

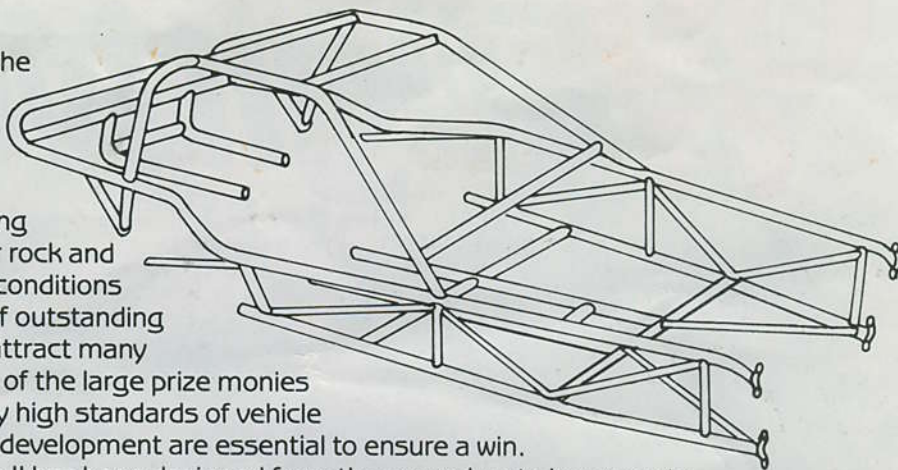
Fugitive II



Bred from strength



The concept of the Fugitive car comes from the American Baja Desert race cars where they are raced in 1000 mile long endurance races over rock and sandy terrain. These conditions ensure a car design of outstanding durability. The races attract many competitors because of the large prize monies offered. Consequently high standards of vehicle handling and general development are essential to ensure a win.



The UVA Fugitive II has been designed from the ground up to incorporate the latest computer stress analysis data. These changes have culminated in improved chassis strength and torsional stiffness. These developments have benefited the Fugitive with improved road holding and higher standards of safety.

Whether road or race driven, breathless and exhilarating performance is achieved, safely, surrounded by the Fugitive's chassis combined rollover cage. The UVA Fugitive is based on VW Beetle suspension, transmission and engine components, (although other engine options are available).

What might at first seem an unusual donor vehicle has in fact proved to be the most competitive available. Over 30 years of American Baja racing has highlighted the Beetle as an outstanding offroading machine. Because of the economics in using the Beetle based vehicle, road or racing Fugitives can be built inexpensively.

The development of the UVA Fugitive has been enhanced by the technical back up and assistance UVA have received from Dee Engineering (Bugpack), Sway-a-Way and C&C Wheel Co. These Californian based companies are renowned for their off and on road specialist parts and components and are solely represented in Europe by the UVA Co. Ltd.

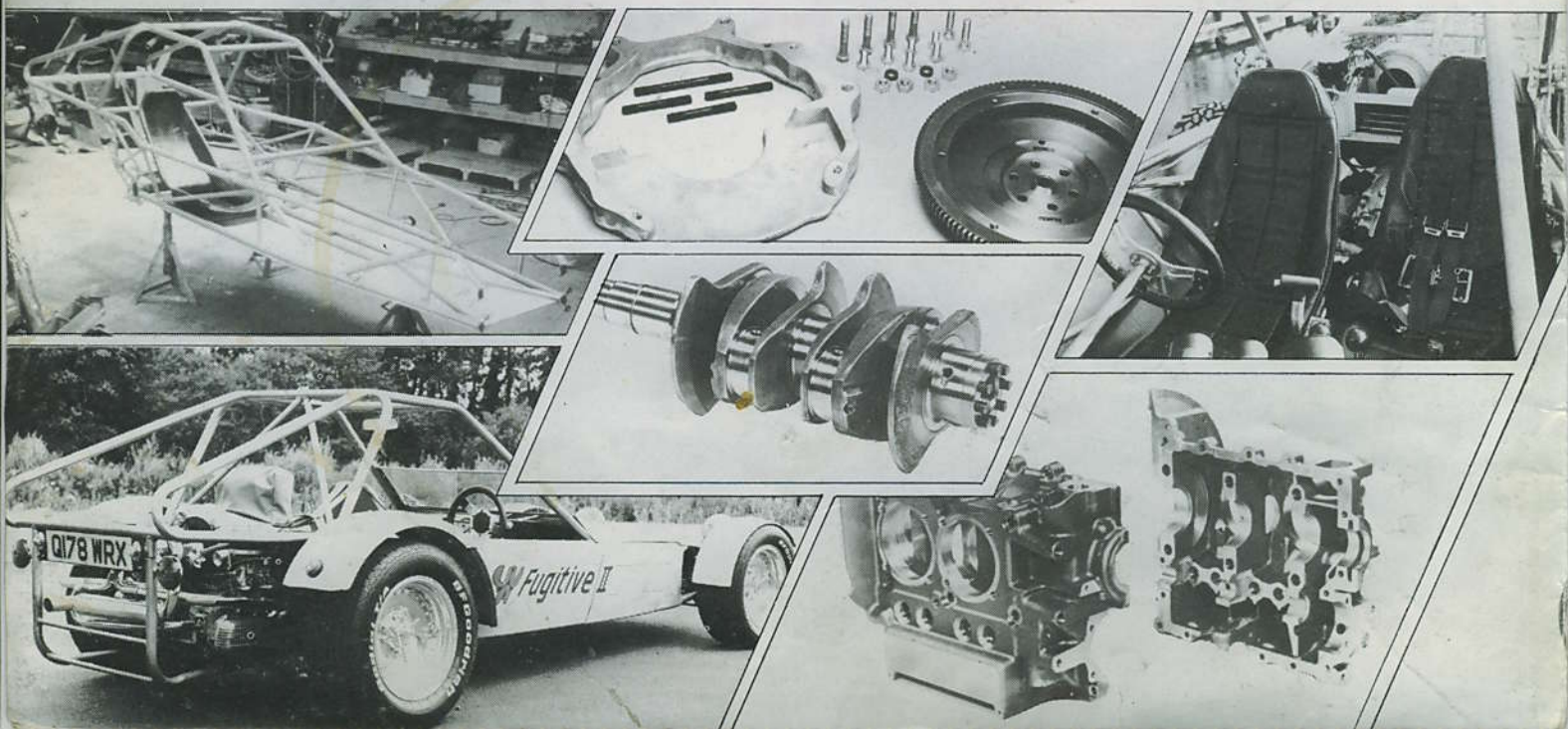
Fugitives can be built inexpensively

The Fugitive chassis, part no. B5501 BJ, is supplied in either part assembled form or fully assembled complete with your own supplied torsion housing. The Fugitive can be supplied to accept either single or double jointed VW rear suspension.

The accompanying price list gives only brief details of the vast range of parts UVA offer a Fugitive builder. The UVA/Bugpack/Sway-a-Way catalogues should be purchased from your local distributor or direct from UVA to help further with details on parts and ideas.

UVA have available, the largest range of specialist VW off roading, racing, customising, conversions and kit car components in Europe.

UVA's technical team are continually developing new products and ideas, so if you are stuck for an answer, always phone for help. UVA stock an extensive range of specialist parts to cover most racing or road requirements.



The basic information needed before building a UVA Fugitive II

The Fugitive is built using VW Beetle components, although all Beetles appear to be the same they are, indeed, not the same.

Brief Beetle Model Outline		Wheel Stud Patt.	Front		Rear	
Year	Model		Brakes	Sus	Brakes	Sus
1960-66	1200, 1300cc	5	D	LP	D	SA
1967-77	1200, 1300cc	4	D	BJ	D	SA
1967-70	1500, 1600cc	4	C	BJ	D	SA
1970-77	1302, 1303 (1300cc)	4	D	MAC	D	IRS
1970-77	1302S, 1303S (1600cc)	4	C	MAC	D	IRS

Key D = Drum brakes
 LP = Link/king pin torsion bar
 SA = Swing axle suspension
 MAC = Macpherson strut suspension
 C = Disc brakes
 BJ = Ball joint torsion bar
 IRS = Fully independent suspension

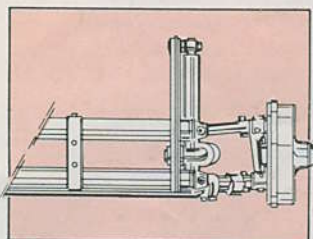
Analysis of suitability of various Beetle components

The up to 1966 Beetle had 5 stud wheels, 205mm PCD (205mm Pitch Circle Diameter) whilst the remaining models of Beetle had 4 stud wheels, 130mm PCD (130mm Pitch Circle Diameter). The larger 5 stud wheel bolt pattern is preferable for the rough going of Offroad racing, while the 4 stud pattern wheels are more than adequate for Offroad fun and street driving. The rear drum/hubs are interchangeable between 4 and 5 "studders" with the use of spacers on the drive shafts to position the drum and brakes.

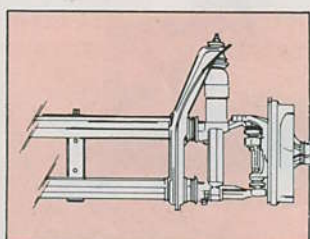
(D) Drum brakes are best for Offroad racing and interchanging the front hydraulic cylinders with the rear is beneficial. This increases the rear braking effort and reduces the front, for better balanced brakes. Drum brakes are also ideal for general road use.

(C) Disc brakes are preferable for high speed road use. Use the UVA rear disc brake conversion (Part No. UM11) for the best in balanced high performance brakes.

(LP) Link/king pin front torsion beam suspension is best suited to offroad racing. The link pin design allows the suspension to be modified for longer travel.



Link/kingpin front suspension helps smooth rugged off-road ride.

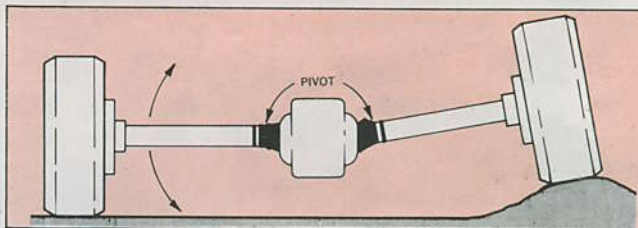


Ball-joint front suspension is excellent for street and off-road use.

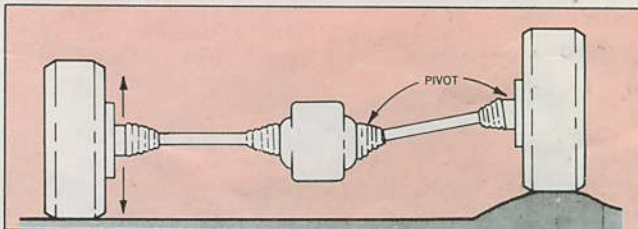
(BJ) Ball joint front torsion beam suspension is preferable for road use and the occasional Offroad use. The inherent design of the ball "jointer" allows for improved suspension geometry and adjustment.

(MAC) The Macpherson front suspension is of no use when building a Fugitive.

(SA) Swing axle rear suspension is suitable for both Offroad racing and road use. It is cheaper to modify a swing axle to obtain longer travel than the IRS.

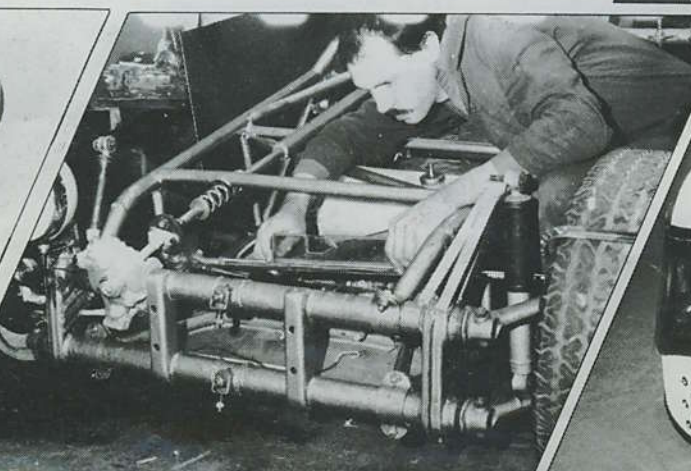


Swing Axle torsion assembly.



IRS torsion.

(IRS) Independent rear suspension (double jointed) is preferable for both offroad racing and high speed road use. The double jointed rear suspension has a better design which keeps the rear wheels in a near vertical plane through it's suspension travel, therefore, increasing tyre contact with the road.



Synopsis of which type of rear suspension you should run

Here are the pros and cons of each – you can decide which system you want to run. Remember, if you ask an Offroad racer who uses the IRS, he's probably say that his IRS was best. Conversely, if you ask a Swing Axle user, he'd say his was the best. Below is a chart to help you choose. (The advantages of both systems apply to both recreational and serious racing use. The disadvantages apply more to racing use.)

Swing Axle Advantages

Less unsprung weight.
Simplicity of design (less things to break).
Costs generally less.

Swing Axle Disadvantages

Should convert to later style long axles (67 onward).
Axles should be x-rayed or magnafluxed, shotpeened and highly polished on drive plate end.
Fulcrum plates should be matched to axle (should be done by experienced personnel).
Heavier axle tubes or axle tube stiffeners are required to keep axle tube housing from bending.
Stops are required on spring plates for camber control when wheel is in lowest position (recommended 2°3' maximum camber with spring plates against stops to eliminate ill handling effects)

I.R.S. Advantages

Additional ground clearance available.
Additional wheel travel.
Minimal camber change.
Lighter torsion bar can be run.

I.R.S. Disadvantages

Transmission stub axles may need modifications to increase longevity.
Constant Velocity joints need modifications and constant maintenance.
Axles should be replaced with aftermarket torsional types (Part No. B6571).
Trailing arms need to be beefed up (we have a kit available for this purpose, Part No. B6574).

Fugitive Suspension Suggestion Guide

	Front	Rear
Serious off road racing spec	LP	IRS
*On/off road car spec	BJ	SA
Street roadster	BJ	IRS

*The advantage of this specification means you only have to "cannibalise" 1 model Beetle.

Beetle transmission gearing	Differential ratio
1200, 1300 cc	4.375
1500, 1600 cc	4.125

The gear ratios in Beetle transmissions are almost identical, the only major differences are the differential ratios. An off road vehicle with high profile tyres should use the Beetle transaxle with a 4.375 diff. A sports roadster with low profile tyres should use the 4.125 dif. version.

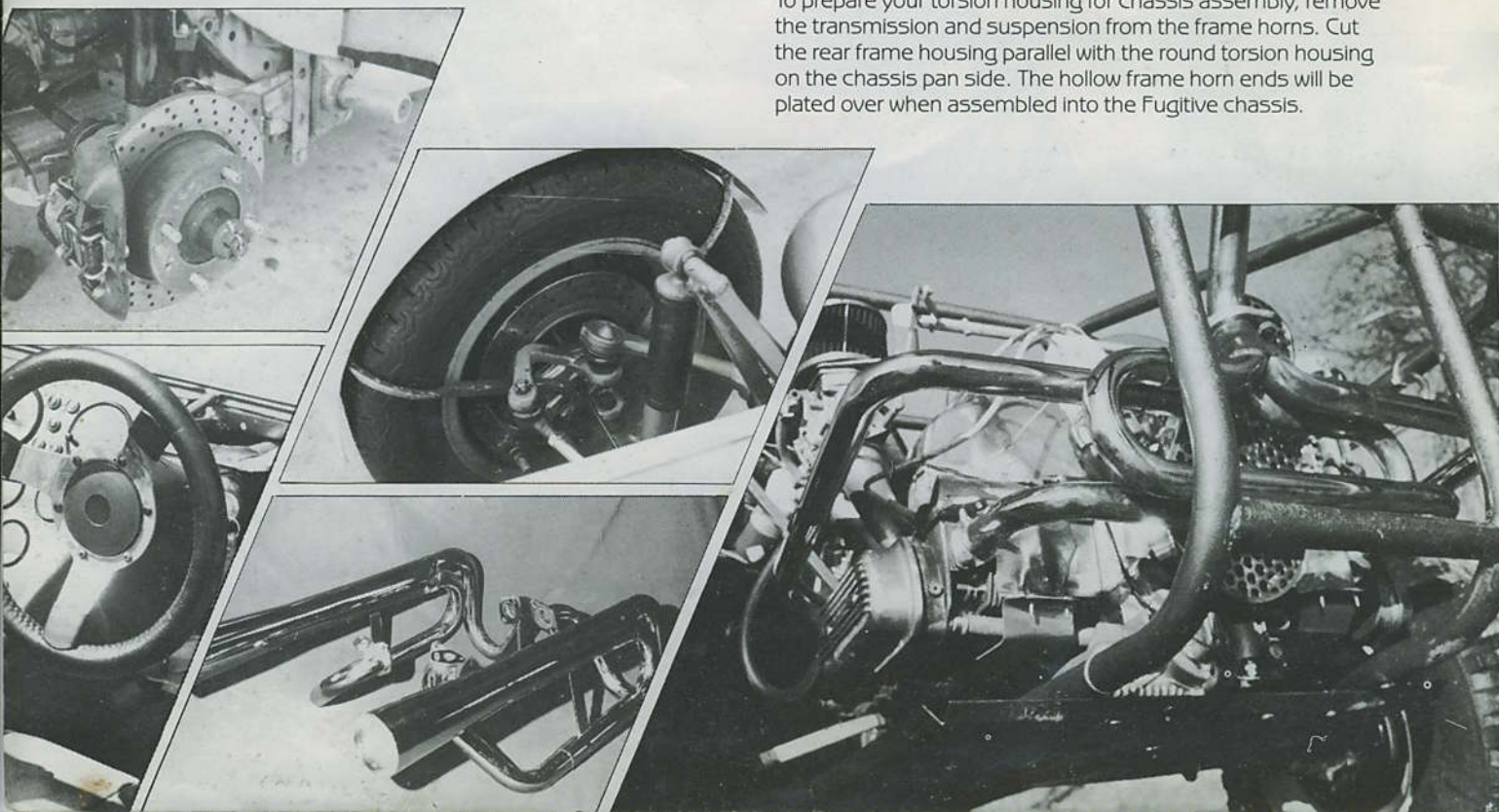
The parts required from your donor Beetle

	Offroad Racing	On/off Roadster	Sports Roadster
Front suspension beam	★	★	★
Steering box & ancillaries	★	★	★
Steering column		★	★
Fuel tank		★	★
Horn		★	★
Pedals		★	★
Handbrake lever & mountings		★	★
Gear lever & shaft	★	★	★
Instruments & switches		★	★
Wiring loom		★	★
Brake pipe clips	★	★	★
Brake master cylinder reservoir		★	★
Rear suspension & torsion housing	★	★	★
Engine & transmission	★	★	★
Battery	★	★	★
Control cables & tubes		★	★
General electrical fittings		★	★

Chassis construction

If you require a fully welded chassis it is preferable if you supply a Beetle rear torsion housing (bare). The chassis can then be finally assembled and welded with your torsion housing affixed to it.

To prepare your torsion housing for chassis assembly, remove the transmission and suspension from the frame horns. Cut the rear frame housing parallel with the round torsion housing on the chassis pan side. The hollow frame horn ends will be plated over when assembled into the Fugitive chassis.



Answers to some of your questions

Q. Are there different Fugitive Chassis?

A. There is only one Fugitive chassis which is strong and works well in On and Offroading. Racing Fugitive chassis have additional bracing to suit their chosen task, either Offroad or tarmac circuit racing. The UVA Fugitive II chassis has been subject to a computer stress analysis programme to refine its outstanding qualities – beware of poor imitations. For the serious racer requiring the ultimate, the chassis can be built in the lighter, stronger and higher priced Chromoly tubing.

Q. Can I use other types of engines?

A. The Beetle engine/trans'y package has proven to be the most competitive racing combination. Although different engine options can be installed into a Fugitive with the aid of UVA's range of engine/trans adaptor kits; Rovers, Fords, VW, Alfas etc.

Q. Is there a shorter version of the 100" wheelbase Fugitive?

A. No, is the straight answer. For years competitors have believed that a shorter 90" wheelbase has been the way to go for short course racing. This was true until the introduction of the steering (Fiddle) brakes. This device allows each rear wheel to be independently braked (overriding the normal footbrake). This virtually turns the car on a sixpence (remember sixpences) which drastically minimizes the effect of the wheelbase in a corner. The many advantages of a longer wheelbase car are, more time to react to changing road conditions, plus a more comfortable ride. Also better stability at high speeds and greater car control on rough surfaces.

Q. Will a Fugitive "pop wheelies"?

A. No, not even with a V8 Rover in the back. The Fugitive is a purpose designed concept race car not an uncontrollable circus trick show. The VW rear engine layout has years of competition success as proof of its racing virtues (Porsche 911 and Delorean are two further successful examples).

Q. How much construction can I do myself?

A. If you are a competent welder the chassis can be purchased in kit form and welded by you. If your welding is questionable, go for a fully welded chassis. The extra cost is minimal compared to the overall cost of the car and could make a difference on resale value. The final assembly is straightforward. UVA can part or complete build race cars to customer requirements.

Q. How long will it take to build?

A. This depends on your organisation. Plan which type of Fugitive you are going to build, use the UVA/Bugpack parts catalogues as a shopping list, prepare and repair your standard parts ready for assembly. Don't kid yourself on how much it's going to cost you to meet your desired Fugitive model. Budget correctly, purchase all the parts you need and you will build the car, from an assembled chassis, within one month. Alternatively, use time as your way of spreading the cost and assembly period.

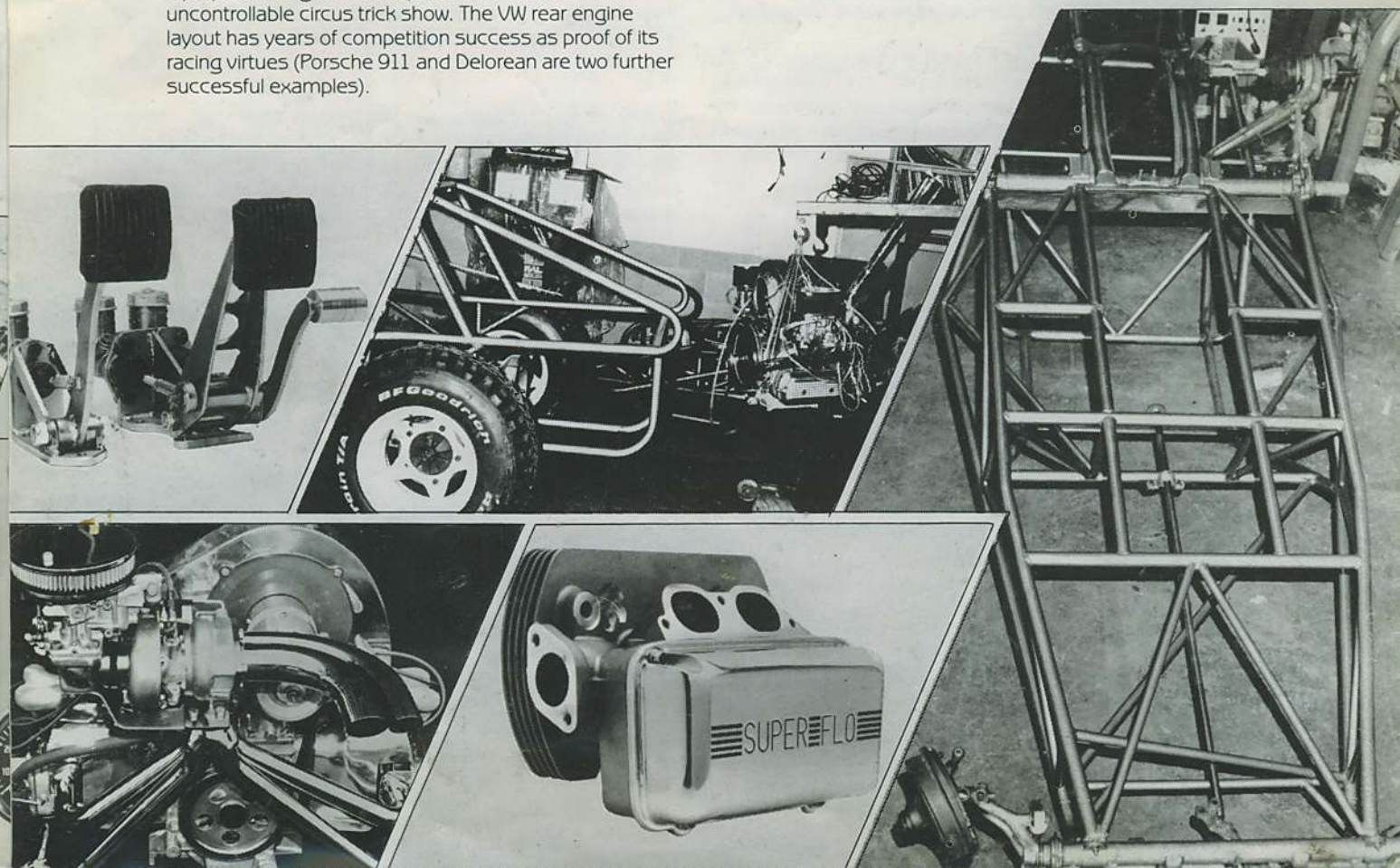
Q. Will I get stuck for those special parts?

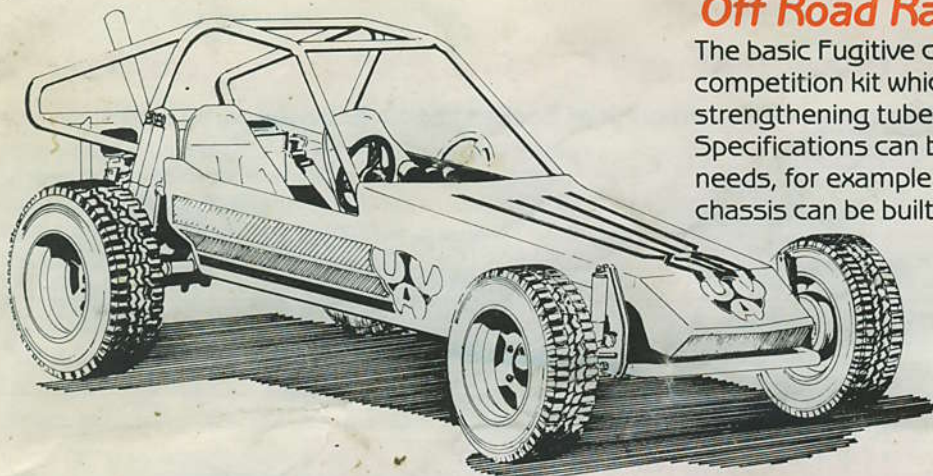
A. No, you will not, UVA's policy is to stock an extensive range of special parts and equipment to help you construct your car from mild to wild. UVA have a range of second hand and standard parts available too.

Q. What do I do to make the car road legal?

A. The build manual shows you how to assemble a road legal car, covering lighting requirements to registration forms – it's quite easy.

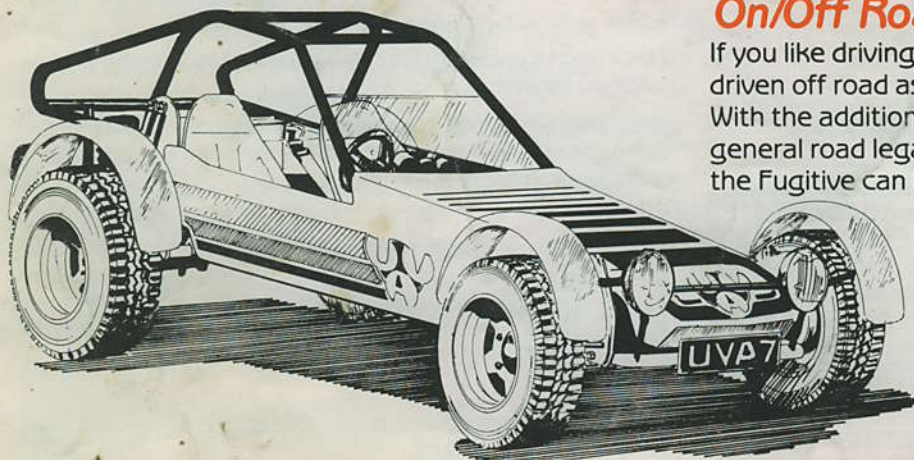
UVA are continually developing new ideas and products; if in doubt, please phone and ask for help.





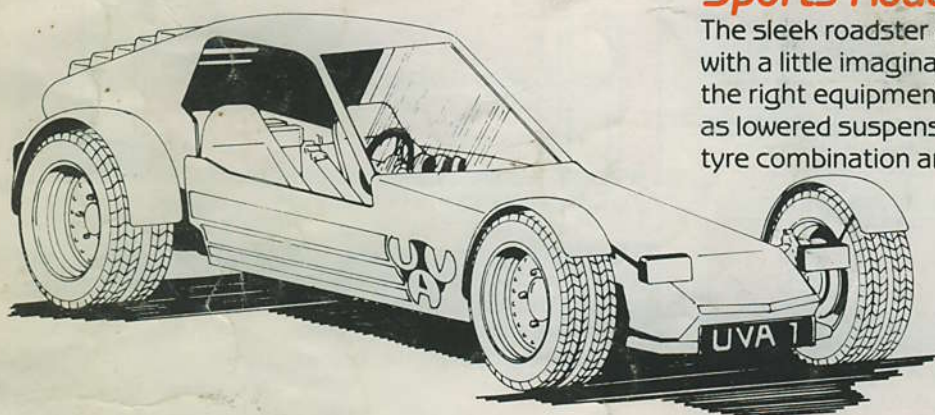
Off Road Racer

The basic Fugitive chassis is supplemented with a competition kit which includes additional strengthening tubes plus front and side crash bars. Specifications can be altered to suit individual needs, for example either a single or two seat chassis can be built.



On/Off Roader

If you like driving a sporty road car that can be driven off road as well, then the Fugitive is ideal. With the addition of lights, speedo, mudguards and general road legal equipment such as a silencer, the Fugitive can be highway driven.



Sports Roadster

The sleek roadster appearance can be achieved with a little imagination and judgement in choosing the right equipment to complete the Fugitive. Such as lowered suspension, roadster style wheel and tyre combination and additional body mods.

The Fugitive Hardtop

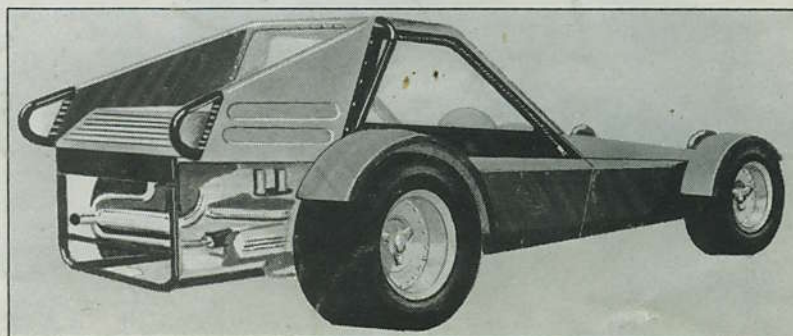
Suitable for the Sports Roadster and the On/Off Roader.

UVA Technical Data available

Preparing the Beetle to Handle
How to Lower the VW Front End
Fitting a Porsche 911 Engine/Trans into a VW
Tyre Dimension Chart
VW Gear Ratio Chart
Fitting Water Cooled Engines into VW's

Books available

B7044 Clymer Performance Tuning Book
B7049 Off Road Preparation Book
B7050 5200 Holley Carb Handbook
B7051 How to Hot Rod VW Engines
B7052 Clutch & Flywheel Book
B7053 Metal Fabrication
B7054 How to Make Your Car Handle
UC 10356 VW Beetle Car Repair Manual



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