

# MK Indy



## Build Manual

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## Indy Assembly Instructions

Assuming you have ordered your chassis kit, it is time to obtain your donor parts. There are two main ways of doing this, either buying a complete Sierra or alternatively just taking the parts you require from the breakers yard.

The first option allows a single donor build, ensuring an age related plate can be allocated on the completion of your build.



Before



After

## Donor Parts Check List

- Engine, gear box, starter, alternator, carb, engine mounts, spark plug leads, distributor, speedo cable and all associated nuts and bolts.
- Prop shaft, differential, drive shafts, rear brake plates, shoes and drums, wheel nuts, hand brake cable and brake lever all with associated nuts and bolts.
- Steering rack and column complete with central bearing stalk, steering wheel and universal joints.
- Front uprights, discs, pads, hubs, callipers, wheel nuts and associated nuts and bolts.
- If required, dash panel, fuse box, battery, horn, washer bottle and jets, header tank, hoses, indicator relay / hazard warning and switch, windscreen wiper assemblies.
- Paperwork for Donor vehicle (retain vin plate). These will be required when registering the car with the VRO
- Other items to source if required if not being supplied by KnK, radiator hoses, sensors, hose clips, exhaust system, exhaust clamps and mounts and pedal rubbers.
- Wheels and tyres and nut set, if after market wheels are not being used. Seats / trim / switches.
- List as required to suit your own needs.

## Engine & Gear Box

Most builders use a 4 cylinder Sierra engine and five speed Sierra gearbox. However, there are many other engine and gearbox configurations which will fit the Indy chassis, mainly due to the Indy's increased engine bay size.

The following list is a guide to engine and gearbox combinations:-

<b>Your Engine</b>	<b>Replacement Gearbox</b>	<b>Clutch Requirements</b>
Escort Crossflow	1600cc Sierra	23 spline 7.5 inch
Escort RS2000	1600cc Sierra	Original
Cortina Crossflow	1600cc Sierra	23 spline 7.5 inch
Cortina Pinto 1600	1600cc Sierra	23 spline 7.5 inch
Cortina Pinto 2000	2000cc Sierra	Original
Sierra 1600	2000cc Sierra	Original
Sierra 1800	2000cc Sierra	Original
Sierra 2000	2000cc Sierra	Original
Bike Engine	Original	Original

## Fitting the Floor

The first task that needs to be carried out is the fitting of the aluminium panel floor by pop riveting it to the Chassis. This is best done using a set of G clamps and Cleko's



Pop riveting the floor.

If you are using a pinto engine then the centre notch (where gearbox mounts) will need to be cut out of the panel prior to fitting.

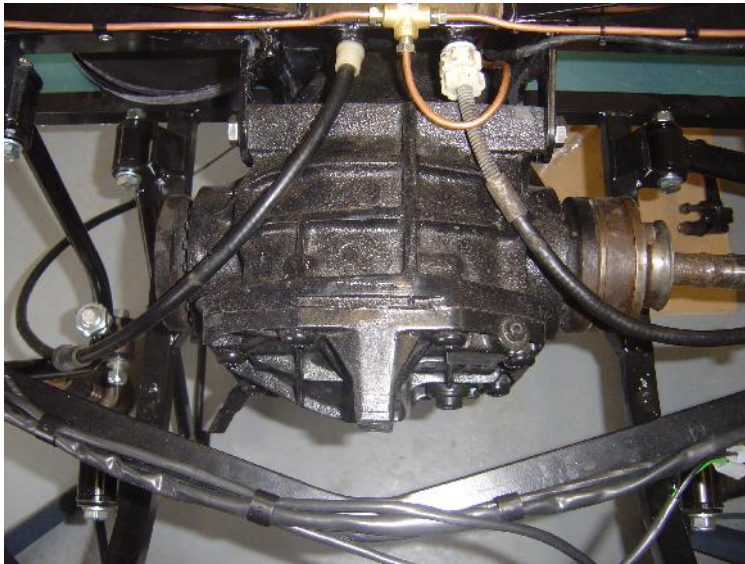
## Rear Axle & Differential Assembly

You will need to find an axle with splined half shafts to enable it to pass through your new fabricated uprights (drum brake models). The back diff from a Sierra is the one that is best suited for this kit.

If Discs are being used then a bolt on half shaft will be used.

The Diff mounts straight onto the chassis in the pre drilled chassis brackets as shown in the diagram below.

In most cases these items will be serviceable and only need cleaning and painting, although we would recommend new brake shoes and brake cylinders, plus a new hand brake cable.



The Diff in Position



## Uprights & Hub Assemblies

The front uprights will need stripping and cleaning to be modified by ourselves to enable them to be used with our double wishbone front suspension set.

If the discs and callipers are serviceable, they will only need cleaning and painting. However, it is worth considering exchange callipers, discs and pads, they are available from many sources and provide you with a nearly new, and safer brake system.



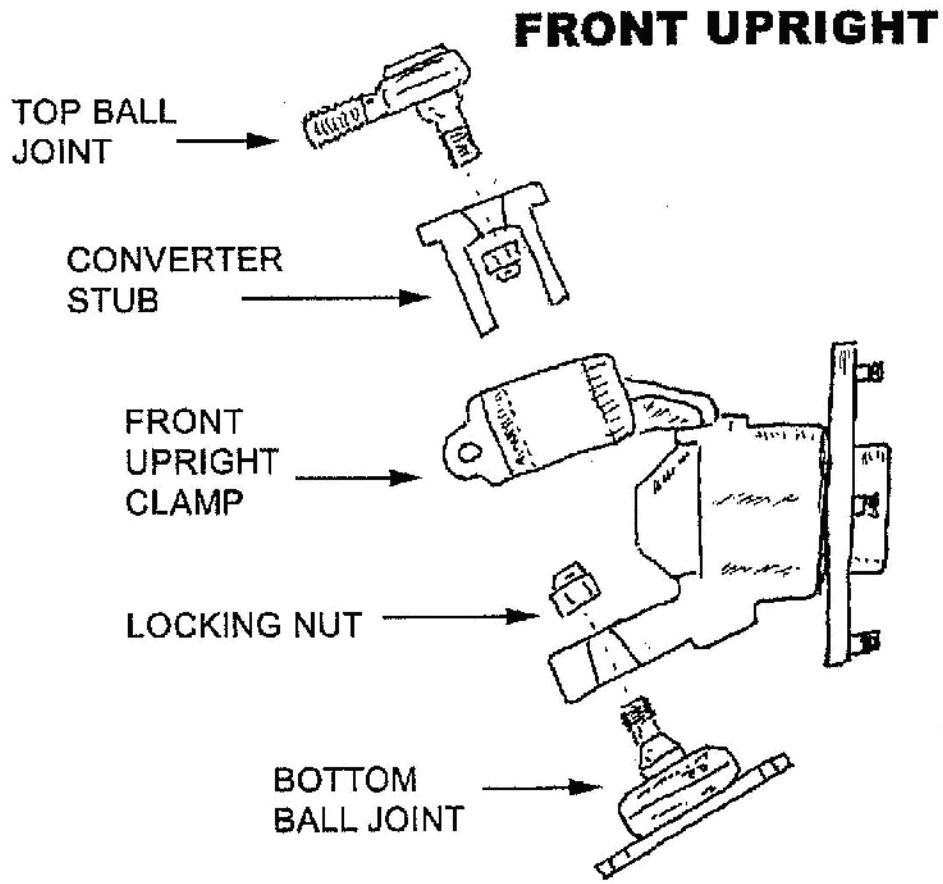
Front Hubs



Rear Hubs (Drums)



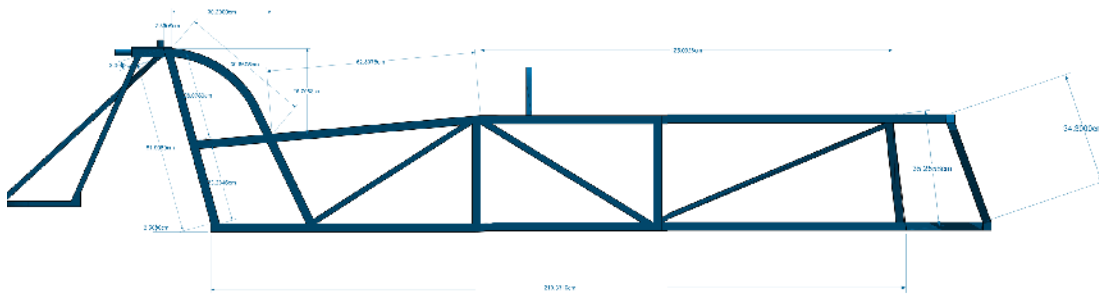
# Front Upright



## The Indy Chassis

Although all the main brackets have been provided, further brackets may be required to suit individual builders need.

The finish of the chassis is also an individual choice, but it is important to ensure it is well protected against rust, either by plastic coating (powder) or primer and gloss enamel.

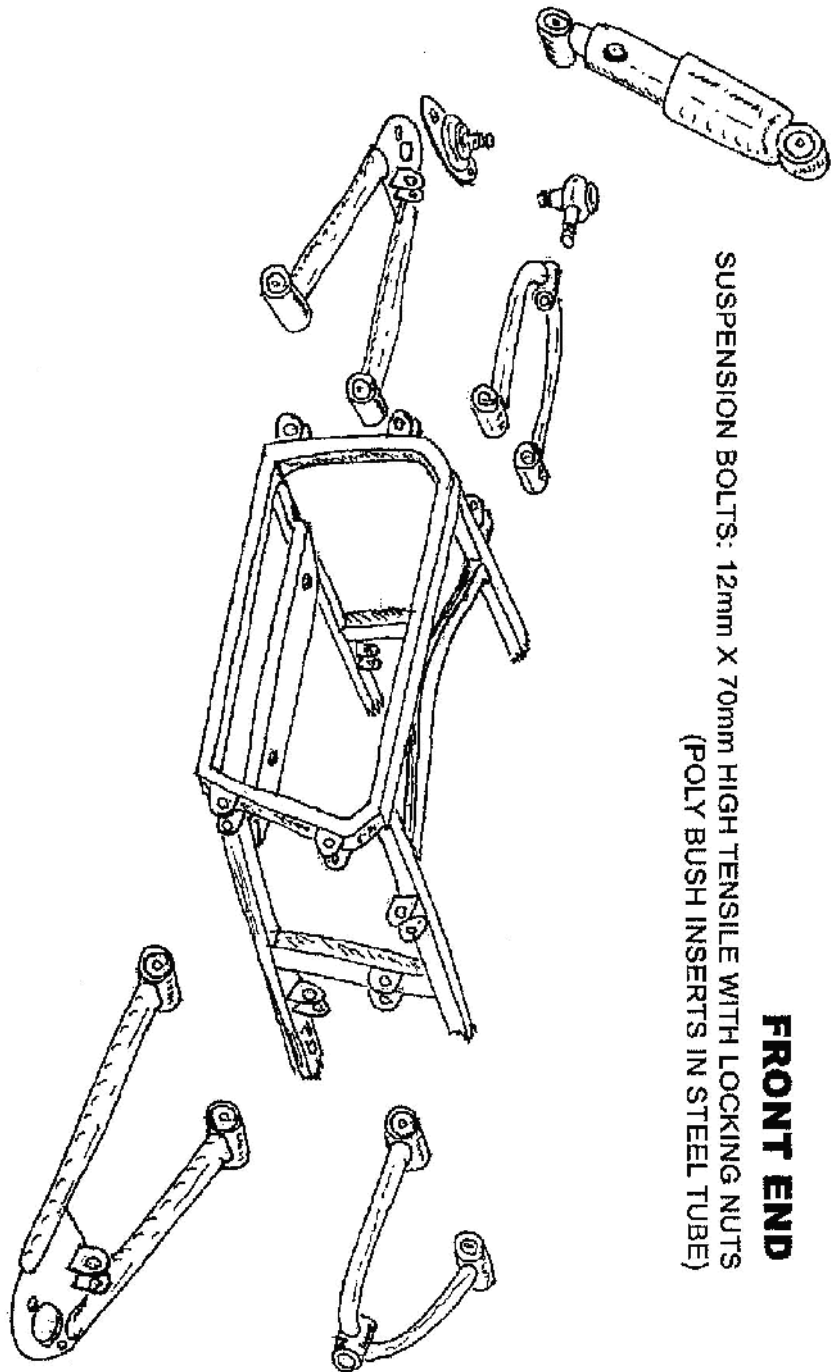


Indy Frame



A Powder coated chassis

# Front End



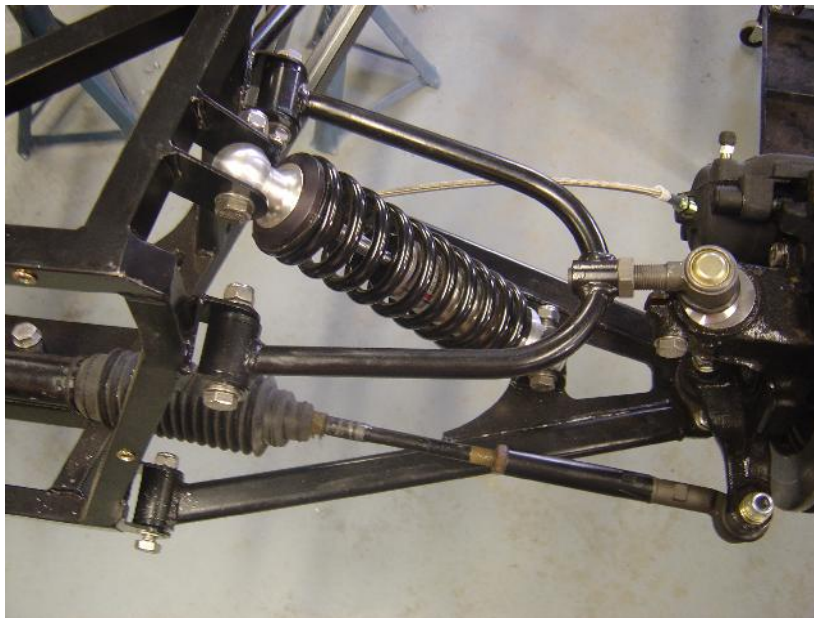
**FRONT END**  
SUSPENSION BOLTS: 12mm X 70mm HIGH TENSILE WITH LOCKING NUTS  
(POLY BUSH INSERTS IN STEEL TUBE)

## Front Wishbones

These items are fully fabricated and ready for the bush set to be fitted, after painting or coating.

The bushes are fitted using a bench vice to insert them into the tubes on the end of the wishbones.

HTM 12 x 70mm bolts are required to fit all the wishbones and fastened with M12 NY lock full nuts.



Front wishbone assembly

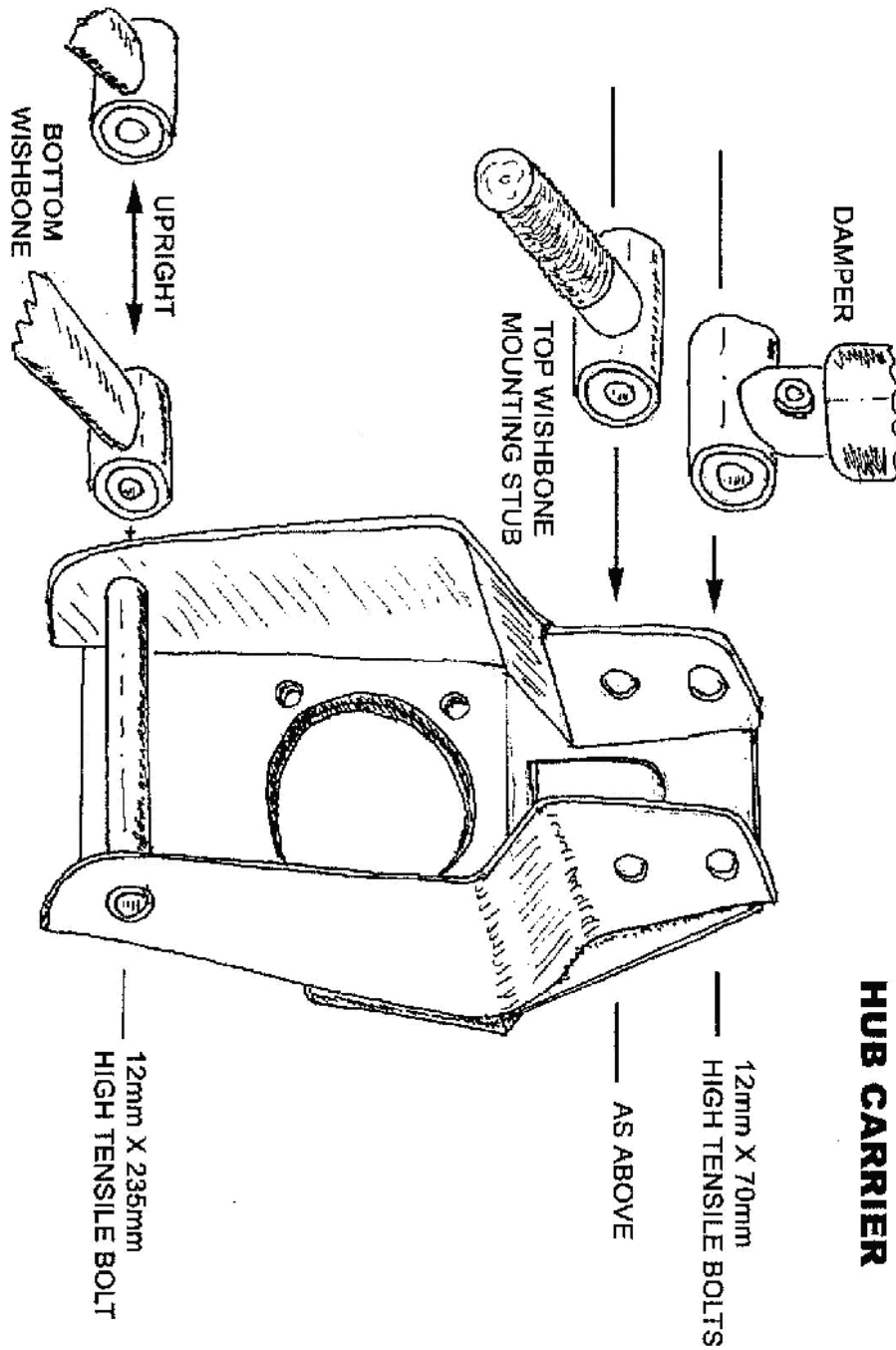
## Rear Wishbones & Uprights

These are fully fabricated by us to utilise full length drive shafts and Sierra rear drum braking system or disc braking system. It also provides reduced unsprung weight to aid even and compliant road holding.



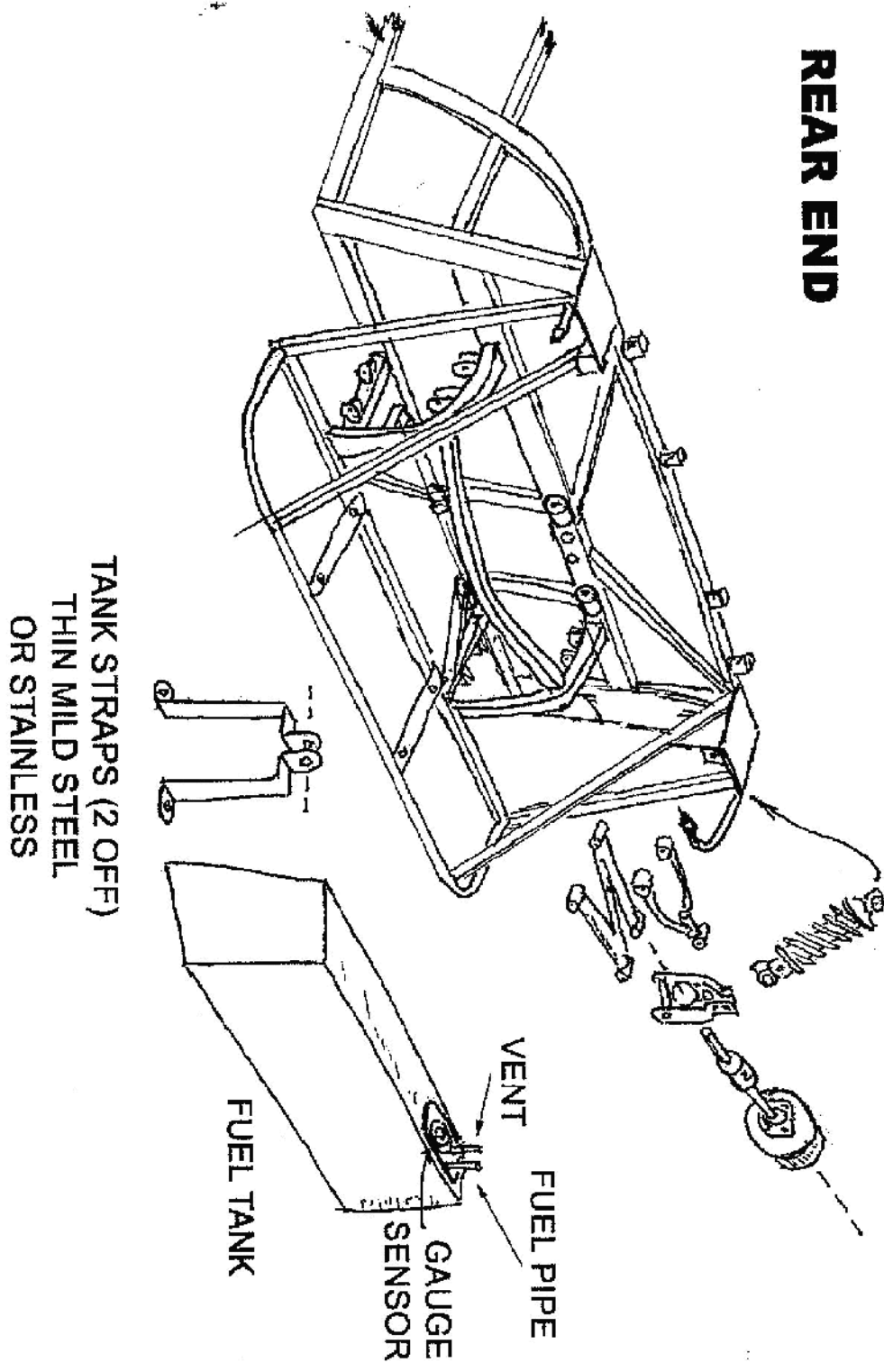
The hole at the top of the carrier provides (right hand side in this figure) access to the Brake fitments

# Hub Carrier



# Rear End

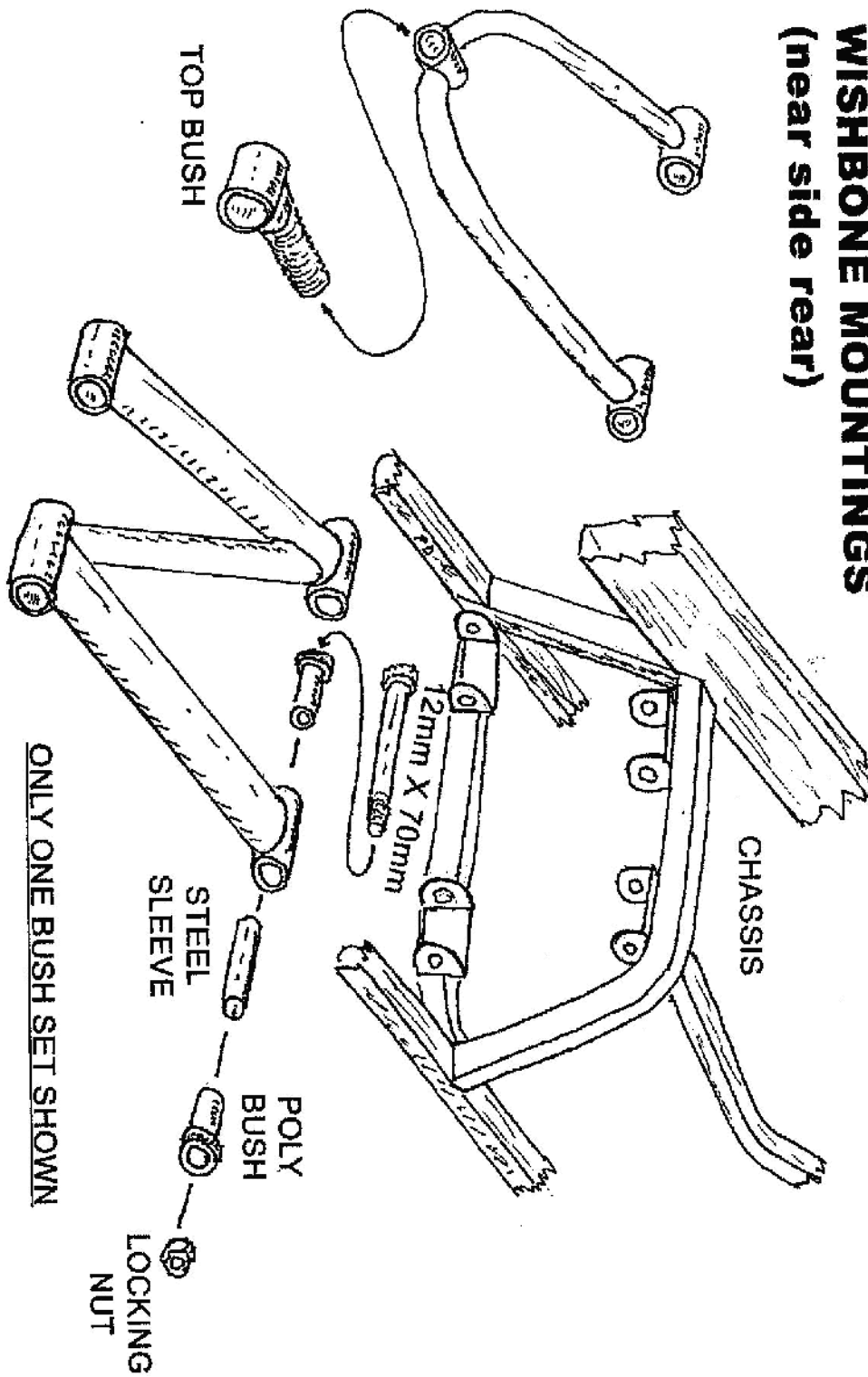
## REAR END





# Wishbone Mountings

## WISHBONE MOUNTINGS (near side rear)



## Steering

You will need the complete steering system from the Sierra. The steering rack will need modification (shortening) by ourselves and should be cleaned and the protective rubber boots removed before giving it to us. You will also need the UJ linkage modified by us.

You will need both universal joints, and the column, not forgetting the column centre bearing, which may need replacing. The column can be cleaned and painted and the stalks removed if not required.

Fit the rack to chassis with 2 HTM 12 x 70mm bolts and NY lock nuts.



A shortened Sierra Rack



Steering column fitted

## Engine & Gear Box Mounts

Obviously these mounts vary depending upon engine and gearbox choice, however it is recommended that the original donor mounts are retained. Extension mounts can then be made to locate these original items onto the chassis.

For Bike engines we supply a cradle that fits onto the chassis.

Please state the type and model of engine before ordering in order to have the chassis fabricated to suit it.

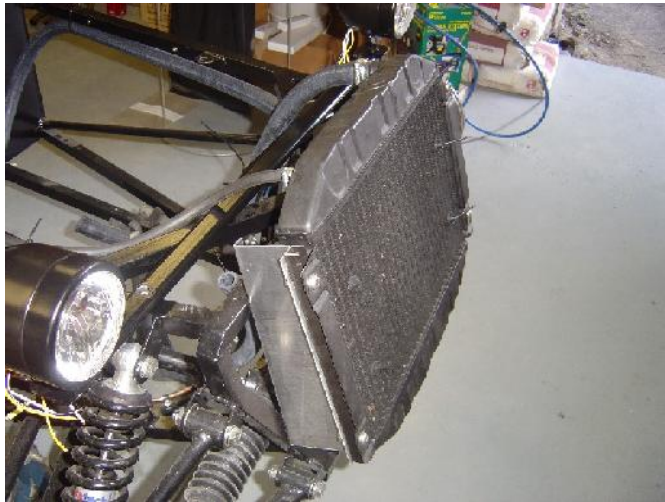


Fireblade cradle

## Radiator fitting

The radiator is fitted using the supplied/homemade brackets. This must be trial fitted with the nose cone in place before any permanent fixings are made otherwise the cone may not fit at the body fitting stage.

Also ensure enough room is left to allow fitting of the fan.



Radiator fitted to chassis



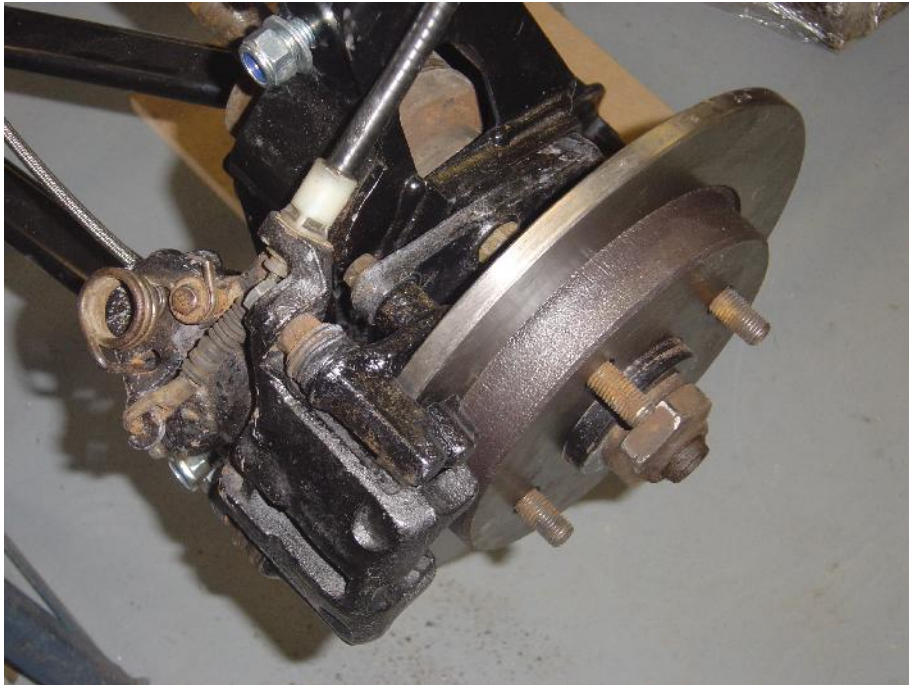
Radiator Hoses (dependant on Engine)

## Brakes

With brakes it goes without saying that extreme care should be taken from a safety point of view, this is also backed up by NCT requirements at a later stage.

If finances permit, it is worth considering stainless flexible brake pipes, and copper brake pipes in the construction of the brake system.

These hoses will be fitted to the callipers according to the Sierra Haynes manual.



Rear disc brakes & callipers



## Brake Lines

The recommended way to run the brake lines are shown in the following diagrams. These lines are fitted to the Chassis with P-Clips and the spacing should be approx 200mm between each fixing.



Front brake lines



Rear brake lines

## Pedals & Master Cylinder

The standard Sierra master cylinder is used without the servo. This needs fitting to the front bulkhead (if required with strengthening plates). The fabricated pedals can then be fitted to the brackets provided on the Indy chassis.

Brakes are a very important safety feature and we would recommend using as many new components as possible, or properly refurbished items.



Pedal box





Brake Push Rods



Brake reservoir and cylinder

## Handbrake

This item can be fitted on the brackets provided to enable the new brake cable to be located in the tubes in the back panel.



Handbrake mounting

The cable is run from the lever back under the Diff and into the brake callipers or Drums. The cable may require shortening, if so then a Clevis should be used on the shortened end of the cable.

## Fuel Lines

These are, to a certain extent, a matter of choice, but again they should be fixed with P-clips to the chassis with a spacing of 200mm between clips. For the majority of the route from the petrol tank to engine copper pipe can be used, it should be run up the centre tunnel, making sure to avoid fixing it near where the propshaft will be. At points of contact with the chassis rubber sleeving should be used to cover the rigid pipe. Rubber hose should be used to the tank/pump and to the carbs.

(Care: some fuel lines are not suitable for unleaded fuels as they react to Benzene products).



Fuel pump (For Honda fireblade)



Car Fuel pump mounted

## Prop shaft

The propshaft fitted is the one that came from the Donor car and modified by us to suit the engine being used to allow fitting of a connector flange.

The central mounting bracket needs to be fixed to the drivers side footwell wall, this should be mounted so that the back end of the shaft is a level as possible.



Sierra Propshaft



Bike engine modifications



Propshaft mounts



## Internal Panels

The prop shaft tunnel needs to be covered with steel sheet, aluminium or Plastic panels which is the lighter and better option.

You should make the top panels removable for access to the prop shaft, brake lever and gear lever. These removable panels also allow easy access to the fuel line, brake lines and the wiring harness to the rear of the car.

The outer internal side panels, if required, can be made from aluminium or plastic sheet or leather grained fibre board, which are in turn screwed or riveted in place.



Internal panel fitted to side.

## External Panels

The external panels will require some trimming to allow them to fit flush with the chassis. There are some chassis rails etc that have to have notches cut out of the panels to allow correct fitting. This is best done with a jigsaw and set of files but the best tool for this job is a powerfile.



External panels fitted

## Dash

Depending on your personal preference and the engine that has been selected the gauges will vary from one car to the next. E.g For a bike engine setup the gauges from the donor motorcycle can be used.

The dash blank can be made up of a number of materials / coverings, wood, plastic, carbon fibre to name but a few. Also the builder can use and number of configurations of warning lights an switched that he/she deems necessary.

The example below is just one possible layout to use.



Dash



## Front Wings

The fitting of front cycle wings uses our straight bracket. These brackets should be bent to cater for the wheel and tyre combination used and then mounted to the upright and the cycle wing fitted to them.



Front wing brackets



Fitted bracket & wing

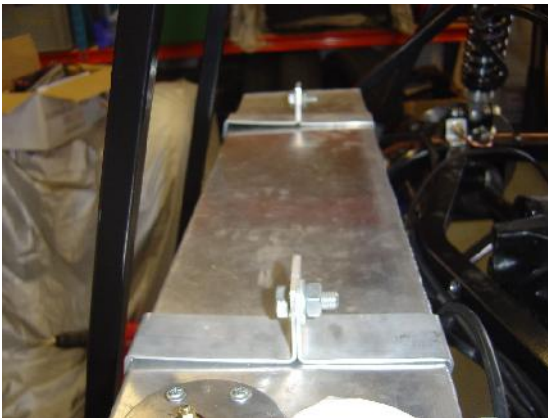
## Fuel Tank

We supply Aluminium fuel tanks, with or without the hole for a fuel sensor, and complete with inlet and outlet pipes.

These items are extremely durable and are made to fit our chassis with two metal straps.



Aluminium Fuel Tank



Fuel Tank Straps

## Seats

These can be in the form of fibre glass racing style seats (available from ourselves) or any other type which can be fixed securely to the chassis floor using Seat Runners.



Seats & Runners



Fitted seats

## Seat Belts / Harness

The most common type of restraining method used is a harness, either 3,4 or 5 Point, alternately an inertia reel seat belt can be fitted. The option that is selected will be determined by the usage the vehicle will get.

There are mounting points fabricated into the Chassis that will allow for any of the option selected.



Harness setup



## Exhaust

The exhaust is fitted by mounting it to the point that is fabricated into the chassis. A mini exhaust bobbin should be used to attached the exhaust to the chassis to allow for movement during use.



Mounted exhaust



Rear of exhaust.

## Lights

The headlights are mounted onto a headlight bar that is fixed to the chassis under the nose cone.

The Rear lights (Stop and indicator) are mounted onto the rear mudguards.

The front indicator are from a motorcycle and are mounted into the indentation in the nosecone.

The number plate light is fitted to the boot panel in a position above where the number plate will be fitted to the car.



Headlamp mounted on Light bar



Rear lights on mudguard



## Bonnet

The bonnet is fitted using bonnet catches to securely fit it to the chassis. A number of after market over center catches can be used.



Bonnet



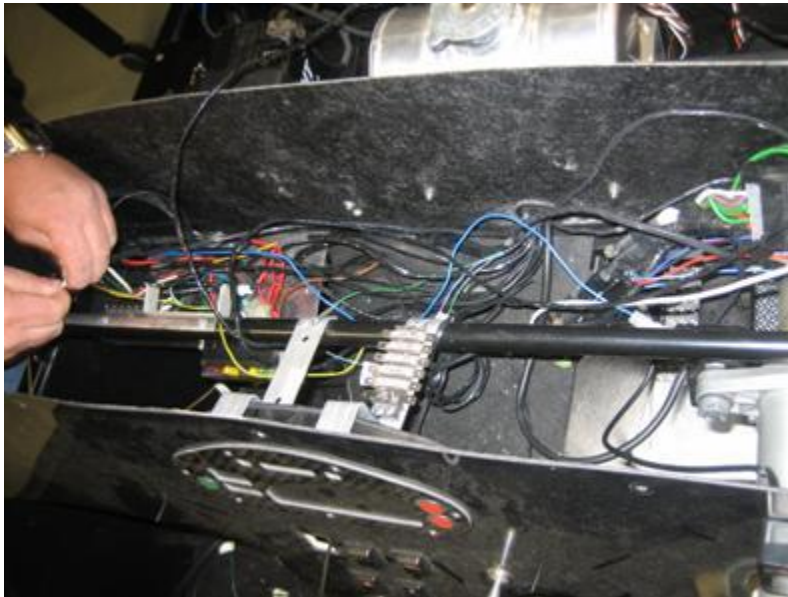
## Wiring Your Car

Although sometimes time consuming, wiring of cars is relatively simple as long as the diagrams are followed. Sticking to the list wire colours is also recommended to avoid confusion.

For builders not wishing to attempt the wiring there are a number of after market wiring looms available, all with easy to follow instructions.

For a car engine setup the wiring loom from the car can be used but a generic Kit car loom where a lot of the wiring for features from the donor that are not use are removed, is available from us.

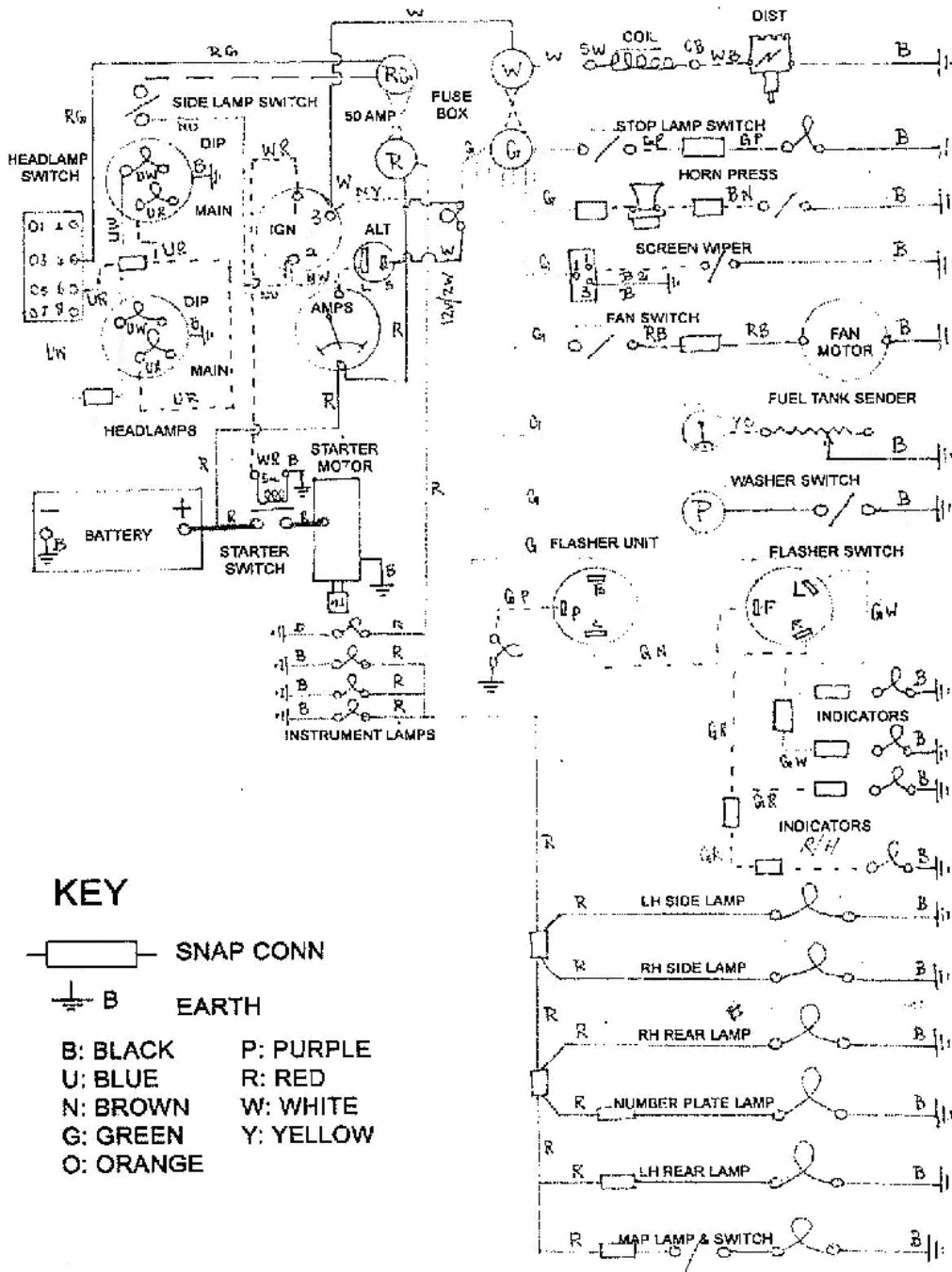
If a bike engine is being used then it is a bit more complex as the bikes loom will need to be spliced into the car loom to get it to work.



Setup of wiring behind the dash

# Wiring Diagram

## WIRING DIAGRAM



## Setting up the Indy

1) Changing the camber you should only screw the top ball joint in/out of the wishbone and keep the mushroom in the SAME location each time. The mushroom is there to adjust castor and should normally be set such that the top of the ball joint is as far forward as possible. Running standard radials you should aim for 1-2 degrees of camber, the lower end is suitable for road use, more camber if you are hammering it on track.

2) There are several important things to note with setting the springs and shocks

- Set the rear of the car approx 20mm higher than the front. This will improve turn in and front end grip. The ride height is set by adjusting the spring base up and down

- Initially start with the front end at say 5/6 clicks and rear end soft (2/3 clicks) and gradually increase the stiffness of the rear until you get the handling balance you like (as you increase the rear it will get more over steer on power and cornering). After that you can change the front or rear click settings to fine tune things. Typically if you stiffen the front too much you will get under steer. You want to run soft enough on the road to give you good ride/bounce absorbency, if the ride is too hard the handling will be skittish on uneven roads. If you do a track day you can adjust each corner up 2/3 clicks to maximize grip on the smooth track surface.

3) Make sure your wheel tracking is set up correctly - small amount of toe-in both front and rear is a good place to start.