

Fisher Sportscars



Fury Build Manual

Website: www.fishersportscars.co.uk

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INTRODUCTION by Jeremy Phillips, designer of the FURY

SINCE EARLY 1982 I HAVE BEEN DESIGNING AND MANUFACTURING LOW COST, high performance sports cars. Examples of the Sylva marque bear testimony to my commitment to novel design: rather than big budget competition success. The countless fastest laps, class and outright wins at circuits throughout Great Britain and recently abroad tell their own story.

The FURY that you are about to assemble represents the culmination of years of road and racing practice. Hopefully, it will give you many miles of exciting 'pure' driving. This construction manual has been produced in an effort to help you achieve an enjoyable and cost effective build-up. Don't forget you are not the first person to have built one of these cars and there is always support for you at the end of a telephone line. Do not risk your valuable kit components if you are not sure! You may even be able to help others to follow in your footsteps by finding a new way to get over an old problem. Please remember that once you have completed your project FISHER SPORTSCARS will gladly give it a 'once over'. For your support and feedback on construction please contact FISHER SPORTSCARS on 01622 832977.

Wishing you an enjoyable and trouble free build-up.

Jeremy Phillips

SECTION ONE

1.1 DONOR VEHICLE AND GENERAL INFORMATION

In order to build you FURY you will need a number of mechanical components from a FORD SIERRA for IRS version and FORD ESCORT MK2 for LIVE AXLE. Although the ESCORT and SIERRA are comparatively hard-wearing vehicles we strongly recommend replacing the following components for the sake of your own safety:

All brake components including rear slave cylinders. ALL brake lines, brake flexible hoses: Rear brake shoes, front disc pads and fuel lines. Also check: brake discs for wear and run-out, complete steering for any play (worn bushes) etc. For a reliable vehicle we advise you to also check the following: The radiator for damage (leaks), and all the cooling system especially the hoses and clips.

IF IN DOUBT THROW THEM OUT

Renew the fan belt. HT leads, condenser, plugs and points etc.

ON COMPLETION of your Fury have the tracking checked and set correctly. Remember the Fury is much lighter than the donor Sierra or Escort so LOWER tyre pressures will be needed:

Try 18-20 psi to start with and adjust to suit. Finally on completion of your Fury check ALL nuts and bolts for the correct tightness (torque) before venturing on to the road, and again after about 3 -4 weeks use.

In SECTION TWO of the MANUAL we suggest a build-up sequence for the Fury, you may wish to vary this; however we do ask you to read this construction manual thoroughly BEFORE YOU START YOUR BUILD UP It may save you money and hours of your valuable time!

For you assistance during and after construction of you FURY we recommend the purchase of a Haynes Manual or similar. It is not proposed that this construction manual will cover renovation or replacement of standard FORD SIERRA and ESCORT parts.

1.2 PURCHASE OF A COMPLETE DONOR CAR

For an IRS FURY any FORD SIERRA fitted with the OHC 1600, 1800 or 2000 'Pinto' engine will provide most of the parts needed. The rear differential ratios vary, but generally we stick to the 3.92:1 and 3.62:1 for a car engine mainly for road use. For bike-engined cars a 3.38:1 or even a 3.14:1 are advisable. A Freelander differential is also available for the Fury chassis (see our kit list) this is ideal for bike engined cars as it comes with 3.2:1 ratio as standard- this differential is also extremely light- only 12KG.

Usable roadworthy donor cars can be purchased for as little as £200. £500 can buy a car too good to break! The real bargain basement cars tend not to be advertised, their owners assuming that an advert is too much trouble and they simply contact a local breakers yard to take it away. So for a real cheapy, go to your local breakers and see if they have a complete and running car, but make sure that the registration documents come with it.

A car purchased this way is unlikely to have an MOT so listen to the engine running and if possible try it up the yard. The body is sure to be rotten but of course this does not matter. The breakers may let you dismantle the car on their site, this way you can leave all those bit you will not need.

For a live-axle car, any MK2 ESCORT with a crossflow engine will be suitable. A MK2 Sport or Ghia will provide most of the parts needed and will also have the 'Sport' type wheels and useful 3.54 diff ratio

(good for bike engined car), plus a dash with rev counter. Back axle ratios vary with 3.5 and 3.7 being fitted to the GTs and Mexicos, 3.9 for the Saloon and 4.1 and 4.44 fitted to vans and estates. The Ford diff has a small tag attached to it giving the ratio. Generally the 3.5 or 3.9 would be correct for road use. The 4.1 is a good choice for a tuned Escort engined FURY used in competition. The 4.44 will give great acceleration but poor fuel consumption. A suitable ESCORT can be obtained for between £50 and £500. Remember that you will be throwing away or trying to sell most of the car.

FULL DONOR PACKAGES ARE AVAILABLE FROM FISHER SPORTSCARS (see 1.3)

1.3 PURCHASE OF THE PARTS ONLY

You may decide to opt for buying individual components, as they are required. This is especially relevant if you intend using the car in competition. By the time you have built yourself a demon engine, selected the correct gearbox and back axle, bought accurate aftermarket instruments, plumbed in a special radiator etc., you will find you are not using very much of your original donor car. The parts only method can be as cost effective. But you do not have a logbook. This is not a problem as you can obtain a 'Q' plate or in some cases when all new parts are used, the current new registration. If buying a 'donor' package from FISHER SPORTSCARS a V5 from the stripped car can be supplied.

Acquiring the donor parts should not be difficult. If you are not keen on grovelling around and getting oily in a muddy breakers yard there are now a number of yards who will dismantle and steam clean the parts you require at a modest charge. Wandering around a breakers can be a rewarding experience, you may just find the component your require from a different vehicle, for example, Skoda or Citroen GS saloons have excellent instrument sets, a small Suzuki jeep or Fiat might provide a compact heater, and so on.

AN EVEN EASIER ROUTE IS TO BUY A DONOR PACKAGE FROM FISHER SPORTSCARS!

1.4 COMPONENTS FROM FORD ESCORT (FOR SIERRA SEE SECTION 3.1)

The components required from the donor Escort are as follows:

Engine complete with ancillaries. Gearbox, propshaft, back axle assembly - steering column and rack - McPherson strut complete with disc calliper and hub, wheels and tyres.

Complete wiring loom and switchgear, instruments - speedo cable - handbrake and cable - radiator and hoses - battery and fixing strap - horn - clutch and throttle cables - windscreen washer.

NOTE: Some customers now fit FORD SIERRA front uprights and steering columns complete with the much more modern stalk/switchgear. If you intend to use the old registration number it is wise to have the chassis plate giving the donor car chassis number. If the car is to be built on a very tight budget it may be necessary to keep and modify the standard ESCORT manifold and system.

1.5 COMPONENTS FROM OTHER VEHICLES

(For Sierra based cars see section 3.1)

All the following are available from FISHER SPORTSCARS.

Sherpa Track rod ends for bottom wishbone joint.

Vauxhall Chevette Top wishbone knuckle joints for rocker arms.

Sierra	Steering column and extension.
BL Mini	Early type heater assembly, wiper motor, rack and blades.
Lotus Elan S3	Windscreen - new from FISHER SPORTSCARS.

1.6 UNIQUE COMPONENTS

All other components unique to the FURY are listed in the current Price List.

1.7 COMPONENTS REQUIRING MODIFICATION

(For Sierra based cars see section 3.4)

All parts to be modified can be provided on an exchange basis.

The back axle must be modified by FISHER SPORTSCARS and must be provided 3 weeks prior to collection of your chassis. We only require the axle casing, which should be clean and free from paint. The propshaft must be shortened. This should be carried out by a specialist machine shop and on completion should be balanced. The split type propshaft will be cut to remove the centre bearing CV joint. FISHER SPORTSCARS can also provide modified propshafts.

The Sierra column extension is also modified on an exchange basis, for a small charge.

The McPherson struts are modified by the factory and are required three weeks prior to kit collection. Please remove the disc and calliper and cut the tube just below the spring seat.

1.8 COLLECTION OF KIT

A long-wheel base Transit van is the most suitable vehicle for picking up your kit. Alternatively a flat bed car trailer can be used. The chassis will support the body nicely for a safe trip home. If a van is to be used it needs to have a clear cargo bed of at least 5ft x 9ft. All chassis/body kits originate from our factory in Kent whether ordered from there or an agent. It may seem like a trial to have to collect, especially if you live 200 miles away or more, but it will give you the opportunity to inspect the factory demo cars and any builds underway. If you remember your camera and that list of questions you have been compiling, the day will be very rewarding. Obvious, but remember to bring plenty of rope and/or tie-downs with old blankets or carpet to help protect your shiny new kit.

SECTION TWO

2.1 SUGGESTED ASSEMBLY SCHEDULE

1. Acquire all parts necessary.
2. Prepare parts for assembly.
3. Trial assembly of chassis and running gear.
4. Dismantle and paint chassis.
5. Panel chassis with aluminium. Floor panels, tunnel top, cockpit sides, rear cockpit panels
6. Fit front and rear suspension, and steering assembly.
7. Run brake lines and hoses; Fit pedal box and master cylinders and handbrake assembly.
8. Fit petrol tank and sender, Run fuel lines.
9. Fit engine/gearbox and ancillaries.
10. Fit radiator, hoses and fan.
11. Fit boot floor and rear body tub.
12. Fit sills.
13. Fit bonnet.
14. Fit doors.
15. Fit lights.
16. Fabricate dash and fit instruments.
17. Run wiring and fit battery.
18. Fit seats.
19. Paint and /or finish body panels.
20. Fit windscreen.
21. Fit harness.
22. Fit hood and side windows.
23. Hardtop.

2.2 WORKSHOP MANUAL

A Haynes type workshop manual is of great assistance while selecting, obtaining and renovation all the necessary mechanical parts for you build. Particularly useful is the information on wiring. The diagrams once studied will allay any fears you might have on this subject. If you plan to tune your engine David Vizzard's books or similar are recommended.

For live-axle cars, Ford Escort Mk2 1975-80 Haynes No 280

For IRS cars, Ford Sierra Haynes No 903

2.3 TOOL LIST

Most people undertaking the construction of a kit will have carried out some work to their own cars, so it is likely that you will already have some tools.

The basic tools required are:

Set of AF and metric spanners and/or sockets

Screwdrivers - posi/Philips - flat bladed - electrical.

Electric drill with set of drill bits.

Files - flat, round and half-round.

A Powerfile is worth buying.

Hacksaw and junior hacksaw.

Hammer

Pliers

Mole grips

Tin snips

G clamps - small

Tape measure

Pop rivet gun

Soldering iron

Wire brush

Stanley knife

Most of the above can be obtained as and when you need them so you do not have to purchase the whole lot at once. With luck you will be able to borrow any of the other tools you may need.

NOTE: Most people tell you, with some justification that you should only buy the best tools available - whilst this is a good idea there really are some fantastic bargains on the market and for items that are only used once or twice, why pay a fortune.

2.4 TRIAL ASSEMBLY

Once all your mechanical components are gathered together it is a good idea to do a trial assembly on the chassis. Fitting front suspension, rear suspension, steering, engine, gearbox and prop will enable you to study in detail how everything goes together without the body panels obstructing your view. On an IRS car it is good to trial fit the differential before fitting alloy panels. All fixing holes not drilled by the factory can be drilled prior to painting the chassis. This may seem like a lot of unnecessary work but in the long run can save time.

2.5 PAINTING THE CHASSIS

A powder coat finish is available at extra cost, see current price list. We thoroughly recommend this type of finish. It will save hours of hard labour and is a very durable finish. If you have ordered a powdercoated chassis proceed to the next section.

The chassis is now ready for painting, and because of the Trial Assembly it should not require any further work. You can paint your chassis with a 'hammer' finish paint. This can be sprayed or applied by brush - if you do spray Hammerite, do not thin too much, about 10% thinners. For a better finish, prime with red oxide primer and finish with several coats of cellulose. This must be sprayed on. Whatever finish is chosen you will find that when spraying, most of the paint will end up on the floor, in your hair, all over tools etc., so mask off your spray area and wear suitable protective clothing and face mask.

2.6 PANELLING THE CHASSIS

Panelling the chassis is not difficult but will take some time. The accompanying photos will help to explain the text.

Live axled Fury.

All aluminium panels are provided pre-cut but need trimming to fit. The floor panels need to be cut around the steel floor pan. The cockpit side panels are cut to size; the tunnel panels are slightly oversized and will need to be trimmed.

The first panels to fit are the propshaft tunnel sides. On the passenger side the panel runs from the seat back to the metal bulkhead. Before this panel can be fitted it will have to be cut away to receive the brackets for the handbrake lever. Rivet the panel on with 5/32" pop rivets at approx. 50mm centres. On the driver's side the panel is similar and connects at the front, to the sheet metal footwell pan.

The tunnel top is best split into three pieces. The first runs from the tunnel front to under the dash support rail, this is riveted on. The second runs from under the dash rail to the change in angle on the tunnel top, this panel is best kept removable so to give access to the propshaft, brake lines etc. The third panel will run up the angled section and should also be removable. Use self-tappers for this.

The floor is the easiest panel to cut and fit, use the chassis as a template to find the correct size. You will need to cut around the steel cockpit floorpan but you must leave an overhang on the outer edge for the sills to sit on. The floor panels must project 30mm outside the line of the chassis to provide support for the sills. The floor panel overhang continues forward using strips of aluminium. Refer to photos. The floor panel can be sealed with silicone mastic, applied prior to fitting - this will help to give a watertight floor and prevent corrosion.

ALUMINUM PANELLING - LIGHTWEIGHT CHASSIS

The Fury lightweight chassis does not have sheet steelwork welded to the cockpit back, sides and rear floors so these areas need to be panelled in aluminium.

First fit the rear cockpit sides and rear tunnel sides. The rear cockpit sides are fitted to the inside of the chassis tubes. Use cardboard templates to get a good fit. Put a fold in the rear edge of the side panels to return around to rear panel face. An overlap is created to rivet the rear cockpit panel to.

Next cut and fit the cockpit rear onto these folds.

Panel the tunnel sides

Panel tunnel top as standard chassis in 3 pieces ensuring that these are removable.

The cockpit outside panels can be fitted. These are fixed to the outside of the chassis.

Turn the chassis over and cut floor panels to size. Place the sheet onto the chassis and use a marker pen. Panel each cockpit separately leaving the bottom of the propshaft tunnel open.

The floor panels must overlap the outside edge of the chassis by 30mm to provide support the sills. This overlap continues forward to the end of the bodywork sill section.

The engine bay area and tunnel can be panelled for a flat-bottomed car but make these panels removable for easy access.

IRS CHASSIS

Note: before starting panelling it is advisable to trial fit the differential into the chassis.

The first panels to fit are the tunnel sides. Fit rear tunnel sides first. Put fold in rear of this panel to return against rear bulkhead panel. Drill holes to expose harness fitting points and differential mounting bolt holes. The forward tunnel sides can be cut to fit and riveted on at 50mm centres. It is advisable to leave one of the front tunnel sides removable for ease of fitting engine and gearbox.

Tunnel top- as live axle car. As the handbrake on IRS cars is positioned in the tunnel you will need to cut a slot in tunnel top for lever.

Floors- these are the easiest panels to fit. Make sure you leave an overhang of 30mm or more for the body sills to sit on. The floor overhang continues forward using the strips of aluminium- refer to photo's.

The floor panels can be riveted with the large flange rivets at 50mm centres and sealed with mastic applied prior to riveting-this will help to give a watertight floor and prevent corrosion.

Rear bulkhead- trim and rivet at 50mm centres.

Cockpit sides- these are fitted to the outside of chassis. Rivet at 50mm centres and seal with mastic.

The engine bay area and tunnel undersides can be panelled for a flat bottomed car but make these panels removable for easy access.

2.7 REAR SUSPENSION

LIVE AXLE

The rear suspension is designed to give good side and forward location with no bump-steer and a low roll centre. This is achieved with two lower trailing arms, a Panhard rod and two leading arms. Springs and damping are taken care of by two fully adjustable Spax shock absorbers. The rear springs are 130lb for road cars. The chassis provides fixing points for all the suspension components. The back axle will require the addition of five brackets to accept the locating links. This is carried out on an exchange basis.

Both the trailing, leading and Panhard links are provided with bushes. The rectangular box section trailing arms locate into the axle and coil-over shock unit. Fit these arms first, bolting to the chassis with M12 x 65 bolts. The leading arm is now bolted to the chassis so the axle can be offered up and bolted in using the same bolts. This job will require two people. The panhard rod can now be fitted. Use a M12 x 65 bolt at the axle end and M12 x 120 bolt at the chassis end. Tighten bolts later when the chassis is at its correct ride height. The Panhard rod is adjustable so the axle can be centred in the chassis.

NOTE: The Spax shock absorbers provided are adjustable for spring height and for damping. Winding the spring base up does **not** alter the spring rate; it will merely lift up the car an appropriate amount. When fitting ensure the spring is uppermost and that you can easily get to the small shock adjust screw. The screw should be set to full 'soft' for normal road use, even racing on smooth track, it is unlikely that you would need more than three clicks. Check that the axle is filled with oil.

2.8 HANDBRAKE ASSEMBLY

The handbrake lever is positioned on the passenger side of the propshaft tunnel and locating holes are provided. The cable is standard in length and runs under a nylon bearer (Ford Part No 1404502) immediately below the lever. Alternatively use another M12 bolt with home-made bush - piece of plastic conduit with 2 washers each side. The outer cable slots into a ferrule on the chassis at the rear of the cockpit. The attachment on the back axle is all as standard Ford Escort.

2.9 FRONT SUSPENSION

The steering upright is modified by the factory using a machined ring to cap the shortened strut tube. This bolts to the Chevette knuckle joint.

We have not found it necessary to keep the rusty disc-protecting shield attached to the hub. When the shield is removed the brake disc cools more easily. The callipers must be fitted with the bleed nipple uppermost.

Fit the rocker arm first, this pivots on an M12 x 225 bolt, using tube ferrule and nylon tophat section bushes. These bushes will be a tight fit in the rocker arms, the tube ferrule must be 0.5mm longer than the bushed arm and must be able to move freely. If the ferrule is too tight in the nylon, ream out with an old bolt slotted and fitted onto a drill with emery cloth. Some resistance is acceptable - too loose and you will have slack suspension!

Next fit the shock unit, fitted with 180lb springs, both ends use M12 x 65 bolts. See note on shock absorbers in section 2.7.

The lower wishbone is now bolted to brackets using 2 x M12 x 65 bolts. The wishbone is fitted with Sherpa track rod ends. Wind the track rod ends in until fully home, this will be fine for road use. This roughly equates to 6 - 7 threads showing after the locknut.

Bolt the Chevette knuckle joint to the rocker arms using two M10 x 25 bolts.

NOTE: These joints are asymmetric and must both be fitted in the same orientation (the centre line of the joint fitted outside the line of the two retaining bolts), flat side on ball joint facing inwards.

The upright can now be fitted. Fit the rack, as it would be in the Escort donor using the Ford retaining brackets and rubbers. Use four M8 x 25 bolts with nyloc nuts.

The Sierra steering column can bolt straight onto the brackets provided, just behind the dash. The outer column will also have to be supported at its lowest end by means of an exhaust clamp or similar. The extension complete with knuckle joints must be obtained from a Sierra and will need to be lengthened as necessary. The easiest way to carry this out is to cut the extension in the middle and bolt one end to the column and the other end to the rack, an accurate dimension can then be taken. Using a tube with an internal diameter the same as the column diameter, ensure that there is an overlap of at least 20mm at each end.

NOTE: This can be carried out by the factory if required. Your Sierra steering column extension should be brought to us for modification prior to kit collection.

2.10 BRAKES

A bias bar pedal box brake system can be supplied for Fury kits. This uses 2 brake cylinders, one for the front brakes and one for the rear. These bolt to the pedal box with M8 bolts and nylocs then attach to the brake pedal through a brake balance bias bar. This gives you bias control from front to rear. The basic principle is that the front brakes come on first. The push rod of the front cylinder is pushed first, this being nearer the fulcrum point of the bias bar.

The KuniFer brake lines supplied by the factory must be attached to the chassis at 200mm centres. Care must be taken when bending these pipes, do make sure that the radius is not too tight. This would reduce the flow of brake fluid or worse cause a fracture. For competition use steel braided hoses. Take care in positioning the brake pipes away from the propshaft, diff flange, steering rack and column, and exhaust. Do not run brake pipes under the chassis. See separate diagram for brake line layout.

Tandem brake cylinder.

A tandem type brake master cylinder can be fitted. This is easier for SVA testing as it has a pre-set bias front to back and requires no setting-up.

Fit the master cylinder into either of the holes in the bulkhead (we fit to the inside holes), making sure that you have enough clearance around it for brake lines. Drill and bolt into position. The factory provides a pedal fixing bar.

A tandem brake master cylinder kit is available from FISHER SPORTSCARS.

2.11 FUEL SYSTEM

The MG Midget fuel tank is bolted up to the chassis angles using M8 bolts and four large washers. Note: fit spacers at the front end of the petrol tank so that the tank sits level in the car. A suitable fuel line can be run through the tunnel, ensuring that it is well secured and away from the propshaft. If a powerful engine is to be fitted it will be necessary to feed it with a suitable electric fuel pump. This can be located at the rear of the car adjacent to the tank. A suitable filler cap will have to be fitted once the GRP rear body is on. In the meantime tape up the filler pipe. The fuel gauge sender will need to be fitted or a blanking plate screwed in its place using a suitable gasket. If fitting a fuel gauge, fit a short length of sender wire and an earth to the sender - before the boot floor is fitted. FISHER SPORTSCARS can supply a plastic 6.5 gallon petrol tank - see kit list. Larger capacity fuel tanks in plastic or aluminium are available from FISHER SPORTSCARS.

2.12 ENGINE AND GEARBOX

For most car engine installations the engine and gearbox can now be fitted on the mounts provided in the kit. See notes in section six for further engine fitment notes. The gearbox mount must be the type fitted to the Cortina, stocked by the factory. This mount has two bolt holes which may need to be packed with washers to give the optimum line to the propshaft. The engine mounts are bolted to the engine block, the engine is offset to the passenger side so use longest engine mount on the drivers side. Use Cortina rubber mounts to bolt to the chassis plates (also available from FISHER SPORTSCARS). When fitting the engine use wood blocks instead of rubber engine mounts to locate the position of the engine the when happy with the position lift the engine slightly, replace the rubber mounts, mark round

the studs with a felt pen and drill the holes. With both engine and gearbox in place the exact propshaft length can be obtained. Propshafts are available from FISHER SPORTSCARS. When fitting the engine and gearbox make sure that they are as far back in the chassis as possible to keep the weight distribution well placed. A 3-5mm clearance around the bellhousing is sufficient.

2.13 PEDAL ASSEMBLIES

The pedal box provided with the Fury kit is bolted to the pedal box floor, where the chassis is predrilled. The accelerator pedal is fitted to the bracket on the chassis. For the clutch cable a tube is provided - this is mounted on the chassis to give the best line for clutch cable operation. The tube is overlength so will require shortening to suit clutch cable.

NOTE: Most Ford gearboxes can use the standard MK2 Escort clutch cable. The clutch tube on the chassis needs to be 35mm long.

2.14 COOLING SYSTEM

Many types of radiator can be fitted. Common ones are the Golf Mk2, Maestro 1300 and the Fiesta MK2. When using a Ford Crossflow engine the best combination is to use the thermostat housing from a MK1 Fiesta (fitted with Crossflow engine) is used (Ford finish code 610210) to give a suitable filling height. An expansion tank or header tank (see kit list) will also be required, fit to the bulkhead as high as possible. We recommend the fitting of an electric fan to the radiator. An alloy radiator is available from the kit list, this comes with a built in electric fan switch and is suitable for most bike and car engine installations up to a tuned 2000cc Zetec or Hayabusa engine.

2.15 HEATER/DEMIST

A recirculatory heater as found in the Mini can be fitted by remodelling the bulkhead to suit. Fit demister vents to dash to as in the Mini. See sketch. Or a new high efficiency heater is available on the kit list.

NOTE: A demist facility is only required for Furys with full glass windscreen and is then a must for the SVA test. A cheap, compact and extremely effective demist system is to use one or two 12V camping/caravanning hairdryers! Mount to the underside of the dashtop with a simple bracket and wire to a flick switch on the dash. Make sure that these have separate fuses.

2.16 FITTING GRP BODY PANELS

Before going into detail, this part of the kit build will be unfamiliar to most and may seem daunting. Don't be put off! Gradual familiarity with the process will soon dispel your fears. FISHER SPORTSCARS will be happy to carry out the work or complete what you have started. We are always happy to answer your telephone queries.

By now you should have your FURY chassis pretty well sorted, you will need to fit your wheels and tyres next so that when assembling the GRP panels you can judge whether they are symmetrically located, both across the car and fore and aft. The bodywork is supplied in a coloured gel finish. Gel colours can streak and will definitely fade over a period of time. FISHER SPORTSCARS cannot guarantee colourfastness but endeavour to provide the best finish possible. Where two moulds are joined a flash line will appear on the body. The worst of this is removed at the factory. These flash lines only appear on the edge of panels. The remainder can be removed by carefully filing down, sanding with 400 and 800 and finally with 1200 grade Wet and Dry paper. Then polish with T cut or rubbing compound. If you propose to keep your car in its gel colour you may require a small quantity of gel coat. Aerosol spray cans match to your body colour are also available - contact the factory for details.

The first panel to fit is the boot floor. At this stage it is advisable to fit the rear wiring loom to the car as access becomes more difficult with the rear boot floor/body fitted. If you are using inertia reel seat belts you will need to trim away this panel to clear the support brackets. If you are fitting harness type seat belts, drill holes in the boot floor to access harness nuts. You will also need to cut a hole for the petrol tank filler neck and an access hole for the sender unit - this can have an alloy cover panel taped over it. Rivet onto the chassis tubes using large headed aluminium rivets at 50mm spacing. Check that the fuel tank sender has a flying lead attached.

Now offer up and TRIAL fit the rear body tub section, sill sections and bonnet, the body tub will need to have a hole drilled for the steering column to pass through. The sill to body tub alignment is the most critical. While the body panels are not fixed they are very flexible - tape or clamp all panels and adjust until you are satisfied with alignment. Check that the wheel positions are even and that the body as a whole is square on plan. The forward bulkhead will align with the inch square chassis crosstube. The door opening bottom return sits down onto the side chassis tubes. The door openings need to be cut out once you are happy with body tub fitment. Once securely fixed in place this area should be trimmed away leaving 15mm return for a door seal. Now rivet the GRP to the chassis along the crosstube at the front and the main side rails inside the door openings.

The sills will require trimming along their inner edge to give a profile on plan to match the main body sections. The inner edge fastens to the extended aluminium floor at the bottom and to the upper rail using an aluminium strip forward of the front bulkhead. Use a simple aluminium bracket at the rear end of the sill and attach to steel cockpit sides. The sill can be riveted in place but for access to side exhaust it may be preferable to bolt on at least one side for maintenance. The sill must align with the datum of 240mm above the underside of the chassis.

The rear can now be bonded across the boot floor and under the wheel arches using 50mm strips of glassfibre mat and resin. (GRP kits to complete your Fury are available from the factory) With the rear body located rigidly you can now cut out the door aperture as previously described.

The bonnet hinge frame must be bolted to the chassis using M8 bolts. With this in place the bonnet can be fitted. Trim as necessary around the rear flange so that it lays level with the rear bulkhead.

The bonnet alignment with the sills is quite adjustable as the front edge of the sills can be moved/flexed up and down to achieve a good shut line. A strip of sponge tape is recommended for application around the bonnet join to stop vibration. On the factory demonstrator the bonnet has been clipped down using rubber over centre catches (see kit list) these are SVA friendly and extremely easy to fit! Triumph type catches, Dzus or other flush fit catches can be used. On race cars exceeding 100mph it is advisable to use two clips on the top rear edge to prevent lifting. There are three bonnet styles available: the flat bonnet, the standard bonnet and the 'Le Mans' bonnet to suit all engine choices.

Door Fitment:

Possibly the single most time consuming job on the Fury build is the door fitment. In order to get a reasonable door seal, shut lines and outer profile the door should be bonded to the door inner once it has been hung. First cut a hole in the main body for the hinge, as per separate diagram. Bolt hinge in place using M6 bolts and large diameter washers. The hinge can be made stiffer by tightening the M12 nut, which is threaded onto the pivot bar of the hinge, this also preloads the hinge so leaving no slop. Fit a rubber door seal to the return. Next cut the inner and attach to the hinge. Many types of door latches can be used, the photo shows Metro latches which are concealed inside the door just leaving the post attached to the rear body. Once fitted, shut the door inner ensuring a good seal against the door seal and to the main bodywork. Trim back the excess from the door inner by approx. 6mm from the outside body line. With this excess removed a trial fit of the door outer can be carried out. A shut line gap of 4mm is required in order for the door to be opened and closed with ease. Door outers are oversize and require trimming to achieve a constant shut line (4mm). Trim with a flat file or coarse sandpaper on a wood block. When an even shut line is achieved put a slight radius on the gel edge and polish. First tape the outer in place making sure it follows the natural line of the body and all clearances are maintained.

Now working from inside the car it is advisable to tack door inner to outer using small blobs of car body filler. Check alignment and opening of door. When you are happy with fit unbolt door and the outer can be bonded to the inner with glass fibre and resin. Access being obtained through the door pocket. When the resin is cured check for final clearance on full opening. The door being light should not need a check strap. Fill where the door inner and outer meet with body filler and sand smooth this can be sprayed with a paint aerosol to finish.

2.17 LIGHTING

Headlights are 7" units (5³/₄" on the Le Mans bonnet) with 8" diameter chrome rims. Many types of lights can be used on the Fury, ask the factory for details. A numberplate light must be fitted, also rear reflector. Rear light clusters are also available. One fog light is obligatory, two are optional. Side indicator repeaters are obligatory. It is very important to get the lighting position correct - see the SVA guide.

Note: all lights must be wired to earth. It is advisable to use bullet type connectors for the headlights, as you may need to remove the bonnet at some stage. Other lighting options are available please contact the factory for information.

Front headlights on the big bulge bonnet: the light emitting part of the headlight (which is the rectangle in the centre of the lense) needs to be 500mm from the ground. To obtain this put the ride

height of front Spax up to suit. Or ride height lifting brackets are available from FISHER SPORTSCARS. Front indicators on all bonnets must be 350mm from the ground, so re-position as sketch. Various types of indicators can be fitted to the Fury- motorbike fairing indicators being the most common. MGF front indicators are ideal fitting the contours of the 'Le Mans' bonnet exactly. Use old indicator recesses in bonnet to fit small type fog lights.

2.18 ELECTRICS

A new Fury wiring loom can be bought from the factory or the Ford Escort loom can be adapted to fit. Put the fuse box through the bulkhead and use the large grommet for the forward loom. Drill a hole in the tunnel top and fit a grommet for the rear run. Using original switchgear bolted to the column, plug all corresponding ends of the loom together. The wiper motor and rack is taken from the BL Mini and used without modification. The spindle on the drivers side is located in line with the steering column. The motor is bolted to the vertical face of the bulkhead. The wiper motor must be wired to self park for SVA test. A dash top is provided in the body kit and will need to be fixed to the front bulkhead by small brackets. The dash itself can be made from 16g aluminium, carbon fibre or plywood depending on personal choice. (three styles of GRP moulded dashboard are available). Instruments such as Stewart Warner or Smiths can be used, or a trip to the breakers yard may yield some economic alternative. The wiring for the instruments should be added into the loom as per the relevant manufacturer instructions. Ensure that the appropriate senders are fitted, it is important that the fuel sender is fitted to the tank prior to installation.

At the factory we stock ETB instruments, these are provided with compatible senders.

The wiring can be a major headache, use the Haynes workshop manual diagram and follow each line through and the job should not be as difficult as you thought. Soldered joints are very much better than crimped.

The main colour codes are:

Headlights	Indicators
Main - white	Left - white/black
Dip - yellow	Right - green/black
Side Lights	Horn - red/yellow
Left - grey/red	Stop Light - red/black
Right - grey/black	Petrol Tank Sender - blue/black
Main Alternator Feed - red	Alternator Light - blue

The feed to the coil is yellow/black and is interlinked with a pink balast resist wire. This must be rewired if a 12V sport coil is used.

Note: 'brake fluid low' warning light and circuit test switch needs to be fitted to dash for SVA test.

2.19 SEATING

The factory can supply glassfibre bucket seats for the Fury. These can be supplied fully trimmed or a simple removable centre trim section can be supplied. Fully trimmed highback seats are also available in a choice of colours and piping. In practise for an above average driver these seats may leave you sitting too high, so do try out the seating options before buying.

2.20 WINDSCREEN

The windscreen is as fitted to the original Lotus Elan S2 and S3. Shop around for quotes to have the glass bonded in. It is possible to bond the glass in yourself; the factory can supply kits with instructions. Trim the screen frame all round, leaving approx. 20mm overlap. Until the windscreen has been bonded in this frame will need to be supported with a prop of wood from inside the car to keep a good line. The rubber trim (Ford Transit or similar) is held in place with the same mastic used for the screen, it should be mitre cut to fit the bottom corners.

For a neater and stronger finish - fill the back of the windscreen surround with glass fibre bridging compound and finish off with a layer of car body filler.

2.21 WIPER/WASHER ASSEMBLIES

The wiper motor, rack, spindles and blades are taken straight from the BL Mini. Choose one with two-speed operation if possible. Drill a hole for the spindle at the base of the screen on the driver's side first. The spindle will lie on plan with the steering column. Drill the hole on the passenger side to suit the rack and fit the motor on this side on the vertical face of the bulkhead. The wiper arms and blades will need to be chosen to suit the height of the windscreen. The Mini arm is ideal but it will need 11" blades. The wiper motor needs to be wired to self-park for SVA.

The Ford washer system can be used but will need a new jet and tube.

2.22 SEAT BELTS/HARNESS

The Fury is designed to accept 3 or 4-point harness. Threaded inserts are welded to the chassis. To comply with SVA the top SVA mounts are on the rollover bars. If you require standard lap and diagonal seat belt points, please advise the factory.

2.23 EXHAUST SYSTEM

New exhaust systems are available for most engine options on the Fury, or the standard Escort exhaust can be adapted to suit. This can either run under the car or through the sill, exiting just forward of the rear wheel. If this option is chosen ensure that adequate clearance is given to all GRP to reduce risk of fire. Laggings as used in flues can be used inside the sill if necessary, or line the inside of the sill with kitchen foil. Make sure that you have a good airflow through the side sill by cutting holes in

both ends of the sill. At the factory we often fit a flexi-link between the silencer and manifold, with a brace between the manifold and engine.

2.24 HOOD

The hood is supplied with all fittings required. The hood frame is fitted as shown in the separate diagram. Fit the chrome hooks to the rear of the body first. Slip the rail into the rear of the hood and attach to body. Pull the hood over the hood frame and forward onto the hood header rail, which is bolted temporarily to the windscreen frame. Glue the hood to the header rail using a contact adhesive. When this is dry unbolt the header rail and roll the hood material around the rail, trim off excess and glue neatly onto rail.

2.25 HARDTOP

The Fury hardtop can be provided as a kit or complete, ready to fit. The hardtop panels are supplied in gel colour. All flash lines are minimal and can be taken back with a file, wet and dry paper and finished with cutting compound and polish.

The targa panels come with mounting points for overcentre catches and front clip already bonded to them. Fit the overcentre catches and carefully trim back the panels to give a constant shut line. You may need to file or sand down the width of the edge of the targa panels where they overlap to fit flush with the main body of the hardtop.

Bond the rear quarterlight Perspex windows in with Sikaflex or similar panel sealant. Fit supplied rubber strip to the base of the hardtop and the edge, which meets the windscreen surround to provide a weatherproof seal.

The hardtop is best bolted to the windscreen surround in three places. At the rear use just one central bolt. Each side is secured by one bolt just behind the door opening.

Rear screen - fit the rubber to the hardtop. Place the glass in the bottom of the rubber then ease the glass into the rubber channel along the sides then upto the top. Use plenty of washing-up liquid! Fit the fillet starting at the bottom centre of the rubber.

Fit supplied rubber extrusions to targa panel gutter edge. Leave the rubber 3cm overlength at the front of the hardtop so that this can be tucked into the door edge rubber to give a neat and weatherproof seal. Using the screen rail and fixings provided, mount the sidescreens to the top edge of the door

2.26 REGISTRATION AND SVA

To put your Fury on the road it will have to pass and SVA test, be insured and checked by the DVLA, who if satisfied will issue you with your registration plate number. They may allow you to retain the old registration number if you have used two major parts from one donor vehicle.

The following will be taken to be major components:

Suspension

Axles

Transmission

Steering rack

Engine

Kit cars that have been built using not more than one reconditioned component, can be registered under a new registration mark. The one reconditioned component can be the engine, gearbox or back axle!

Fisher Sportscars can provide a certificate of newness and you must retain the necessary receipts for a new registration.

When you are well advanced on the build and your Fury is looking like a car, book your SVA Test and phone your local DVLA office and tell them you are building a kit car and wish to register it for the road. They will send you a form V55 that you can fill in although some parts of it have no relevance to kit cars. The other form they will send you will ask where various parts come from, part numbers and receipts. So it is important that you keep all receipts.

Most local DVLA centres will let you drive or trailer your newly completed SVA tested and insured Fury to them for inspection. This can save a lot of time, as appointments for home inspections usually take longer to come through.

The SVA test is a one off test costing £150 at the time of writing. The SVA testing manual is a daunting document on first sight but do not be put off from buying a kit car because of SVA. The potential owner should be more confident as it is a good thorough test procedure and one that is probably long overdue. A car with an SVA certificate will have a higher resale value. SVA should encourage a wider mainstream acceptance of specialist cars.

All kit parts supplied by FISHER SPORTSCARS are SVA compliant.

At present we supply a magazine guide to the SVA with our build manuals, but we highly recommend that you buy a full SVA manual from the Vehicle Inspectorate.

The Vehicle Inspectorate

91 - 92 The Strand

Swansea

SA1 2DH

Tel: 01792 458888

See <http://www.vosa.gov.uk/vosa/> for details of the SVA scheme, the fees and a list of test centres.

A precautionary MOT prior to booking your SVA Test may seem unnecessary but it should eliminate some small problem and save a retest, which will be especially relevant if you live some way from your

nearest Testing Centre. The MOT is also a good way to check the emissions and headlight alignment on your car.

Areas to watch when building your Fury:

Front headlights: These should be a 500mm from the ground to the light-emitting surface (this is the rectangle in the middle of the headlight). Put the car on mid to high ride height at the front to obtain this on the standard bonnet. The Le Mans bonnet is ok.

Front Indicators: These must be mounted higher than the moulded recess. We fit MGF indicators on the Le Mans bonnet and small fog lights in the recesses in the bonnet moulding. FISHER SPORTSCARS also supply motorbike type front indicators for use on standard bonnets.

Front grill: it is best to fit a grill to bonnet aperture. This can be a simple piece of expanded alloy mesh from your local builders' merchant.

Seatbelts: Use the top harness points on the roll bar as the others are deemed to be too low even though they have passed German TUV testing.

Door latches: The Metro type door fittings are fine for SVA.

Bonnet Catches: It is very important that these are SVA compliant; use Triumph type, the rubber overcentre catches or Dzus.

Protective Steering: The Fury can take Sierra or Escort columns, both are ok for SVA. FISHER SPORTSCARS can provide an SVA steering wheel and boss, which is deformable, or use an old Escort/Sierra steering wheel for the test (this also gives a larger 'safe area' on the dashboard).

Interior fittings: The lower edge of the dash - 19mm radius, this can be 5mm if covered in non-rigid material. Make sure that all sharp edges have the correct radius or are trimmed in the cockpit area.

Master Brake Cylinders: A red 'low fluid' warning light must be fitted to the dash and this must have a test facility operable from the drivers seat or use a handbrake light switch to provide brake test light.

All these parts are available from FISHER SPORTSCARS.

Chassis number- this must be stamped into chassis frame for SVA test.

Information to use on SVA application form.

Design weights (from Fury FF95 0041)

Design Axle 1 weight 500kg

Design Axle 2 weight 500kg

Design gross weight 1000kg

FISHER SPORTSCARS will gladly give your vehicle a pre-SVA Test look over and advise on any part of your build. Alternatively we offer a full SVA service and can SVA and register your car for you.

2.27 GENERAL INFORMATION

SPECIFICATION:

Chassis	Spaceframe in 1" square section steel tube. Floor, rear bulkhead, footwells and cockpit side panels in 16 gauge alloy sheet. Semi-stressed transmission tunnel in 16-gauge aluminium. Bolt on rollover protection.
Body	Unstressed GRP open two seater. Flip front bonnet and removable sill sections.
Suspension - front	Sierra or Ford Escort Mk2 modified uprights. Adjustable lower wishbone. Upper rocker arm operating inboard, adjustable coil spring damper unit (Spax), nylotron bushed. Roller bearing kit available for rocker arm.
Suspension - rear	Double wishbone independent using Sierra hubs and brakes on fabricated uprights. Live axle-Escort Mk2 live axle - located by twin longitudinal Watts linkages and a panhard rod. Adjustable coil spring damper units (Spax), rubber bushed.
Steering	Escort Mk2 rack and pinion. Sierra column modified Sierra steering extension.
Brakes	Front disc. Rear drums or discs. Non-servo. Tandem split dual master cylinder is standard. Race adjustable bias bar system available as option. Lightweight alloy callipers, big disc's and hubs are options.
Pedal Box	Adjustable floor mounted.
Engine options	Virtually any four cylinder in line engine and transmission will fit. Popular choices, Ford Crossflow and Fiat DOHC, Rover 'K' series, Vauxhall 16v/8v, Ford Pinto, Ford Zetec, Toyota 4AGE, Rover V8 chassis pack available.

Bike engines - Honda Fireblade and Blackbird. Yamaha R1, Kawasaki ZX9R, Suzuki Hayabusa.

DIMENSIONS

OVERALL LENGTH	10'9" / 3.23.mtrs	OVERALL HEIGHT	3'3"0.975mtrs
OVERALL WIDTH	5' / 1.500mtrs	GROUND CLEARANCE	5"150mm
WEIGHT SPLIT	50/50	WHEEL BASE	7'2"2.150mtrs
WEIGHT	car engine 580kgs	lightweight car 520kgs	bike engine 420kgs

TRACKING INFORMATION

Camber 3\4 degree negative.

Toe-in 3mm - 4mm for road tyres.

WHEELS AND TYRES

Alloys - fit an 18mm positive offset Recommended alloy wheels would be 5 1/2" x 13 or 6" x 14 with 175/70/13 radial tyres running at 18-20psi pressure on car engine cars, 14-16psi on bike engine cars 6" x 14" wheels can be fitted with 185/60 tyres.

For track day or race use- 205/60 rear tyres and 185/60 or 195/60 fronts are most common fitment.

SECTION THREE

3.1 IRS DONOR VEHICLE AND GENERAL INFORMATION

The chassis pack comes as a comprehensive kit, which requires just a few donor parts to build into a high specification full rolling chassis.

The chassis is designed to take a variety of engine choices.

Ford XFlow, Pinto, CVH, Zetec, Vauxhall 8V/16V, Rover 'K' Series, Toyota, 4AGE and Rover V8, Honda Fireblade, Honda Blackbird, Kawasaki ZX9R, Yamaha R1 and Suzuki Hayabusa.

Donor parts required to complete a full rolling chassis:

Ford Sierra differential, drive shafts, rear brakes (1600, 1800 or 2000 Sierra) - (Freelander differential is an option- see kit list).

Ford Sierra or Escort MK2 front uprights, hubs, and brakes

Ford Sierra column, stalks and steering extension

Escort MK2 steering rack, track rod ends, fitting clamps

Note; Sierra driveshafts, column extension and front uprights and modified in the kit price.

Full donor packages are available from FISHER SPORTSCARS

Remember to keep registration documents.

The 2000 Sierra front discs are vented but the callipers are the same size as on the 1600 Sierra. On such a light car the extra weight of the vented discs has no benefit. Also the 2000 rear drum brakes are big enough to stop a fully laden Transit van. A 1600 Sierra has got lighter/smaller front and rear brakes as well as lighter (smaller diameter) drive shafts.

If you chose to use the 2000 differential you must also use the drive shafts and bearing callipers but the smaller drum brakes from a 1600 will bolt to these. Alternatively the rear disc brakes from some models of Sierra/Granada can be fitted.

The Ford OHC Pinto engine is not small or light but is a very robust unit and will give good power for very little money. Choose any capacity but use twin-carburettors rather than injection. The best gearbox is the 5 speed Type 9, it is distinguished from the later MT75 gearbox by being steel cased with a separate cast iron bellhousing.

3.2 COMPONENTS FROM FORD SIERRA

The IRS kit uses parts from any 1600, 1800 and 2000 Sierra. You will need the rear diff, drive shafts (exchanged for new ones in the kit price), hubs, rear brakes, handbrake cable, handbrake, and front uprights with disc callipers and hub. The uprights need to be cut off just below the spring seat and are modified in the kit price. Steering column complete with bulkhead fittings and steering extension (modified in kit price).

You will need a Ford Escort MK2 steering rack, track rod ends, fitting clamps and rubbers.

Note: for a budget build use as many parts as possible from donor car, i.e. wiring loom, instrument pod, battery horn, windscreen washer bottle etc.

3.3 PARTS FROM OTHER VEHICLES

Escort MK2 steering rack, track rod ends, fitting clamps and rubbers.

BL Mini will provide heater including demist vents, wiper motor/rack, wiper arms and blades.

Lotus Elan windscreen S2/S3 (available from kit list)

Metro door lock, inner handles

3.4 COMPONENTS REQUIRING MODIFICATION

All modifications are done in the kit price. These components need to be at the factory 3-4 weeks before kit collection or on an exchange basis when you pick up your kit.

Sierra drive shafts complete

Sierra column extension

Sierra front uprights (please supply without disc and calliper. Strut tube cut through below spring seat)

Sierra handbrake lever

3.5 FRONT SUSPENSION ASSEMBLY

The steering upright is modified by the factory using a machined ring to cap the shortened strut tube. The top ball joint supplied in the kit screws into this, make sure to use locking tab washers. The disc and calliper are fitted as per Sierra. Fit the rocker arm to inner hole on chassis bracket, this pivots on an M12x220 bolt using a tube ferrule and nylon tophat section bushes. These bushes will be a tight fit in the rocker arms the tube ferrule must be 0.5mm longer than the bush arm and must be able to move freely. If the ferrule is too tight in the nylon, ream out with an old bolt, slotted and fitted with emery cloth. Some resistance is acceptable, too loose and you will have slack suspension.

Next fit the Spax shock unit fitted with 180lb springs. Use $\frac{1}{2}$ " x $2\frac{1}{2}$ " bolts each end. See note on shock absorbers in section 2.7. The lower wishbone is now bolted to brackets using $2 \times \frac{1}{2}$ " UNF x $2\frac{1}{2}$ " bolts; the wishbone is fitted with track rod ends and locknuts. Bolt the top ball joint through the rocker arm. Fit Escort MK2 steering rack using the Ford retaining clamps and rubbers. Use $4 \times M8 \times 25$ mm bolts. The Sierra steering column is bolted to the chassis using the bracket provided. The lower bulkhead/bearing/bush is used as on the Sierra. Use the plate provided in the kit, bolted to the front of pedal box. The modified column extension is used to join the column to the steering rack.

3.6 REAR SUSPENSION ASSEMBLY

Fit differential by laying on left side and lift nose into chassis first, and then turn back to upright position. Bolt the differential into chassis using top long bolt M12 x 110mm, $2 \times$ front lower bolt M12 x 25mm (drivers side will require a shim washer fitting) and a single rear M10 x 70mm bolt.

The Upper wishbones are located on the chassis by $2 \times \frac{1}{2}$ " UNF x $2\frac{1}{2}$ " bolts, these in turn are bolted to the rear uprights using $1 \times \frac{1}{2}$ " UNF x 3" bolts.

The lower wishbone is also located onto the chassis with $2 \times \frac{1}{2}$ " UNF x $2\frac{1}{2}$ " bolts and to the upright with $2 \times 1\frac{1}{2}$ " UNF x 4" bolts, with spacing washers as necessary.

The uprights are handed. The double slope on the side of the upright faces forward on the drum set-up. The handbrake cable comes into the front of the brake back plate.

On disc braked cars the upright is put on so that the double slope of the upright faces rearwards. The calipers are put on upside down. Remember to take off calipers and bleed in the upright position to expel all air.

The brake back plate is sandwiched between the bearing carrier and the upright with an aluminium spacer (provided in kit). The Spax shock/spring is bolted between the bracket on chassis to the bracket on bottom wishbone by 2 x $\frac{1}{2}$ " UNF x 2 $\frac{1}{2}$ " bolts.

The drive shafts can be fitted along with the brake components (refer the Haynes Manual). There are two types of CV joints. The 'Tripod', which pushes into the diff, and the 'Lobro', which is a bolt-together joint. Refer to Haynes manual for detailed explanation of their assembly. The 'Tripod' shafts will push through the upright but the 'Lobro' ones need to be assembled around the upright.

3.7 HANDBRAKE

Bolt the handbrake lever to mounting tube using M8 x 45mm bolts, so that the lever is on the inside of the tunnel. Feed the standard cable through the chassis eyes (located on passenger side tube next to the diff nose) and bolt the half moon compensator to the modified lever arm.

3.8 BRAKE LINES AND HOSES

Layout as standard live-axle car but it has another T piece at the rear of the tunnel, dividing brake lines to each side. The braided hoses can be fitted directly into rear drum brake slave cylinders or brake callipers on disc set-up.

3.9 STEERING COLUMN

The Sierra steering column bolts to bracket provided in kit. This bracket is then bolted to the bracket welded on to dash rail of chassis. The lower bush on the column fits into standard Sierra bulkhead fitting and pushes into plate supplied in kit. This plate is bolted to the pedal box front. The Sierra steering column extension (modified) is fitted between column and rack.

3.10 ROLL BAR

The roll bar bolts to the rear of chassis using M10 x 25mm bolts. The roll bar side braces bolt through the chassis with 4x M8x45mm bolts. Harness attachment points are supplied on the roll bar for SVA. Also harness points are provided on the main chassis frame but belts must pass over the lower bar on roll bar for SVA.

3.11 REAR SUSPENSION SETTING UP

Ideally you require a small amount of toe-in 1mm-2mm and no negative camber at normal ride height. This is easily set with the car sitting on a reasonably flat garage floor. Adjust the camber by winding top wishbone adjuster in or out. Toe-in is adjusted by winding the rear rose joints in or out of the wishbone.

We offer an alignment and corner weight service at the factory for IRS set up.

SECTION FOUR - FURY SPYDER

The Fury Spyder offers pure open top motoring at modest cost. It is easier to build than the standard Fury, having no doors or windscreen.

Build-up of rolling chassis is as previously described.

4.1 FITTING SPYDER GRP BODY PANELS

Body fitment is as standard Fury but without doors. Note: An infill panel is required on the inside of the tub above rear of sill end to the front edge of the boot floor (where your elbow is). This can be cut from cardboard taped into position then laminated on both sides with glass fibre resin and mat.

4.2 WIND DEFLECTOR

Before fitting the wind deflector supplied in the body kit mark out a 40mm band around the bottom inside edge of wind deflector, mask and spray with black aerosol. Attach to the body tub with M6 x 16mm socket cap button head bolts at approximately 6" centres. For SVA test the maximum height of the wind deflector is important, it must not be higher than 645mm from the seat reference point. The seat reference point is obtained by putting a block 136mm x 53mm onto the seat as the sketch.

As it is a wind deflector not a windscreen you do not need a wash/wipe system or a heater/demist facility. A *Titanfast* type trim is required on the edge of the wind deflector for SVA test.

4.3 REAR WHEEL ARCHES

The Spyder rear tub has wider rear wheel arches than the standard tub this allows fitment of wider wheels and tyres. Customer cars have been fitted with 13 x 7 wheels with 205 x 60 tyres.

SECTION FIVE

5.1 MOST COMMONLY ASKED QUESTIONS

1 How do metallastic bushes work?

How these bushes work is frequently misunderstood. The mild steel ferrule through the bush is clamped so that it cannot move between the bracket on the chassis. Only the rubber of the bush moves. It is important that final tightening is done when the car is sitting on the ground under its own weight.

2 Why doesn't my car seem to handle well?

Live-axle cars, problems with handling on most customer cars can be remedied by correctly setting the Spax shock absorbers and checking tyre pressures. The tracking should also be checked. The Spax shock absorbers damping adjustment is a small screw in the side of the lower body of the shock absorber. Every half turn of the screw makes a difference to the damping, not just when it starts clicking. At first run with the Spax on the softest setting i.e. the screw must be wound fully anti-clockwise, then adjust to suit. Bear in mind that there is a great deal of difference between the weight of your car with two people luggage and a full tank of petrol or just you on your own.

Tyre pressures, time after time customer bring their cars into the workshop with 30psi in the tyres. We generally run tyres at 18-20psi once again take a bit of time to see what suits you and your car by adjusting 2psi at a time.

Tracking, the front wheels should be toeing-in between 3-4mm. This you can check by measuring between the front and rear of wheel rims.

The front suspension camber angle should be between $\frac{3}{4}$ to 1 degree negative, this means that the wheel is sloping in at the top slightly.

3 Exhaust heat?

We recommend that you line the sill, which carries the exhaust system with a heat reflective material. Drill holes in each end of the sill and along the underside of the sill to facilitate a good airflow over the exhaust. To reduce exhaust heat into cockpit fit another aluminium panel on the inside of the sill, to form a double skin with a gap of about 10mm.

SECTION SIX - NOTES ON DIFFERENT ENGINES

6.1 FORD ENGINES

Crossflow, Pinto, CVH and Zetec all these engines bolt to the Sierra type9 gearbox. These are available with a wide choice of gear ratios to suit every type of engine and use.

Zetec engines, 1600, 1800 and 2lt Zetec engines can be used in the Fury. A pre-August 1995 engine is not liable for catalyst emissions test under SVA so can be fitted with carburettors. Carburettor, ignition packages and performance exhaust systems for the Zetec engine are available from FISHER SPORTSCARS. If you are fitting standard fuel injection we can supply you with a lower inlet manifold which uses all the standard Ford parts but fits under the bonnet.

6.2 ROVER 'K' SERIES

FISHER SPORTSCARS supply adapter packagers to mate the Rover engine to the Sierra 5 speed type9 gearbox. The 'K' Series engine can be used with standard injection system, standard sump and engine management system. Note; it is better to use 1400 'K' series alternator and oil filter housing as clearance in this area is limited. When sourcing 'K' Series make sure you are supplied with exhaust manifold, down pipe and catalyst as these can be modified and used. You will need the complete engine wiring loom with ECU box, key fobs and alarm box (which is under the glove box in donor car). These items are most important and on post 1994 cars they are matched per vehicle. The fuel tank will need a return pipe from the fuel injection system. You will need a fuel injection pump, a Ford XR3I or similar is fine, remember to fit a fuel filter before pump.

6.3 INSTALLATION OF BIKE ENGINES

The Fireblade/Blackbird engine is installed on the 3 mounts provided. Use existing engine mount bolts on the engine, use tube spacer at the ends as bolts are over length.

The 2 x side mounts come down to the flat plates on the chassis. The bushes in the mounts fit into U bracket, which can be welded or bolted to chassis plates.

The rear mount bolts to the top chassis rail - drill the chassis tube and bolt through with M8 bolts making sure to use washers each side.

The engine position is quite flexible. The only governing factors are the exhaust manifolds exit into the side sill and the propshaft alignment.

The sprocket is unbolted and the new propshaft flange is bolted into position using original bolt and washer. You can now measure and order your propshafts.

See separate drawings for fitment of gear linkage kit.

Clutch cable, use the bike cable, use the cable end fixing plate supplied or there is a custom cable available for the Fury.

Instrument cluster, use the bike cluster. The speedo will not work so we use an electronic 80mm speedo, which works off a disc and sensor on the diff flange. This fits well into the early Fireblade cluster. The cheaper way is to fit a pushbike speedo, (Sigma sport 700 comes with illumination kit which is a must for SVA) these are programmable and will read upto 200mph. They also have many other functions e.g. average speed, trip etc. A top of the range one costs about £20!

Water hoses, and cooling, use as many of the bike hoses as possible, only a few extra bends are needed to complete the cooling system. It is advisable to fit a simple expansion tank to the bulkhead and a pipe to expansion outlet on engine. Alternatively fit a header tank, which tee's into the bottom hose and takes the expansion pipe from near the thermostat housing. A Fiesta MK2, Golf or Maestro radiator is more than adequate. An alloy radiator is available from the kit list. Use the bike electric cooling fan or high efficiency electric cooling fans are available from the kit list.

Fuel pump, use original early Fireblade bike fuel pump and filter or a low-pressure car fuel pump fitted with an adjustable fuel regulator.

Blackbird engine, installation is much as Fireblade except it has a hydraulic clutch, oil cooler and requires a modified sump. The clutch housing will need to be cut to allow the propshaft to pass through it and it will also need to be spaced away from the engine block with lengths of studding and tube spacers to clear the proshaft UJ. Also extend push rod on slave cylinder.

Hydraulic clutch master cylinder- use a rear motorbike $\frac{1}{2}$ " brake master cylinder. This is ideal for Suzuki Hayabusa or Honda Blackbird clutch operation.

Modified sumps are available, contact FISHER SPORTSCARS for details.

Oil cooler, use the Blackbird oil cooler and oil pipes which can be extended easily, or use conventional car oil cooler.

SECTION SEVEN - GRP INFORMATION & SAFETY NOTES

LAMINATING

The only GRP work on the Fury is to bond the boot floor to the rear tub, the door inners to the door skins and bonding the inner wheel arches to the bonnet and body tub.

Cut 2" -3" strips of glass fibre mat.

Mix a tin (an old baked bean can or similar) of resin at a time. Fill to about one inch from the top. Add approximately 1 level teaspoon of catalyst to 1 tin of resin. Stir thoroughly. The air temperature will affect the curing time. Allow any GRP work to cure overnight.

Using a cheap 2" paintbrush - plastic handles are best, apply resin to the surfaces then press on the mat using the brush. Apply more resin to the glass mat.

The glass mat will become soaked in resin. This is clearly visible as the mat changes from white to opaque. Stipple the mat with the brush using dabbing motions until the mat is full of resin and free of air bubbles.

Always wear protective gloves (marigolds) and goggles when using resin and catalyst. Work in a well ventilated area.

GEL COLOUR

All body panels come with minimal flash lines. They are evident on the edges of all main panels. Use a small smooth file to reduce the flash line nearly to the surface of the panels. Finish off with wet and dry abrasive paper starting with coarse grit, about 240 and finishing with fine 1200 grit. Finally finish with a cutting compound and polish up with a car polish such as Mer.

If there are any pinholes or voids on the gel finish these can be filled with gel coat resin. Contact our GRP Dept for your supply of gel colour.

Make sure that the hole or area to be filled is totally clean and very lightly sanded.

Mix a small quantity of gel at a time. Use a film pot or similar container - never use glass containers for resin work.

Use 3-4 drops of catalyst to $\frac{1}{2}$ film pot of gel.

Apply to the area ensuring that it is filled with no air pockets. Do this neatly with little excess. The gel will air dry sticky so it is necessary to cover each area with a piece of polythene held in place with tape. Allow curing overnight. Sand down and polish as detailed above.

WARNING: Catalyst (organic peroxide) can cause fires. Acid content can burn skin. Risk of serious damage to eyes. Harmful by inhalation and if swallowed. Rinse any affected area with plenty of water and seek medical advice. Store in a cool, well-ventilated place away from any contact with metal. Do not use newsprint to clear up spillage.