

# Mirage

From Fantasy to Reality  
by Mike Reimann

In 1970 I achieved a young man's dream – owning a car of my own! Even though I didn't know how to "top off the oil" it didn't diminish my pride. This brought to light a wide range of engineering and technical skills I lacked. Because I have an insatiable appetite for learning, I challenged myself to build a car from the ground up. The goal was to fabricate a unique vehicle. To achieve this end, I would need to gain new skills such as automotive principles, machining, welding, wiring and fiber-glassing. From the outset the experts agreed – "It'll never run!" Nevertheless, by 1973 the chassis, suspension and power train were complete. In 1975 the car was licensed and street driven and bodywork was underway.

The fantasy was to build an exotic car similar to the Ford GT40 Mk IV. A basic design philosophy was established that would guide the project. The car would primarily be for street use and as much as possible, standard components would be utilized to ease maintenance and repairs. The only major non-standard component was the gearbox, a ZF five speed transaxle. It had performance and weight advantages that made its use worthwhile.



Chassis construction and the rear suspension used features not found in "street" cars. The chassis utilized three structural design types: Twin-tubes form the basic frame; the roll cage and scaffolds are space frame construction; and semi-monocoque panels act as stress members simultaneously forming walls. This hybrid structure provided a rugged yet light frame.

By 1975, though mistaken for a dune buggy, the car was safety inspected and licensed in California. It had to go through a gauntlet of Department of Motor Vehicles officials, highway patrol officers and picky inspectors. They subjected it to all the regulations in a 2" thick vehicle code. Requirements dealt with brakes, fenders, mirrors, lights, glass and smog devices. All passed with flying colors. Fortunately bumpers were not required by the rigorous California code.



Bodywork was formed from fiber glass panels. "One-shot" female molds minimized total work and expense while producing smooth and continuous contours. Cross-sectional wooden frameworks were fabricated for the major body panels. Each framework was lined with sheetrock, which when wetted easily shaped into the contours. Finer detailing and a smooth finish were gained from tape and bedding compound. Finally, the molds were shellacked and waxed.

Polyester resin was squeegeed into fiber glass mat to produce the actual body panels. Removal of the panels could only be accomplished by destroying the molds. The panels had smooth surfaces and required minimal sanding in preparation for painting.



Due to the car's small size, components were packed together like a Chinese puzzle. Usually such a compact configuration would be difficult to maintain. To ease access for minor repairs and adjustments, the front and rear body panels were designed to swing clear of the chassis. Both panels can also be easily removed. This simplifies major repair efforts such as engine removal, which can be done in one hour.

The ZF transaxle allowed for a mid-engine configuration. To accommodate this arrangement, an independent rear suspension was developed. It can be readily adapted for experimentation and is easily tuned. Handling characteristics are similar to those found in Grand Prix cars.



In the engine bay, most parts were specially fabricated or modified. I designed all components such as suspension, intake induction and exhaust headers. An unusual but needed adaptation was the use of an Offenhauser manifold and Holley carburetor to allow rearward visibility over the air cleaner. The headers were of a custom arrangement that provided an overhead exhaust flow. These items were built by certified machinists and welders, as I did not have the required skills.

Though it appears complete, the car needs many mechanical improvements, finish out of the interior and detail work. When the project was undertaken I lacked the knowledge and skills necessary to design and fabricate an exotic car. Even though the car is functional, there are features that could be improved due to enhanced knowledge and newer technologies. The brake system, cooling system, fuel delivery system and shifter linkage were reengineered and upgraded. Weather proofing, carpeting, air conditioning, heating and a sound system are needed inside. Body imperfections will be removed. The headlight domes and rear deck will be covered with Lexan<sup>®</sup>. Once these improvements are complete, the car will undergo a "ground up" restoration. Ultimately I hope to have it in perfect condition for *Concours d'Elegance*.

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## General Specifications

Configuration	Mid-engine rear drive
Chassis	Twin tube sub-frame with semi-monocoque reinforcement
Body	Fiber glass
Curb weight	2,650 pounds
Weight distribution (F/R)	42% / 58%
Length	168"
Width	74"
Height	40"
Wheelbase	102"
Track (F/R)	60" / 58"
Overhang (F/R)	42" / 24"
Ground clearance	4¼"

## Engine

Configuration	Overhead valve V8
Displacement	327 cubic inches
Compression ratio	10.5:1
Carburetion	4 venturi 600 cfm
Torque	320 ft-lbs @ 3,200 rpm

## Fuel capacity

Fuel cells	2 x 9 US gallons
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## Suspension

Front suspension	Unequal length A arms, coil spring over tubular shock
Rear suspension	Double trailing arms, transverse top link, lower wishbone, coil spring over tubular shock
Front brakes	12.19" disc
Rear brakes	12.19" disc
Wheels (F/R)	7" x 15" / 8 ½" x 15"
Tires (F/R)	225/50 VR15 / 255/60 VR15
Steering	Rack & pinion

## Drive train

Clutch	Single plate flywheel
Five speed manual transaxle	ZF 5DS25/1
1 <sup>st</sup>	2.42:1
2 <sup>nd</sup>	1.47:1
3 <sup>rd</sup>	1.09:1
4 <sup>th</sup>	.958:1
5 <sup>th</sup>	.846:1
Differential	4.5:1