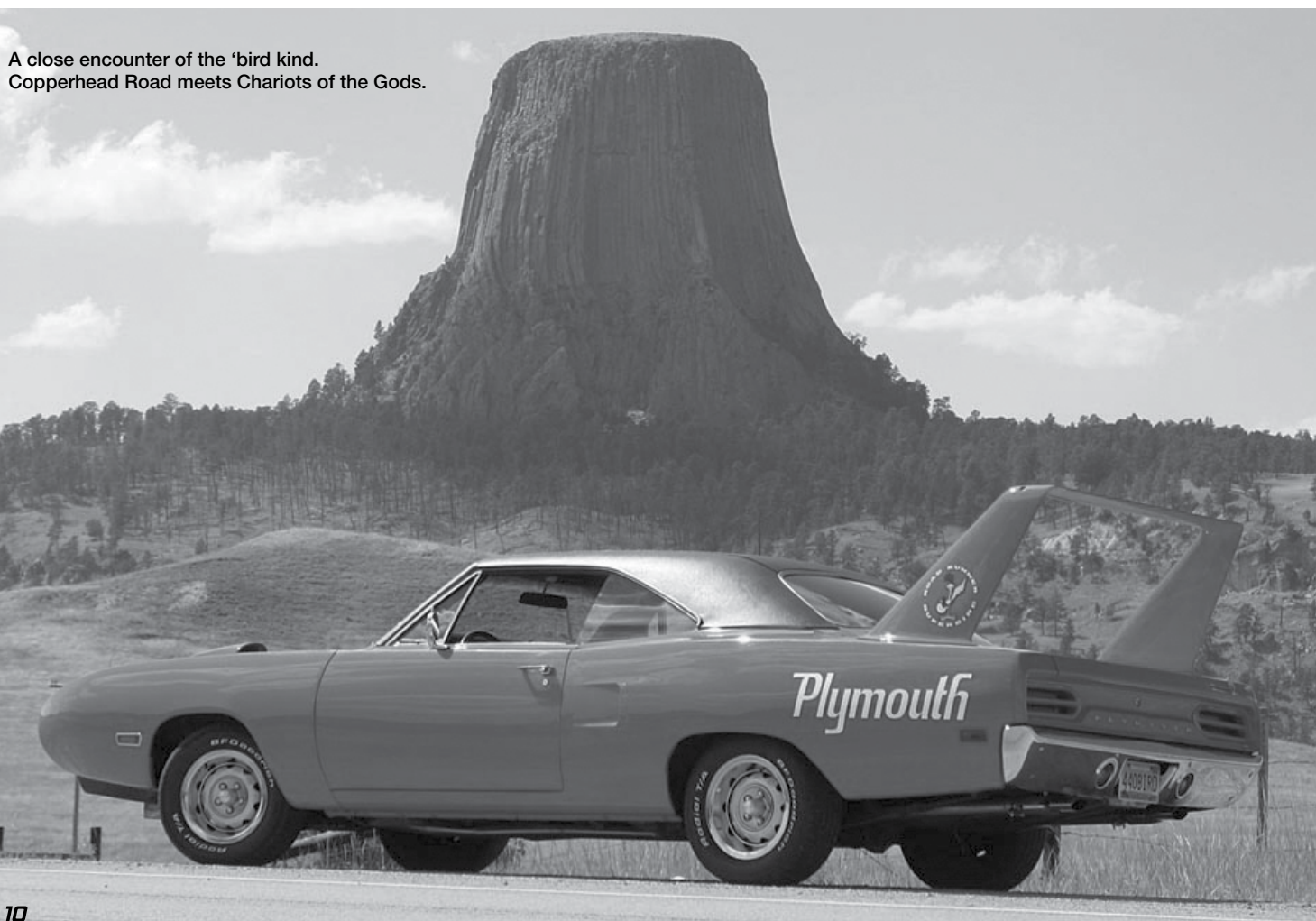
Bobby Isaac won the 1970 NASCAR Championship in this K&K Insurance Daytona, now preserved at the NASCAR Museum.

NASCAR rule changes for the 1971 season effectively eliminated the winged cars (and Ford's Talladega and Spoiler IIts) from serious contention by requiring that they be powered by nothing larger than a 305 cubic inch motor. Although Richard Brooks had some success with a 305 cubic inch Daytona in the 1971 Daytona 500, there were simply too many problems associated with making that motor consistently competitive. Considered with the fact that series boss Bill France did not want 'exotic' cars running in his 'stock' car series, it was clear that whatever teams did with the winged cars, 'Big Bill' would simply change the rules again to penalize them further. These arbitrary and capricious rule changes were not only the death knell for the winged cars, but played a significant role in the manufacturers' decision to universally withdraw from NASCAR in the early 1970s.

Off the NASCAR tracks, things were getting tough on the street winged cars too. Emission requirements were becoming more stringent, strangling the high performance motors that rested between the frame rails of the winged wonders. In addition, insurance rates on high performance cars were moving faster than the cars, and this was especially hard to swallow for the young performance enthusiasts who had enough trouble scraping together money to buy a performance car, let alone afford the exorbitant insurance rates.

The Dodge Charger Daytona and the Plymouth SuperBird went permanently out of production less than eighteen months after the first rolled off the assembly line.

A close encounter of the 'bird kind.
Copperhead Road meets Chariots of the Gods.



the Chrysler Car Club of South Australia presents

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SOUTH AUSTRALIA 2012



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FINS, CHROME & MUSCLE

So where were you in '62?

ON THE WINGS OF A WARHORSE

by Darrel Arment

PHOTOS BY DARREL ARMENT, WAYNE PERKINS, JIM RADKE & DAVE PATIK
Special Thanks To The Winged Warriors Car Club

The '60s may have been one of the most exciting times in racing history. The American automobile buying public was hungry for bigger, faster more powerful cars. It was a time when "Race on Sunday - Sell on Monday" was not a phrase, but a fact of life. It was a time when factory involvement went from handing out parts to drivers that looked like they could win to the factory signing contracts with drivers. It was a time when race car builder's body modifications to cheat the wind were stopped by NASCAR templates, and replaced by the automobile manufacturers factory built wind cheaters. And in the fashion of the '60s excesses, the factory aero wars were on!

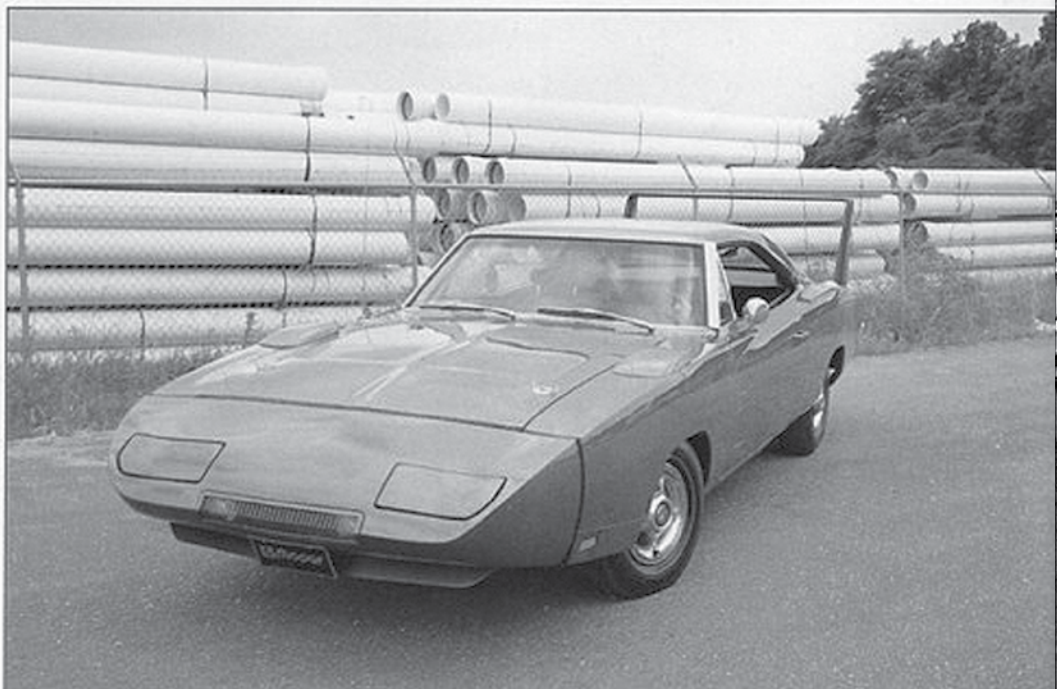
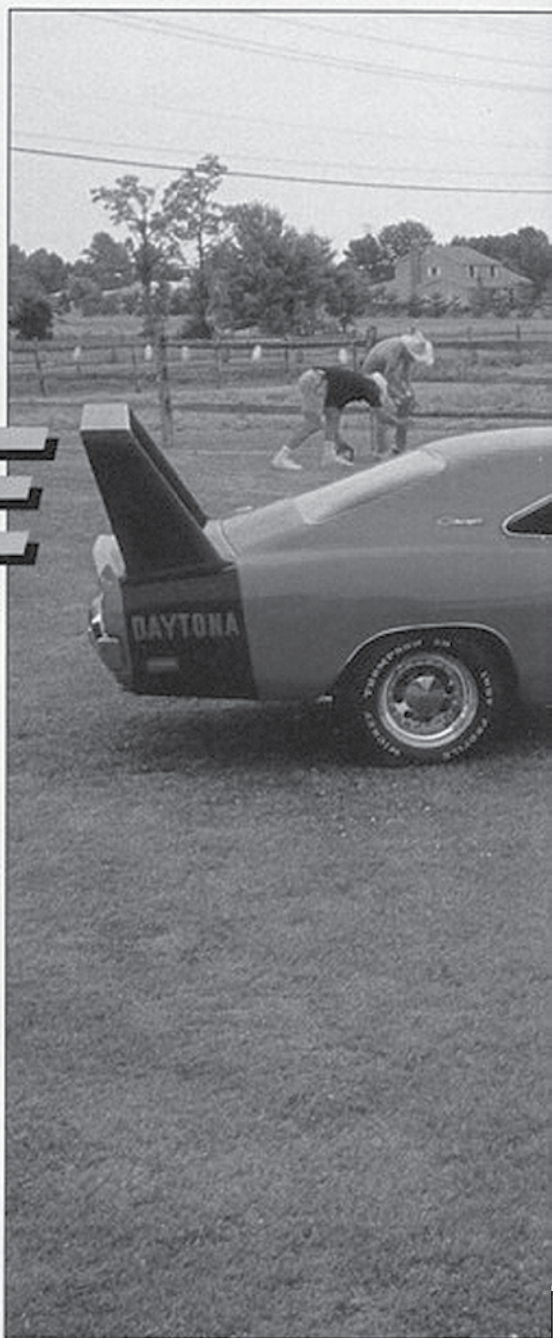
Chrysler's first, true entry into the factory aero wars was the 1969 Dodge Charger 500. The most distinctive features of the Charger 500 is its flush-mounted Coronet grille, new windshield A-pillar molding covering pillar and drain trough and semi fast-back configuration of the back window. This effect was achieved by welding a special metal plug to the existing C-pillar and installing a new rear window with a redesigned decklid.

According to NASCAR's *Homologation Rule* at the time, 500 production cars were to be built for sale to the public before they could be raced. The Charger 500 was available at the start of the model year as a RPO (Regular Production Option). Most of the special Charger 500s were produced prior to January 1, 1969 (but could be ordered throughout the model year) so they could go to war against rival Ford as soon as possible. The accepted records indicate that only 392 were built, but NASCAR let them race anyway.

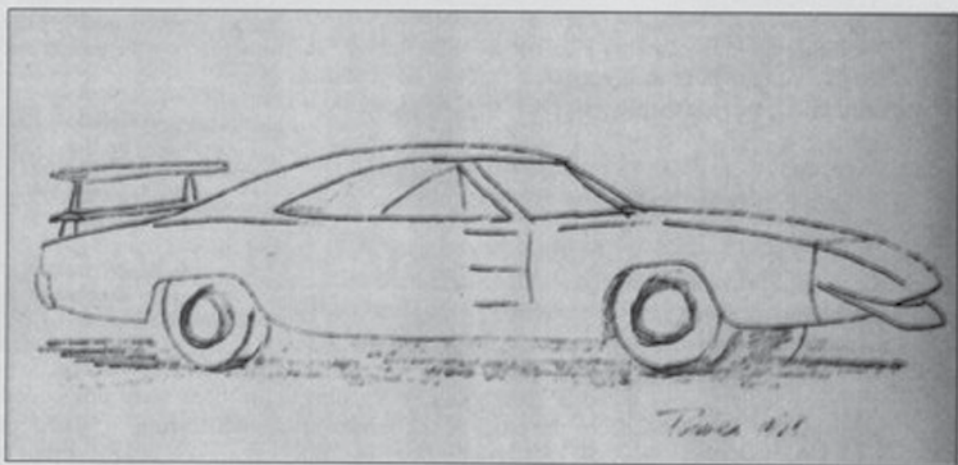
Ford was quick to counter the Charger 500 with its own aero-styled Talladega and Mercury Spoiler II. These offerings featured extended front fenders, flush mounted grille and front bumpers, and a lower body stance.

Their effort was so successful that it sent Dodge engineers running back to the drawing boards, in search of a solution to their high-bank woes. At this point, it became painfully obvious to Chrysler that windtunnel testing would be essential to make Dodge competitive in NASCAR.

The Hemi's power had already been maximized for 500 mile race purposes. So, building more power would have been unwise. What had to be done was to wring another 5 mph out of the body by cheating the wind. That 5 mph at Daytona for example, would equal 500 yards, or five football fields, per lap gain.



'69 DODGE CHARGER DAYTONA



[Above] The original "wing-thing" sketch that John Pointer drew up for Bob McCurry. McCurry hardly gave the drawing a glance. He simply said, "If it'll win races, build it!" [Left] The final design of the wing adorns this stock production Charger Daytona. [Opposite page] These two Chargers provide a view of every angle of the Daytona model. Contradiction to some previously reported news, the Charger Daytona was not developed from the 500 model. Both the Daytona and 500 models were developed from the Charger R/T.

1969 CHARGER DAYTONA: ON THE WINGS OF A WARHORSE

Enter Gary Romberg, Bob Marcell and John Pointer, three of the men responsible for the development of the Charger Daytona. These men were not total strangers to aerodynamics. Before they joined Chrysler, Romberg was an *Aeronautical Engineer* with Boeing holding a B.S. in Physics; Pointer was an engineer at Uniroyal; while the background of *Aerodynamicist* Bob Marcell is unknown. They were the men that through Windtunnel testing would create the Charger Daytona. It was John Pointer's sketch of the original "wing-thing" that he showed to Bob McCurry, Dodge's v.p., which McCurry hardly glanced at and said, "If it'll win races, build it!"

Most of the windtunnel testing was done at the Walter H. Beach (of Beachcraft) 7x10-foot Windtunnel at Wichita State University using a 3/8 scale car. The maximum wind velocity at Wichita was 200 mph. Correlation studies were done at the Lockheed-Georgia 16x23-foot tunnel in Marietta, Georgia using a full-size car. Maximum wind velocity at Lockheed was 370 mph. Also, some full-size car testing was done at the Chrysler Proving Grounds in Chelsea, Michigan.

To get a better understanding for exactly what makes a Charger Daytona so special, we'll dissect each unique part. The hood, fenders and side marker lights are all from the 1970 Charger.

In the beginning, different approaches were taken over the course of several months of testing. What proved to work best was a pointed nose. Both short and long nosecones were used for testing, 9" and 18", with and without spoilers. An 18" nosecone with a front spoiler proved to be superior to the others, plus aided the installation of headlights on the street version.

The Daytona's nose measures 19" from the leading edge of the steel nose to the rear edge, in front of the hood; 69" across the top side-to-side; and 18" from the top rear edge to the bottom on the side. The grille opening measures 23" side-to-side by 3" upper-to-lower-edge. Two 1969 Valiant parking lamps were set in the opening. A rectangular-patterned steel screen covers them. The screen is held in place by a half-inch wide steel grille frame, with five countersunk Phillips screws across the bottom and five studs and speed nuts hold the frame in place across the top.

The grille frame comes to a soft point at the front. It does not quite match the sharper point of the nosecone. From the grille frame's top edge to the center point it is 2.5 ins., but from the center point to the bottom edge it measures 2-5/8". It is 24-1/4" side-to-side. With all the hardware mounted the actual air intake is only about 40 sq. in. This aided aerodynamics but hurt cooling. To help this situation there are two openings under the grille on the bottom side of the nosecone.

The headlight openings are located 3.5 ins. above the leading edge of the nosecone, and 3 ins. from the edge of the fender at the top edge of the headlight opening, and 10 ins. from the top of the headlight opening to the rear edge of the nosecone. Each opening is filled with a retractable fiberglass headlight bucket assembly. The assembly is vacuum operated. In this case, it is held closed by vacuum in such a way that in case of failure the lights would be in the up position and operational. All Daytona headlight doors are painted body color.

The rear-facing scoops setting atop each front fender above



WAYNE PERKINS PHOTO

The Daytona's nose measures 19" from the leading edge of the steel nose to the rear edge, in front of the hood. 69" across the top side-to-side, and 18" from the top rear edge to the bottom on the side.



WAYNE PERKINS PHOTO

A rectangular-patterned steel screen sits behind the steel frame. The grille frame is a half-inch wide channel that comes to a "soft point" 2.5" from the top edge. The correct grille frame does not exactly match the nosecone, that comes to a much sharper point on the leading edge. It attaches by five countersunk Phillips screws across the top and five studs and speed nuts across the bottom. Corners are rounded, not square. Another strange thing about the frame is the correct grille frame measures 2-1/2" from the top edge down to center point, but 2-5/8" from center point to the bottom edge. It is 24-1/4" from side to side.

The turn signals installed on the inside of the grille are from a 1969 Valiant. The two additional openings underneath the grille are for additional cooling.



WAYNE PERKINS PHOTO

the tires were not called for in the original design. But after track testing, it was found to be necessary for additional tire clearance at speed due to the down force created by the aero nose. On the street version the scoops were for the most part nonfunctional, however, all Daytona front fenders were cutout and a large mesh screen covered the hole. This hole in the fender is located 29" ahead of the rear edge of the front fender and measures 7" across. The scoop itself is 9" wide across the closed end, an 8.5" across the rear-facing open end and 1.5" tall at the opening. Overall length is 14 inches.



On stock production Charger Daytonas the fender scoops were mandatory but for the most part non-functional on the street cars. The fenders are cutout and a screen is installed under the scoop. On a street driven Daytona the open scoops direct every bit of debris off the tires up onto the windshield. While they provided tire clearance on NASCAR models.



A new chrome windshield A-pillar molding [right] covered the traditional A-pillar drain trough [left]. It was held in place with concealed clips. The wind faring cancelled any wind disturbances normally associated with A-pillar drain troughs.

Another minor but invaluable aerodynamic item used on the front of the car was a new chrome windshield A-pillar molding. This wind faring covered the A-pillar and drain trough. It is held in place with concealed clips. The wind faring cancelled any wind disturbances normally associated with A-pillar drain troughs.

The engineers had solved the Charger's half-inch of lift problem created by the air over the nose and hood. Now they faced the rear end turbulence that made the original design a handful to drive. This area was addressed with the addition of a

sloped rear glass. The steel plug created for the Charger 500 was again welded into the Charger's notchback C-pillar area on the Daytona to create a 22° sloping semi-fastback, rather than the 45° tilt of the standard air trapping Charger rear window. Although tinted glass (G11) was an available option on the regular production Daytona model, the backlight glass was clear with this option.

The 22° slop of the steel plug and glass also necessitated modifying the length of the rear decklid. Like the Charger 500, the trunk opening was about half the size of a non-modified Charger. The decklid's hinges and modified decklid were borrowed from the Charger 500 with the same package tray used.

The change most commonly associated with the Daytona is the poured aluminum horizontal stabilizer or wing, standing two feet above the decklid supported by two poured aluminum vertical stabilizers. The wing was constructed of extruded aircraft aluminum alloy and the uprights out of sandcast aluminum. The horizontal wing was the brainchild of John Pointer. It controls lift created by the aero nosecone design. Testing proved that the wing was just as effective when located a few inches above the decklid. But that was not practical for street applications where it would be necessary to open the decklid farther than mail slot high. For this purpose alone, the 24" height of the vertical stabilizer (wing) was established. It just clears the decklid. Another feature of the horizontal wing is its infinite pitch angle adjustability within a 12° range.

'69 Charger Daytona Press Photos

When Dodge released their original *Press Photos*, in 1969, a fiberglass nosecone and rear wing were grafted onto a Charger R/T. In these photos you can clearly see that the 22° semi-fastback steel plug is missing. There are other significant differences between these photos and the Homologous version that was raced in stock car competition and sold to the public.

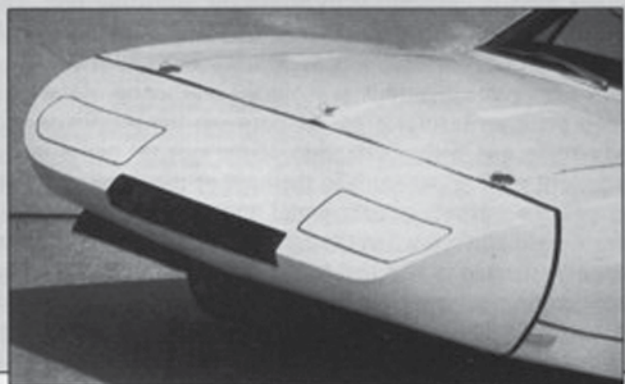
An interesting piece of trivia is that in *Hi-Performance Cars* September 1969 issue they state "Original plans called for the production of 500 units. However, more than 2,000 orders were in before the first model was even built!" The accepted production total of the Charger Daytona is either 501, 503 or 505. The *Winged Warriors* car club has been able to register 342 VINs, and only 38 known are 426 Hemi models to date.

The obvious and not so obvious differences in these *Press Photos* and the homologous cars are:

Obvious: Not a semi-Fastback, no top fender scoops, chrome A-pillar moldings are missing, a 3rd hood pin in the center, the two correct hood pins are too close to the corners of the hood, the air screen in the grille is not body color, no front air boxes under the grille opening and the front sidemarker lens is not indented into the lower valance panel.

Not so obvious: Headlight buckets are not real - they are taped off, the chin spoiler is not body color and squared off at the corners instead of rounded, front sidemarker reflectors are incorrect and incorrectly mounted, and rear reflectors are outlined - they should be same color as stripe.

- Robert Henry



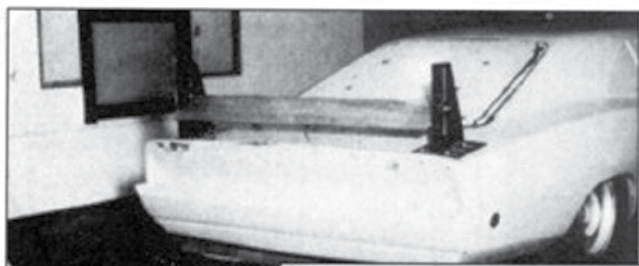


Plymouth Roadrunner SuperBird

CHRYSLERS ON THE MURRAY



1969 CHARGER DAYTONA: ON THE WINGS OF A WARHORSE



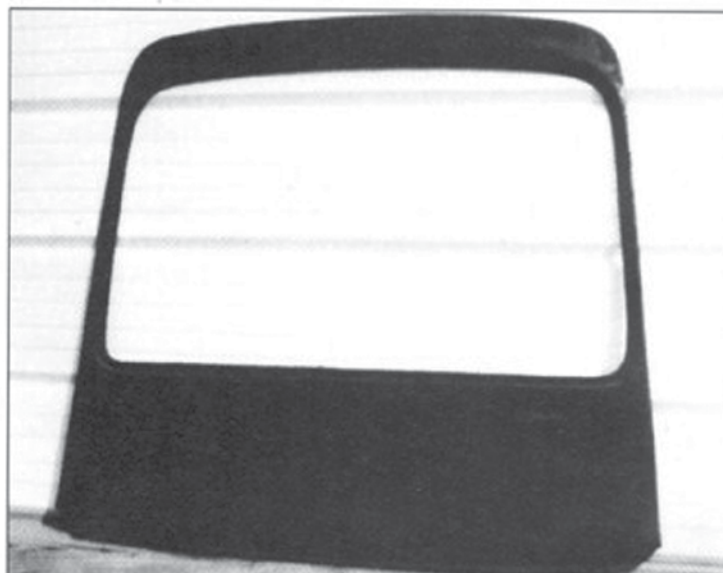
CHRYSLER CORP.

[Above] The first wind tunnel tests were done with a much shorter, crude-looking plywood wing. The wing was functional at this lower profile. The only reason the street cars [right] made a taller wing necessary was for accessibility to the trunk area. They are mounted to the quarter-panels via stud/nuts with a fiber gasket with a "V" brace inside of the trunk.



The rear window plug used on the 1969 Daytona was first used on the Charger 500 regular production model. It was crafted from steel and leaded-in to the area behind the backlight between the C-pillars. The window plug required the rear decklid to be modified, like the Charger 500. It was shortened by cutting it almost in-half lengthwise and seamed together then leaded. The window plug created a 22° sloping semi-fastback roofline instead of the notchback 45° tilt that trapped air between the C-pillars.

DAVE PATIK PHOTO



During the early tests before a much shorter in height, crude-looking plywood wing was used.

Research showed the spoiler and nose to interact, so the engineers followed a total-systems approach. Fore and aft spoiler positioning was studied. As the spoiler moved aft, the spoiler chord (narrow edge facing the airflow) was least resistant at a ground clearance of 6.5 ins. By carefully positioning the spoiler fore and aft, the engineers discovered they could vary front-axle lift with minimum change in axial forces around the front end.

Lift sensitivity and axial-force-to-vehicle-attitude were studied too. Body attitude did not affect rear-axle lift, but the aerodynamicists settled on -.05° nose down as optimum. The best positioning for the rear wing proved to be right over the back axle, however, that wouldn't let the trunk open. The wing was then moved aft to allow for trunk access under the NASCAR Homologation Rule.

The vertical stabilizer uprights are susceptible to occasional pits and distortion because of the sandcast aluminum. The uprights measure 17.5 inches at the base, are 24" tall and 7.5" at the top. Visually they are more upright than the 1970 Superbird stabilizer bars and appear slightly shorter. In reality, they both are 24 inches tall. The top of the stabilizer of the Daytona turns in two inches on each side to meet the horizontal wing. A countersunk area is cast into it to house the adjusting bolt. Due to their shape the vertical stabilizers also facilitate directional stability. The horizontal wing is 57.5" long and 7.5" wide.

The complete assembly is mounted on the top of the quarter-panels with an insulator gasket between the stabilizer and the body surface. On the underside of the quarter-panel is a reinforcement plate. Four studs in the base of the stabilizer protrude through the gasket, quarter-panel and the reinforcing plate to form a rigid surface when the nuts are tightened down. In addition, a "V" brace is attached to the trunkfloor and vertical stabilizer creating a very rigid structure. The mounting position of the vertical stabilizer is three-inches from the side of the car, and three-inches from the rear of the car.



The windtunnel testing led to these eight conclusions that are excerpts from SAE Paper #700036: *The Aerodynamic Development of the Chrysler Daytona for Stock Car Competition* by R.P. Marcell and G.F. Romberg.

[1] The Daytona met project goals of better handling and a 5 mph increase in speed.

[2] The front end/spoiler interacted to reduce front-axle lift and vehicle axial force.

[3] A backlight angle somewhat less than a full fastback proved better in controlling rear lift and axial force.

[4] Changing position of the undernose spoiler altered front lift with minimal axial-force penalty.

[5] Small changes in car attitude changed vehicle aerodynamics significantly.

[6] The undernose spoiler worked better on streamlined than blunt front ends.

[7] Wings helped a lot in controlling vehicle lift and improving directional stability.

[8] The state of the art in windtunnel blockage corrections had not been developed to a high degree for blunt bodies on a ground plane.



During windtunnel testing the engineers came to several conclusions which are staple items that contribute to the success of all NASCAR racers till this day. Probably the three most important from SAE Paper #700036 are: The front end/spoiler interact to reduce front-axle lift and vehicle axle force; the backlight angle somewhat less than a full fastback, 22° semi-fastback, proved better in controlling rear lift and axial force; and wings help a lot in controlling vehicle lift and improving directional stability. Also, the wing's dimensions are dictated not because it is the best position but to allow access to the trunk since Dodge would have to follow NASCAR's Homologation Rule and build the Charger Daytona as a RPO (regular production option) to compete in Stock Car racing.

The thing that is truly remarkable about the development of the Charger Daytona is that it went from John Pointer's drawing to race day in just a year - October 1968 to September 1969. All without the aid of CAD/CAMs! Just solid engineering background; trial and error; and good old fashion hard work.

Did all this aerodynamic manipulation work? It did. The car ended up with a drag coefficient of about .30. That was down 40% from a stock 1968 Charger and 20% less than a Charger 500. A true clean air package. Little did Gary Romberg, Bob Marcell and John Pointer know that their windtunnel work would be the standard for future automotive drag coefficient of automobiles a decade later.

As one might expect, the Charger Daytona started life as a winner. Its introductory race at Talladega, September 1969, the Daytona driven by Charlie Glotzbach set a new official closed-lap speed record of 199.466 mph during qualifying. Richard Brickhouse, in the same car that Glotzbach set the closed-lap speed record with, won the '69 Talladega 500 averaging 153.778 mph as Dodge finished one-two-three.

In 1970, Bobby Isaac at Talladega set a new qualifying record of 199.658 on April 12, 1970. It would stand until 1982. In 1971 the K&K Insurance Dodge Charger Daytona, owned by Nord Krauskopf, tuned by Harry Hyde and driven by Isaac made a trip to the Bonneville Salt Flats. In five days, it captured

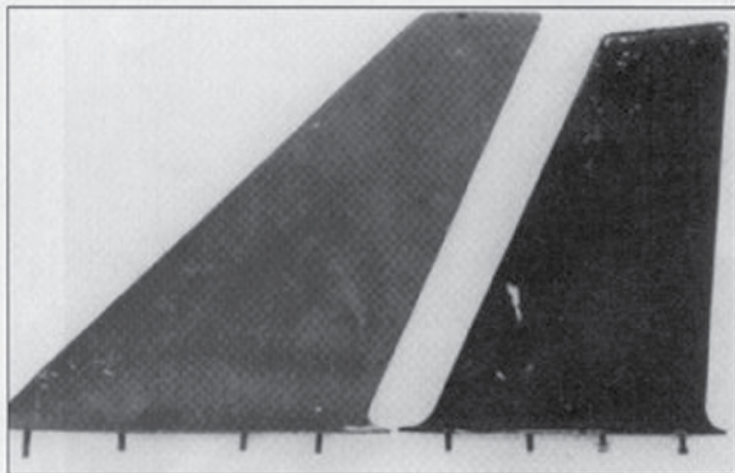
28 new records using one car and engine. That same year Charger Daytonas won 17 of 48 NASCAR races. Incidentally, its Plymouth cousin, Superbird, won 38 of 48 Grand National races during this time. Bobby Isaac would become the first stock car driver to top the 200 mph barrier in March 1970 at Alabama International Speedway with a speed of 200.447 mph. Isaac won the NASCAR points championship that year.

The end of the road for the *Winged Warriors* in NASCAR happened during the year of its greatest success, 1970. They weren't allowed the traditional three-year life span which other models were permitted. In the Fall, NASCAR cancelled eligibility of the Winged Cars with the Hemi. The only way they could be able to compete would be to reduce engine size 25%. With this, Chrysler thus de-emphasized its racing program and dropped its proposed 1971 Charger Daytona.

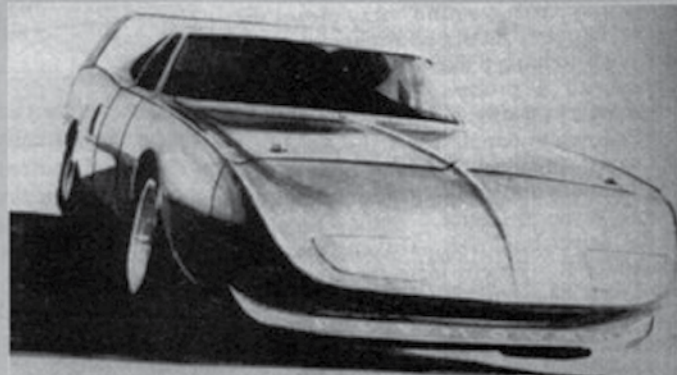
In one final attempt car owner Mario Rossi built a winged '69 Dodge powered by a 305 cid Keith Black-built wedge V8 for the 1971 Daytona 500. It was driven by Richard Brooks. The car led for almost eight laps, throwing a real scare into NASCAR officials, until someone spun in front of Brooks and damaged the nosecone. Brooks was unable to regain the lead and finished tenth.

The *Homologous* version Daytona started life as a rolling Charger R/T equipped with heavy-duty suspension and cooling packages in the Hamtramck, Michigan plant with the front bumper, grille and headlamp components, and rear window chrome deleted. After the nearly-stock Charger R/T was transported to *Creative Industries* (3080 E. Outer Drive, Detroit, Michigan) at a rate of approximately seven per day for the Daytona conversion. At Creative Industries the job required 30 *Special Equipment & Modifications For Body Components*. The major work included are: 22° semi-fastback steel window plug welded in with backlite glass and molding, new decklid and hinges installed, A-pillar stainless bezels installed, rear emblem and stripe, install 1970 fender assembly and hood, nosecone and related accessories, install fender air scoops and screens, rear

1969 CHARGER DAYTONA: ON THE WINGS OF A WARHORSE



Although the Superbird [left] and Daytona [right] stabilizer have different physical dimensions they are both 24-inches tall. The wings are made of poured aluminum. Hence the occasional pits and distortion in some. The Daytona wing is set in 3" from side of car and the rear edge of the wing is the same distance from the rear. The horizontal stabilizer is 57.5" long. The top most edge of uprights turn in to meet the horizontal stabilizer. This measures another 2" on each side.



1970 Dodge Charger Daytona???

Did Dodge plan the Charger Daytona for 1970? Circumstances suggest that this is a strong possibility. But history intervened! Although the *Second Generation* Charger was a styling success it was an aerodynamic brick in stock car racing. It could not build on the success of the previous design. When the Charger Daytona was introduced in September 1969 Detroit, and Chrysler, already had their 1970 model preview session. Car magazines like *Car Life* and *Super Stock* tagged them as officially 1970 cars in event. There is even factory documents supporting this fact.

Product planning what it is, the '68 Charger was born in mid-1965. The time frame involved is within the realm of possibility. We are talking about cosmetic changes, not a complete restyling. It is a known fact that R&D on the Charger Daytona began in October 1968. At this time, Chrysler's styling department was working on the 1971 model B- & E-body cars. That means the styling changes for the 1970 Charger was completed no later than 1966. The minor cosmetic changes to the '70 Charger's hood and fenders, with the additional lip for the loop bumper, was perfect to graph a nosecone too.

When Dodge trucked the production Charger R/Ts to *Creative Industries* for final assembly the *Special Equipment & Modification List For Body Components*, a two page Form with 30 instructions, pointed to the fact that 1970 Fender Assembly and Hood be installed on 1969 front end structures. However, the "Seven Point Checklist" that Creative Industries used for the nosecone, hood, front fenders, wiring harness, decklid, air foil and air scoops for car #149 clearly indicates a 1970 Charger Daytona.

spoiler stanchion reinforcement installation and rear spoiler, prepared surfaces and paint.

The Daytona was available in the same paint colors that were available on the R/T. The Daytona stripe was either Tomato Red, Gloss Black or White. Options that were deleted are: air conditioning, vinyl roof, sun roof, fender mounted turn signals, sill moldings and performance hood paint. If Tinted Glass (G11) was installed the rear glass was clear.

All Daytonas were scheduled for production after April 1, 1969. The first car was shipped to Kingston, Ontario June 27. The last one was shipped to a Lafayette, Indiana dealer on September 8th. Just in time for the Talladega 500 race!

It is believed that all Daytona VINs are in the 287.000 and 434.000 range. Production numbers vary from 501, 503 and 505. Recently, however, a handwritten list has surfaced showing that there may have been only 385 built. Who knows? These cars were only important to the race group, in 1969, and were produced for public sale as a necessity to make them legal. All Charger Daytona VINs begin with XX29. The "Special Order" code, Y39, and stripe delete code, V88, on the Broadcast Sheet indicated to the assembly line worker which cars would eventually become Daytonas. Option code "A11" was used on the Data Plates.PM

An article by Jim McCraw, *Super Stock* magazine September 1969, that the Charger Daytona is "...the wildest car the world has ever seen...available at your nearest Dodge dealer. If not, shop around for a used '70 Daytona; it's still going to be wild years from now!" further exploits the possibility that the Daytona was destined for a 1970 release, but history intervened.

Another story that has circulated for years is the aerodynamic Charger caught the eye of Richard Petty, who was then under contract to Plymouth. When Plymouth refused to release him so he could drive the winged Dodge for the 1969 NASCAR season, Petty bolted to Ford. If this story is to be believed, then Petty would have had to have prior inside information earlier than October 1968 to make his decision. Which brings up some interesting circumstances surrounding development and certain myths. If the fact Dodge believed the Charger 500 was the answer, until they were ambushed by Ford's Torino Talladega at the Daytona 500 in '69, then this leads to two perplexing questions: First, Dodge would have had to know that the Charger 500 would be doomed right out of the gate since the Daytona 500 race wasn't until February 1969; and Second, if not, then the story surrounding the Charger 500's loss at Daytona is a myth and didn't have anything to do with the creation of the winged Daytona.

Whatever, there seems to be enough evidence that circumstances back the theory the Charger Daytona was destined for 1970, until history intervened.

As to whether 501, 503 or 505 Charger Daytonas were built only 342 VINs have been registered by the *Winged Warriors* car club to date. But according to Dave Markus, NASCAR driver, only factory teams received Daytonas. Independent racers shopped at dealerships for the precious Daytona parts to turn their '68 Chargers and '69 Charger 500s into winged Chargers. So, in order to find out just how many production Daytona Chargers were built for the public you would have to include crashed and damaged stock car Charger Daytonas. This could possibly explain the missing production vehicles.

- Robert Oskiera





Richard Lee Petty (born July 2, 1937) is a former NASCAR driver who raced in the Strictly Stock/Grand National Era and the NASCAR Winston Cup Series. "The King", as he is nicknamed, is most well known for winning the NASCAR Championship seven times (Dale Earnhardt is the only other driver to accomplish this feat), winning a record 200 races during his career, winning the Daytona 500 a record seven times, and winning a record 27 races (ten of them consecutively) in the 1967 season alone. (A 1972 rule change eliminated races under 250 miles (400 km) in length, reducing the schedule to 30 [now 36] races.)

Petty is widely considered one of the greatest NASCAR drivers of all time and is one of the most respected figures in motorsports as a whole. He also collected a record number of poles (127) and over 700 top-ten finishes in his 1,185 starts, including 513 consecutive starts from 1971–1989. Petty is a member of the inaugural class of the NASCAR Hall of Fame. He was inducted into the Hall in 2010.

Petty is a second generation driver. His father, Lee Petty, won the first Daytona 500 in 1959 and was also a 3 time NASCAR champion. Richard's son, Kyle Petty, is also a well-known NASCAR driver. Richard's grandson, Adam Petty, was killed in an accident at New Hampshire International Speedway on May 12, 2000, five weeks after the death of Lee. Throughout Petty's career, but especially during his prime, Petty was known to stand for hours – backed against a fence, signing autographs to everyone who asked. In 1969 Petty switched brands to Ford, due to his belief the Plymouth was not competitive on super-speedways; he wanted a slippery Dodge Daytona but Chrysler executives insisted he stay with Plymouth. He would win 10 races and finish second in points. Won back in 1970 by the sleek new Plymouth Superbird with shark nose and goalpost wing, Petty returned to Plymouth for the 1970 season. This is probably his most famous car, and the car in which Petty is cast in the 2006 Pixar film *Cars* and film *Cars 2* in 2011.

Dual Aussie V8 Supercar Champion **Marcus Ambrose** currently drives the #9 Stanley Tools/DeWalt Ford Fusion for Richard Petty Motorsports in the American NASCAR Sprint Cup Series.

Career awards

2010:
Inducted into the first class of the NASCAR Hall of Fame.

1997:
Inducted into the International Motorsports Hall of Fame.

1988: Named one of NASCAR's 50 Greatest Drivers

1989: Sole stock car representative in the first class inducted in the Motorsports Hall of Fame of America



Stockcar racing has its early origins in moonshine running during prohibition. Petty's famous blue Superbird is now immortalised in history, from the Pixar animation "Cars" to a popular attraction at the Chrysler Museum. Not bad for the grandson of a bootlegger family.



WRITER: JULIAN EDGAR

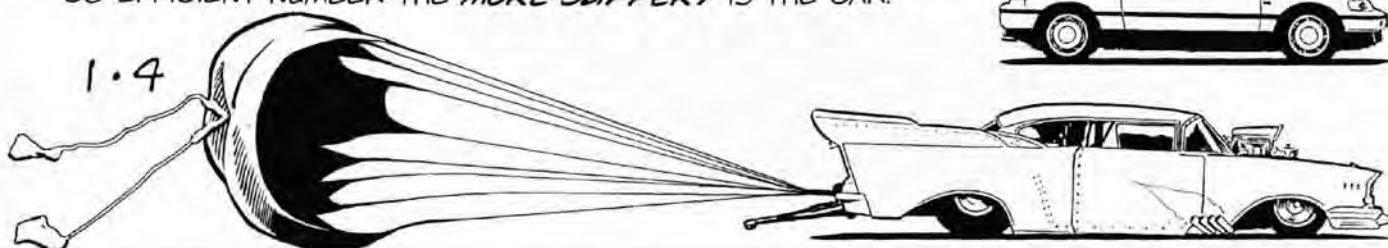
ILLUSTRATOR: DAVE HEINRICH

Car Aerodynamics

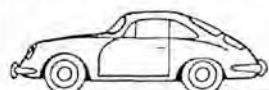


THE **AERODYNAMIC DESIGN** OF CARS INFLUENCES HANDLING, PERFORMANCE AND ECONOMY. AERO MODS CAN BE USED TO IMPROVE ANY OF THESE FACTORS.

HOW EASILY A BODY **SLIPS THROUGH AIR** IS INDICATED BY ITS **DRAG CO-EFFICIENT NUMBER**, OR **Cd**. THE **Cd** OF A PARACHUTE IS 1.4, WHILE THE **Cd** OF A GOOD CAR IS 0.30. THE **LOWER** THE CO-EFFICIENT NUMBER THE **MORE SLIPPERY** IS THE CAR.

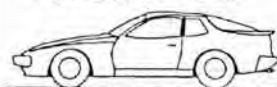


THE TOTAL DRAG OF A CAR IS ALSO AFFECTED BY ITS **CROSS-SECTIONAL AREA**, WHICH IS THE HEIGHT MULTIPLIED BY THE WIDTH OF THE CAR. IT IS MEASURED IN SQUARE METRES. THE **TOTAL DRAG** IS FOUND BY MULTIPLYING THE **Cd** BY THE CROSS-SECTIONAL AREA. IT'S THIS TOTAL DRAG FIGURE WHICH IS MOST IMPORTANT.



PORSCHE 356B

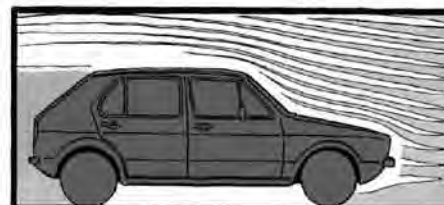
$Cd = 0.40$
AREA = 1.61
TOTAL DRAG
= 0.64



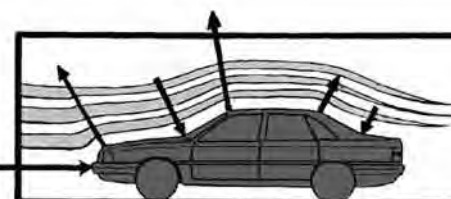
PORSCHE 944

$Cd = 0.35$
AREA = 1.82
TOTAL DRAG
= 0.64

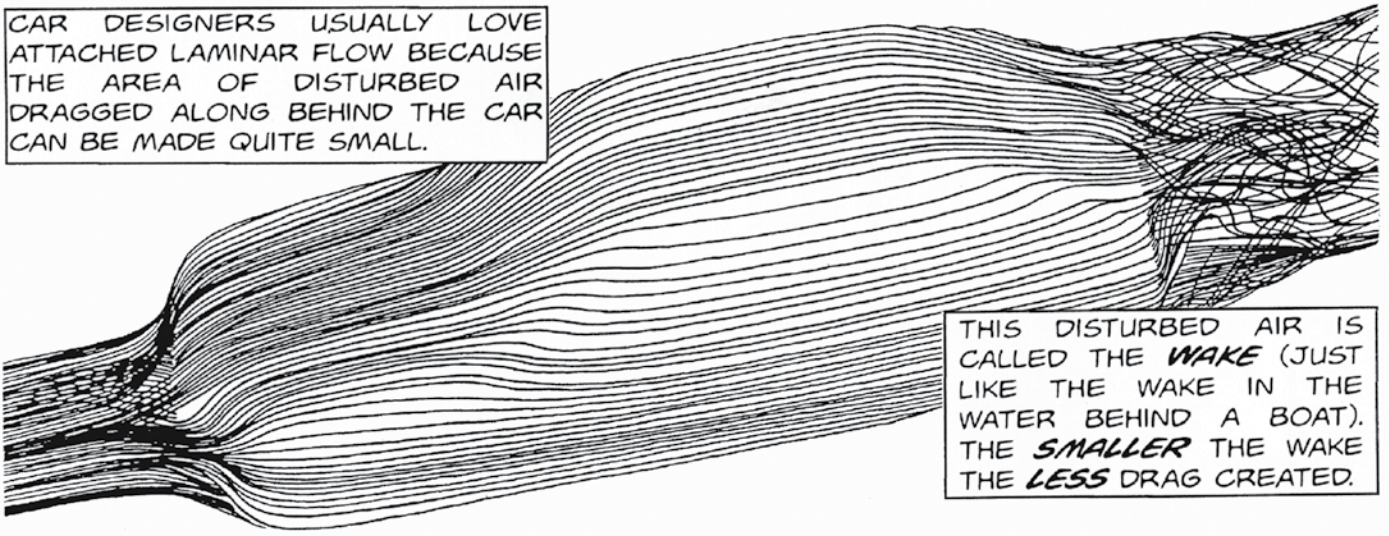
THERE ARE TWO TYPES OF AIRFLOW OVER A CAR - **LAMINAR** AND **TURBULENT**. LAMINAR FLOW OCCURS WHEN THE AIR SLIDES OVER THE SURFACE IN SMOOTH LAYERS. WHEN YOU SEE A PICTURE OF A CAR IN A WIND TUNNEL, THE AIRFLOW SHOWN IS USUALLY LAMINAR.



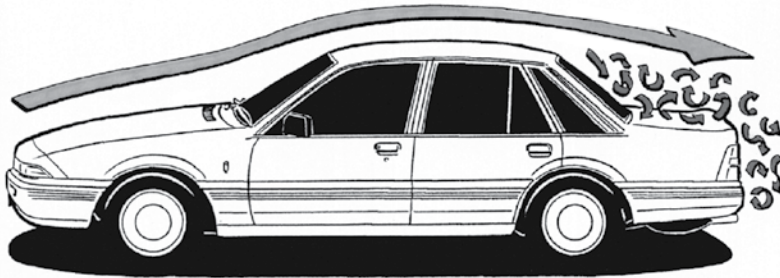
LAMINAR FLOW CAN CREATE **DRAG** AND **LIFT**. WHEN THE AIRFLOW WRAPS OVER CURVED SURFACES THE RESULT IS LIFT, WHICH IS HOW AN AEROPLANE WING WORKS. THE ARROWS SHOW THE AERODYNAMIC FORCES AT WORK ON THE CAR, WITH THE LONGER THE ARROW THE STRONGER THE FORCE.



CAR DESIGNERS USUALLY LOVE ATTACHED LAMINAR FLOW BECAUSE THE AREA OF DISTURBED AIR DRAGGED ALONG BEHIND THE CAR CAN BE MADE QUITE SMALL.

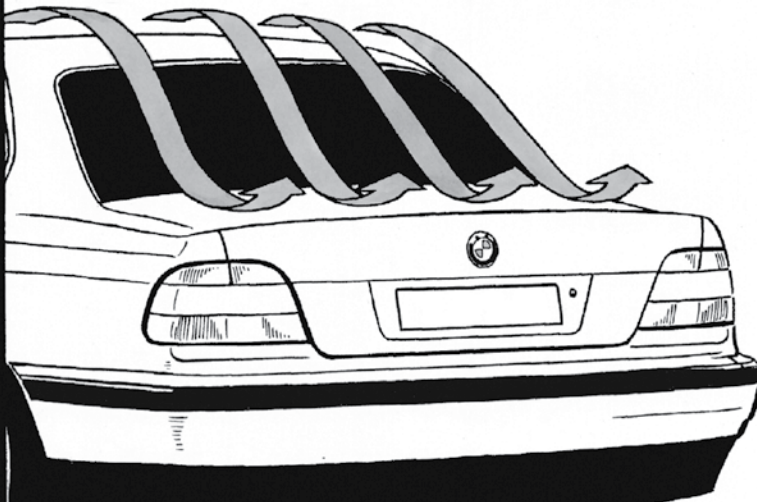


THIS DISTURBED AIR IS CALLED THE **WAKE** (JUST LIKE THE WAKE IN THE WATER BEHIND A BOAT). THE **SMALLER** THE WAKE THE **LESS** DRAG CREATED.

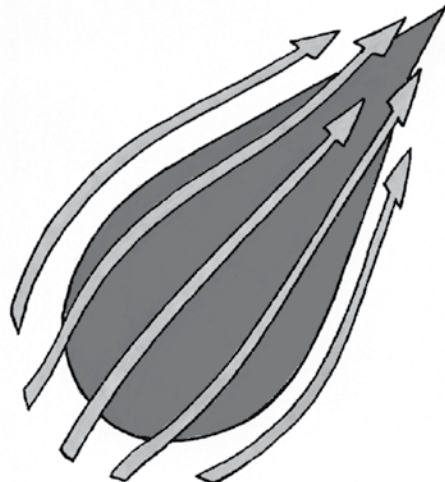


IF THE AIR MOVEMENT IS IN RANDOM SWIRLS AND EDDIES THEN THE AIRFLOW IS **TURBULENT**. TURBULENCE CAUSES LOTS OF DRAG BUT NOT MUCH LIFT. WHEN THE AIRFLOW BECOMES UNSTUCK FROM THE CAR'S SURFACE TURBULENCE OCCURS. IF THE AIRFLOW SEPARATES AT THE END OF A SEDAN'S ROOF THERE'S A HEAP OF TURBULENCE ON THE BOOT AND THE WAKE IS ALSO BIGGER. THE RESULT IS A POOR C_d FIGURE - THERE'S LOTS OF DRAG.

WHERE THE AIRFLOW DOES LEAVE THE CAR **CLEAN SEPARATION** IS REQUIRED. ON LOW-DRAG CARS THE AIRFLOW LEAVES AT THE END OF THE BOOT-LID AND IF THE FLOW CAN WRAP ITSELF AROUND THIS CORNER MORE DRAG IS CREATED. THESE CARS HAVE A SHARP CHANGE OF ANGLE AT THE TRAILING EDGE OF THE BOOT TO PREVENT THIS SUCTION PEAK FORMING.



THE MOST SLIPPERY SHAPE OF ALL IS A **TEARDROP**. THE AIR FLOWS AROUND THE GENTLY CURVED FRONT WITHOUT SEPARATION AND TURBULENCE, AND THE WAKE IS ALMOST NON-EXISTENT.



A **MITSUBISHI** MAGNA HAS THE VERY LOW C_d OF 0.28. IT'S EASY TO SEE WHY IT'S SO SLIPPERY.

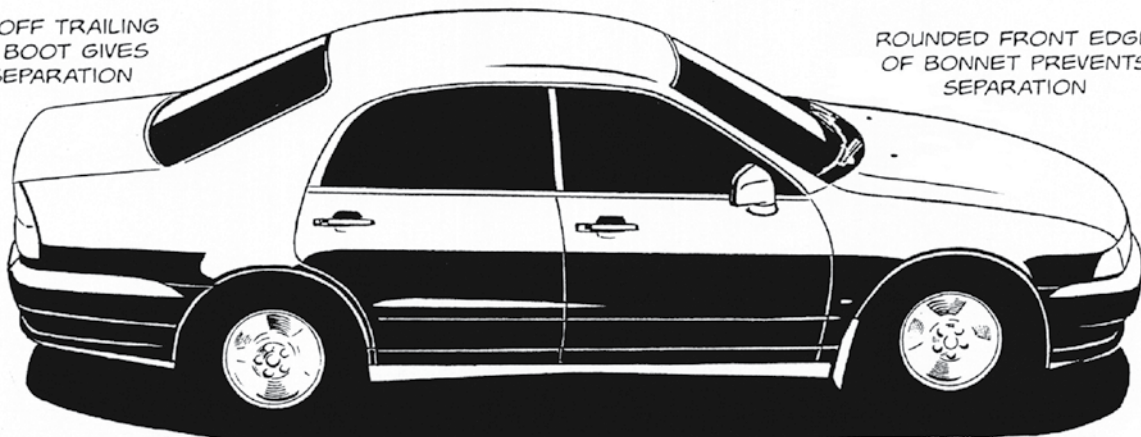
STEEPLY-RAKED REAR GLASS
KEEPS LAMINAR FLOW
ATTACHED FROM THE ROOF
ONTO THE BOOT

0.28

SQUARED-OFF TRAILING
EDGE OF BOOT GIVES
CLEAN SEPARATION

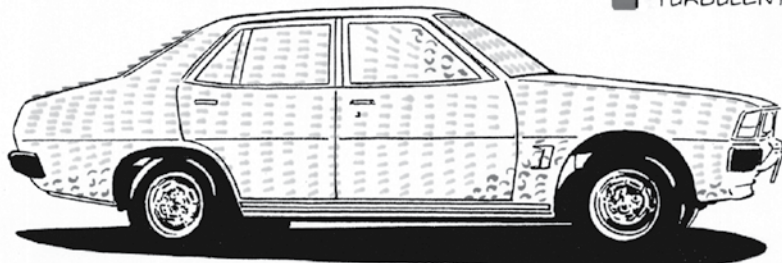
ROUNDED FRONT EDGE
OF BONNET PREVENTS
SEPARATION

WAKE IS
SMALL

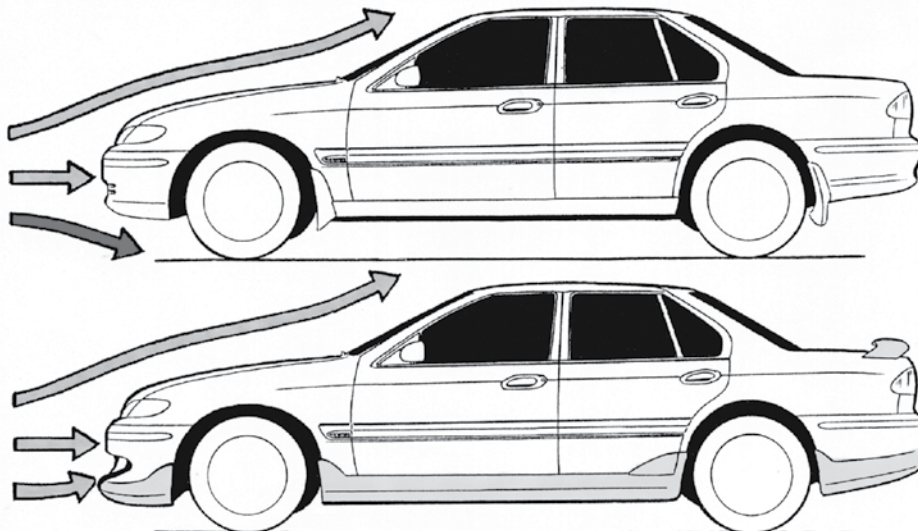


SIDE AIR DAMS CONTROL AIR
FLOW UNDER THE VEHICLE

BEFORE YOU MAKE AERO MODS IT'S
BEST TO **WOOL-TUFT** THE CAR AND
THEN DRIVE IT ON THE ROAD.
OBSERVE FROM ANOTHER CAR
WHAT HAPPENS TO THE WOOL. WHEN
THE TUFTS LINE UP IN ROWS THE
FLOW IS LAMINAR, AND WHEN THE
TUFTS SPIN AROUND THE AIRFLOW
IS TURBULENT.



■ LAMINAR
■ TURBULENT

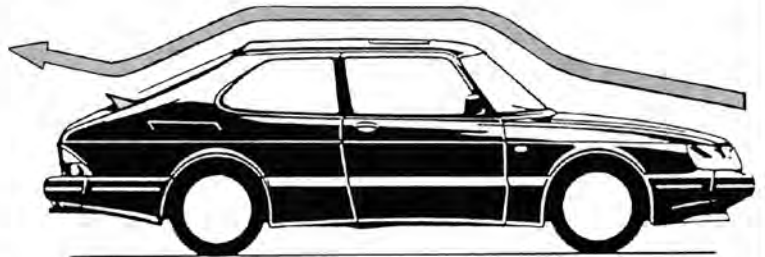


A LOW FRONT SPOILER
WILL OFTEN **REDUCE
DRAG** AND FRONT AXLE
LIFT. TURBULENCE UNDER
THE CAR WILL BE
REDUCED AND RADIATOR
AIRFLOW WILL BE
IMPROVED.

HOWEVER IT'S THE BACK OF THE CAR WHERE THERE'S MORE AERO ACTION. IF YOUR CAR'S A **HATCH** WITH A STEEP TAIL, AIM TO GET A CLEAN SEPARATION AT THE END OF THE ROOF. USING A **ROOF EXTENSION SPOILER** WILL DO THIS.



ON A **LIFTBACK** WHAT YOU DO WILL DEPEND ON WHERE THE AIRFLOW SEPARATES - AND DON'T ASSUME THAT THIS HAPPENS AT THE VERY BACK OF THE CAR. IF THE AIRFLOW LEAVES AT THE END OF THE ROOF USE A **SMALL** SPOILER TO GET CLEAN SEPARATION AT THIS POINT, WHILE IF SEPARATION OCCURS AT THE END OF THE LIFTBACK'S HATCH, USE A **LARGE** SPOILER TO CANCEL OUT SOME OF THE GENERATED LIFT, AS WELL AS TO PROVIDE CLEAN SEPARATION.



ON **SEDANS** WHICH ARE OLDER IN SHAPE THAN THE VN COMMODORE/EA FALCON, THE AIRFLOW SEPARATES AT THE END OF THE ROOF. USE A **VERY LARGE** SPOILER AND/OR INCREASE THE HEIGHT OF THE BOOTLID TO PROMOTE FLOW RE-ATTACHMENT ON THE BOOT. THE WALKINSHAW GROUP A WAS A CLASSIC EXAMPLE OF IMPROVING A CAR'S AERODYNAMICS.



ON **MODERN AERO SEDANS** A SPOILER (OR PROPER WING) CAN BE MOUNTED ON THE BOOTLID.



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See **Hugh 0419 857 905**

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2 x Valiant Safari;
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PARTS WANTED

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SUMMER HOLIDAYS CRUISING CALENDAR

December:

Tues 13th: CCCSA Meeting and Xmas BBQ
– 6pm, Combined Car Club Rooms, Port Road, Croydon
Sat 17th: CCCSA Evening Cruise
– 7:30pm, Departs Welland Plaza, Port Road, Croydon
Mon, 26-Dec-11
Jaf's Last Cruise
Meet at West Lakes Shopping Centre (TBC)

January:

Tues 10th: CCCSA Meeting
– 7:30pm, Combined Car Club Rooms, Port Road, Croydon
Sat 21st: 'CCCSA Cruise to 'CRUISE-ON', Tanunda
– 4:30pm, Meet at Combined Car Club Rooms, Port Road, Croydon
Hot Rods, Street Party & Cruise
Murray St, Tanunda CLOSED for the event
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February:

Tues 14th: CCCSA Meeting
– 7:30pm, Combined Car Club Rooms, Port Road, Croydon
Sat 25th: Mopar MegaCruise - Port Road, Bonython Park
– 2pm, All Chrysler Day Judging
– 5pm, Meet and Greet BBQ, cruise departs
Sun 26th: ALL CHRYSLER DAY South Australia 2012
– 9am-4pm, Urrbrae Agricultural High School
corner of Cross Road and Fullarton Road, Netherby



March:

1st– 4th: Clipsal 500
– Club cars at Thunder Road - single day
Tues 13th: CCCSA Meeting
– 7:30pm, Combined Car Club Rooms, Port Road, Croydon
Sat 17th: CCCSA Evening Cruise
– 7:30pm, Departs Welland Plaza, Port Road, Croydon

If you know of an event not
mentioned here contact
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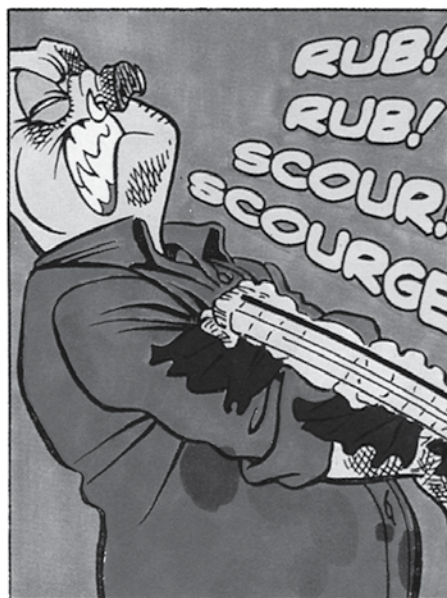


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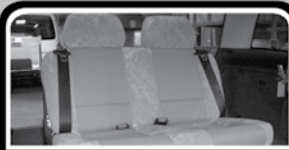
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