



Greenside Works, Thomas Street, Biddulph, Stoke-on-Trent, ST8 SEE

Tel: 01782 520086 Fax: 01782 523724





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# Dear Friend,

- I have tried to make this Build Manual as easy to understand as possible and to quickly update any changes due to legislation.
- On completion of your Beauford you will have to submit your car for a one off test. This is called Single Vehicle Approval (S.V.A.). This has to be arranged through the Vehicle Inspectorate and a designated test centre, to be both safe and environmentally friendly.
- Their main concerns are sharp edges, extrusions etc. Meeting the criteria is quite simple and straight forward. We have put many vehicles through this test. If you are in any doubt what so ever about the S.V.A. please contact me prior to booking your appointment.
- Likewise, if there is something you are not sure of or if you would like to discuss any part of the manual please do not hesitate to give me a call.
- I would also recommend that you join the Beauford Club, it is good value at £10.00 and offers free advice and friendship through its' many members.

DAVID YOUNG

MANAGING DIRECTOR



- Thank you for showing an interest in joining the Beauford Club. Enclosed is a membership application form for your use.
- Joining the Beauford Club means that should you have any problems with either the building of your car or with an existing car then the club will be only to pleased to put you in touch with your nearest club member and others who will be able to help. When it comes to those odd individual parts that you are unable to locate then we should have all the answers. You do not have to own a car to be a member everyone is welcome.
- The club can offer you a great deal of fan and enjoyment before and after you have completed your car. We organise trips, holidays abroad, rallies and meetings to places of special interest. Club areas and stands are arranged at most of the major Kit Car Shows, when the Club provides free refreshments for members.
- We also have some regalia consisting of sweatshirts, tee-shirts, baseball caps, badges (label and car) key rings and ties.
- The enrolment fee is £10 for family membership (inclusive of membership pack) and is renewable each year before the A.G.M at the beginning of March at an annual fee of £10. Cheques or Postal Orders should be made payable to 'The Beauford Club'.
- If you do not wish your address and telephone number to be included on the membership list or your name to be given to other members only, please indicate in the appropriate space on the application form.
- The club is designed to give its members what they want and any ideas or suggestions regarding the Beauford Club will be welcomed by the committee.

We look forward to receiving your application form and cheque.

Liz Ovenden

Membership Secretary

# APPLICATION TO JOIN THE BEAUFORD CLUB

Surname	Forename
Address	
.Post Code	
Telephone NoCar	Reg. No
As well as immediate family members two addition	nal guests are also allowed at any of the club functions.
The initial cost of the above membership will be £1 to The Beauford Club'. Renewal of membersh	0. All cheques and postal orders should be made payable ip is due on the 1st March every year.
Just for our records are you intending to use your	car (please tick boxes):
Just for pleasure and personal use	
As a business for wedding hire etc	
For pleasure with the occasional wedding if asked	
If you would like an "identity" badge to wear at car write below the name(s) you would like on the	shows (so fellow members ow who you are) please badges (two badges per membership)
BLOCK LETTERS PLEASE	
(1)	
(2)	
	lease state whether or not you object to your personal abase and sign below. Please note that your membership his form.
I do not object to my personal details being held or details held on computer)	n the Club computer. (Delete "not" if you do not want your
Signed	Oate
PLEASE RETURN TOGETHER WITH YOUR REM	MITTANCE TO:
Mrs Liz Ovenden (Membership Secretary)	
17 Brooklime Drive, Boughton Vale, Rugby CV23	OSF

Tel: 01788 547033

BEAUFORD TOURER DETAILS		
CHASIS NO		
ENGINE MAKE and SIZE		
MANUAL/AUTOMATIC		
CONTACT DETAILS for paintwork		
CONTACT DETAILS for upholstery		
PAINT DETAILS – colour(s)/code(codes)		
IGNITION KEY No		
DOOR KEY No		

On completion of your Beauford, if you wish, you can complete the details above and return them to Beauford Cars Ltd. And we will store them safely on our vehicle data base where they will be available in case of emergency.

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# **Using this Manual**

- PLEASE READ EACH SECTION THROUGH & ENSURE THAT YOU ARE COMPLETELY SURE OF ALL OPERATIONS BEFORE STARTING WORK.
- Italic text identifies an item of advice to help the user. In some cases this is from Beauford and in some cases it is from other owners or the Beauford Owners Club. This advice if offered without any liability by Beauford Cars for its content.
- Bullet points indicate a work process the order in which to do things. This is not the only order in which you could undertake the build, but an order which has been followed by others and has proven to work.
- Bullet points have also been used to identify specific components. Often from the donor car.



#### PARTS YOU WILL NEED FROM THE DONOR FORD

The Beauford Tourer was first based on a Ford Cortina donor vehicle. Cortinas are becoming few and far between now and most recently built Beaufords are based on Sierras. However, a Cortina donor is still viable if available and its details are included here for completeness.

#### **CORTINA DONER**

The Ford Cortina MK3, MK4 or MK5 will supply all these parts (although the rear springs from the Estate versions are too strong) the ones from the Cortina 2000 are ideal. The 1600 ones give a more comfortable ride at the expense of body roll. (If you're using Ford 2000cc or 1600cc engines then use 1600 running gear, the springs and rear axle are ideal) and easier to obtain. Front suspension assembly consisting of:

- Suspension beam (cross-member) complete with all suspension parts, springs, shock absorbers, hubs, brakes etc. including four mounting bolts. (The four mounting rubbers are not needed).
- Engine including all ancillary parts e.g. starter motor, alternator, ignition coil and ballast resistor etc.
- Gearbox complete with mountings and cross-member. No matter which type of Ford engine and gearbox you fit you must use the standard Cortina gearbox cross member.
- Starter solenoid (if not pre-engaged starter).
- Battery.
- Battery leads.
- Low tension ignition wire plus ballast wire if fitted.
- Speedo cable and circlip. (Only if you are using Ford eng/box)
- Radiator and hoses.
- Instruments. (Optional).
- Gear lever.
- Gear lever rubber gaiter.
- Prop-shaft.
- Rear axle complete with suspension arms.
- Rear springs and rubber seating.
- Rear shock absorbers. (Dampers).
- Rear bump stops.
- Handbrake lever complete with bellows.
- (Handbrake cables are not needed as new ones are supplied with the kit).
- Complete exhaust system. (If usable).
- Wiring loom.
- Clutch and brake pedal assembly.
- Brake master cylinder and servo unit.
- Complete Cortina steering column and switches.

(If you are fitting a Nissan/Datsun engine keep the Cortina engine mounting rubbers as

these are the correct ones that fit the mounting brackets we supply - all other makes of engines fitted keep their own rubber mountings).

#### SIERRA DONER

- Front cross member complete with anti roll bar and brackets, brake calipers, brake hoses and fasteners, discs, steering rack and coupling. (The suspension struts are not required and can be removed from the hub, but save the bolt
- Battery.
- Low tension ignition wire plus ballast wire if fitted.
- Speedo cable and circle. (Only if you are using a Ford eng/box).
- Instruments. (Optional).
- Gear lever.
- Gear lever rubber gaiter.
- Prop-shaft.
- Rear axle beam complete with hub carriers, drive shafts, final drive unit (diff).
   Springs,
- Seating, bump stops, brake drums, shock absorbers, (dampers) handbrake cable etc.
- Handbrake lever complete with bellows.
- Clutch and brake pedal assembly.
- Brake master cylinder and servo.
- Heater assembly complete with dueling and controls, fan switch etc.
- Rear brake flexi T piece.
- Complete steering column, including, bottom rubber bush assembly. (This fits through the bulkhead of the Sierra).

# PLEASE ASK IF YOU'RE UNSURE OF WHAT YOU NEED TO KEEP.

If you are using the Sierra Donor, please bring the whole steering column with you, we can modify it while you wait.

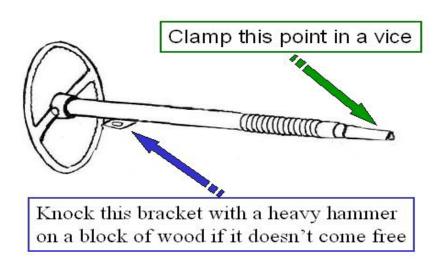
## Converting the steering column

At the bottom of the steering column is a triangular shaft, which must be removed.

To do this:

• Clamp the shaft in a vice and firmly pull the steering column free.

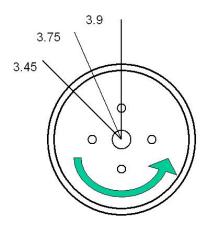
If you cannot remove it yourself, bring the steering column along with you and we will do it while you wait, free of charge. Please bring this shaft to us for exchange when you collect your Beauford Kit otherwise a surcharge will apply



# **HOW TO IDENTIFY FORD REAR AXLE RATIO**

- First lock one rear drum so only the other one can turn.
- Mark: the drum and back plate at the 12 o'clock position, also mark the diff driving flange and diff body at the 12 o'clock position.
- Rotate the driving flange twice so that it turns the brake drum in an anti-clockwise direction.
- With the driving flange returned to its 12 o'clock position after two rotations you can now read off the drum position, and this will give you the following ratio.

If both marks line up you have a 3.9, which is usually from the 1600cc. At 11 o'clock it's 3.75 i.e. 2000cc. and if it's at approx o'clock this is 3.45 i.e. 23oocc. Anything after 12o'clock position is too low for the use on a Beauford, there can be slight variations on these marks so repeat the operation several times.



The following engine/ratio combinations are suitable:

# Ford axle 3.9/1 ratio

1600cc Cortina/Sierra donor - suitable for all engines up to 2000cc using auto or manual gearboxes.

# Ford axle 3.75/1 ratio

2000 Cortina/Sierra donor - suitable for all engines up to 2.8 if using 5-speed box. If you are using a 4 a speed or auto box use a Ford axle with a 3.45/1 ratio from the 2300cc; this is also suitable for engines above 2.8 with auto or manual gear boxes.

If you are using the large Vintage Style cross ply tyres you must choose the next lower ratio, otherwise it will be over geared. If in doubt, call the Beauford works for more details.

#### **PREPARATION - FORD DONOR PARTS**

Those who are familiar with the Cortina or Sierra will need little in the way of instructions other than a list of required parts and this will be found earlier in the manual.

Those who do not have such firsthand experience of the car can be assured that the task is quite simple. We suggest that you purchase a Haynes (or similar) Auto Manual, since it is helpful both in stripping the car and also in the future when servicing the completed Beauford. Alternatively, manuals are usually available in local libraries. You may also find that fellow Club Members might have a manual that you could use.

We at Beauford recommended that you strip the donor before obtaining and working on the Beauford Kit. This is so that the donor body shell and other items that will not be required, can be disposed of, thereby giving you the maximum working space at all times.

For ease of working we suggest that both suspension systems are left on the car until last. In this way the car can still be moved around as required.

If you intend to do the wiring yourself then keep as much of the wiring loom as possible since this will be of use during the build. Label each wire as you go along if you are unsure of the colour codes.

Premier Wiring manufactures a Sierra wiring loom using the original Ford colours. The instructions are clear but if you run into problems, they are at the end of the phone and willing to help.

You will have to shorten the prop shaft. Any reputable reconditioning centre can carry out this for you.

It usually works out cheaper and a much better job to have a one-piece prop shaft made up to the required length. Beauford carry these prop shafts in stock.

If you are not using a Ford engine/gearbox see later section.

When you have removed everything that is required, with the exception of the two suspension assemblies, (see the full list in Part 0), put the car in a safe working position to enable this final stage to be completed.

You can carry this out in several ways; for example with the body on stands or, with the car turned on its side for easy access. We must stress however that you should make sure that the body-shell is in a safe position.

### DO NOT TAKE CHANCES.

Beauford can supply all the Ford parts if you wish. Simply phone for a quote, it's a lot cheaper than you may think.

The rear suspension springs and shock absorbers etc all unbolt quite easily. Do not forget the rubber spring seating,

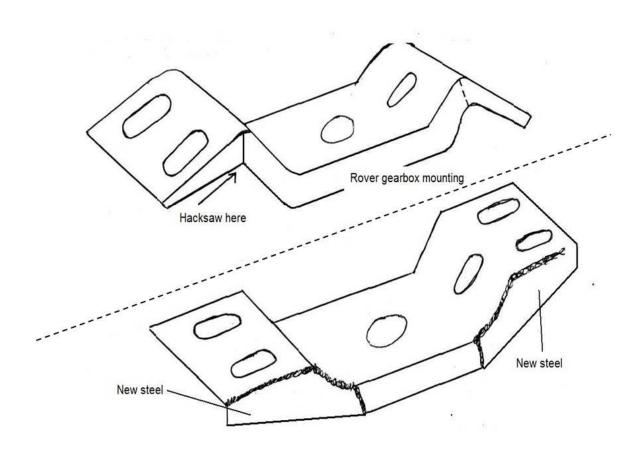
The rear bump stops (convoluted rubber cones) will just pull off the Cortina/Sierra chassis as they are only a push fit onto a peg.

The four long suspension mounting bolts that go through the Cortina/Sierra chassis are not needed. New ones are supplied with the kit.

At the other end of the car the front suspension will come off as a complete assembly. The brake flexible pipes can be cut off and the steering column disconnected from the three cornered drive, then the four bolts retaining the suspension beam (cross-member) can be removed. Take care, it is heavy and awkward to handle. The four mounting rubbers are not needed as the sub frame is bolted straight into the Beauford chassis.

All parts can now be cleaned and inspected thoroughly. The engine mounting brackets must be cut off the front cross-member, as they are no longer needed. If they are not removed the bottom of the Beauford radiator shell will have to be trimmed to clear them. Re-condition or replace any parts as necessary, do not re-use any brake pipes, always fit new since they are so inexpensive and it is not worth risking a possible failure. Your local garage will usually make them up for you.

If you are fitting the Rover V8 or straight six cylinder engine, the gearbox cross-member will have to be modified as shown below. Also on the V8, the alternator will have to be mounted on the top of the alloy platform instead of below. A suitable bracket will have to be made for this purpose, as shown below.



The standard exhaust manifolds can be retained, but you will have to remove the hot air box from the o/s one. As the bolt holes are slotted, make sure you have approx.3/8" gap between manifold and chassis before tightening the bolts on the engine mounts.

### NON FORD ITEMS THAT MAY BE REQUIRED

B.L. Mini windscreen and rubber surround, N.B. if the rubber is old and hard always fit a new one; otherwise it makes it very difficult to fit the screen. (We can supply new rubber surrounds). New glass and rubber are supplied with the split screen.

- B.L. Mini windscreen wiper mechanism with its multi-pin connector plug and enough wire to connect into Cortina wiring loom. (Approximately 18").
- B.L. Mini wiper arms and blades.
- B.L. Mini heater and plastic de-mister vents.
- B.L. Mini doors, including locks, handles, interior door panels and all fixings and screws etc, and (these are only needed for the two door model).

You may use any filler neck you wish, the most popular ones are, Austin Allegro, Ford Sierra, Ford Escort MK 3, Austin Maestro, Vauxhall Nova and Citroen BX. All these except the Allegro have breather pipes attached, and this may help you.

When fitting the tank breather system make sure you use ½" bore tube, otherwise the tank will be slow to fill and will 'blow back' all the time.

N.B. Marina striker plates or similar will have to be used, because B.L. Mini ones will not accommodate the thickness of the body work. Also obtain four screws from the Marina lock; these will be used to fix the striker plates to the Beauford body, as the original fixing screws are not long enough. Take the threaded captive plates from the Marina door pillar and use these as well. It will make adjusting the striker plate a much easier job. (Two door only). We have these in stock F.O.C. usually!

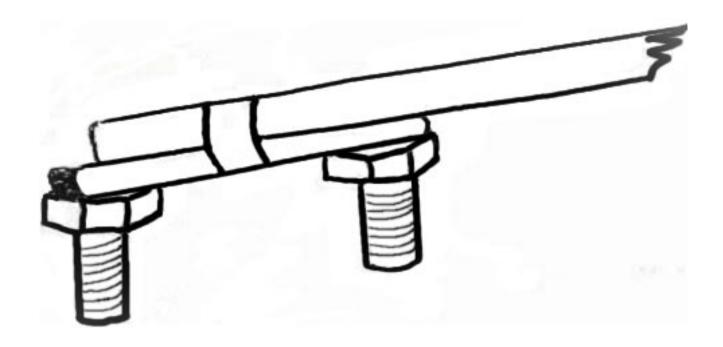
### **ASSEMBLING THE ROLLING CHASSIS**

Before undertaking assembly of the chassis, we recommend that you refurbish and painted all donor parts to a satisfactory standard. We recommend that you use ordinary household gloss paint. Also, give the chassis 2 good coats of gloss as well). Remember, the complete underside can be wax sprayed when the build is complete.

Check all fibre glass panels and remove and 'sand' any remnants from the moulding process. Final preparation can be undertaken prior to spraying the car.

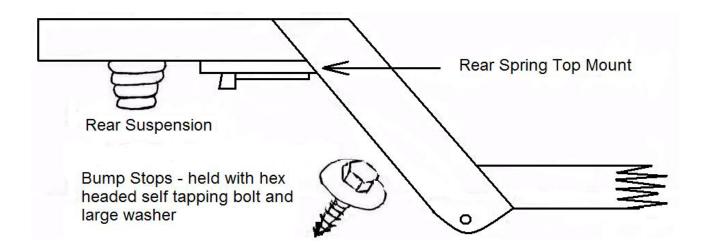
There is no particular sequence to the mechanical build-up of the rolling chassis, however, if you have no lifting equipment the following build-up has proven to be successful..

- Ensure sufficient working space and place the engine/gearbox unit on blocks or bricks about 6" off the ground.
- The chassis can now be lifted over and positioned to pick up the mounting points. Bolt the engine into the chassis using standard Sierra engine mounting rubbers.
- The gearbox cross-member is bolted through the angle iron mounting rails. Also, if you intend to use a mechanical speedometer it is easier to fit the speedometer cable at this point.
- If you are using a Ford engine then use the Ford cable with the top fitting carefully removed so you can then fit any end you need to suit the speedo you are using.
- Clean up the Ford cable and your chosen end, secure them together with 'Araldite'. Cables can be made to suit any fitting by "Speedy Cables", of Swansea if this suits better. The address is given at the end of this book.
- If using a 2000cc Ford engine the alternator sometimes touches the steering column shaft. If so, shorten the adjusting strap to move the alternator inwards and fit a shorter fan belt.
- When the engine/gearbox is secure, the chassis can be jacked up and put on stands.
   The front and rear suspensions can be now be fitted, using original bolts for the front cross member.
- You may find that it takes a little effort to put all four bolts in, since the holes in the cross member are rarely accurate. Make sure that the two front bolts are fitted from the inside nuts on the outside this will save you from having to remove the bolts to fit the front bumper brackets when the car is completed.
- Grease all the mounting bolts before fitting using copper based grease. You can now secure the front brake flexi pipes to the metal brackets on the chassis.
- The rear axle and suspension can now be fitted using the original Ford bolts plus the new ones supplied. Grease all the bolts with copper based grease before fitting, not only will this make it easier get them through the holes but will prevent seizure and help dismantling in years to come when rubber bushes etc need renewing.
- The rubber bushes on the top of the rear axle differential are known as 'top void bushes'. Replace these with the genuine Ford solid bushes i.e. the ones without the slots. They are the same price and perform better and last indefinitely. They are also available for the lower trailing arms try your local Ford dealer, Europa Cars or Speedex, the addresses in the rear of this manual.



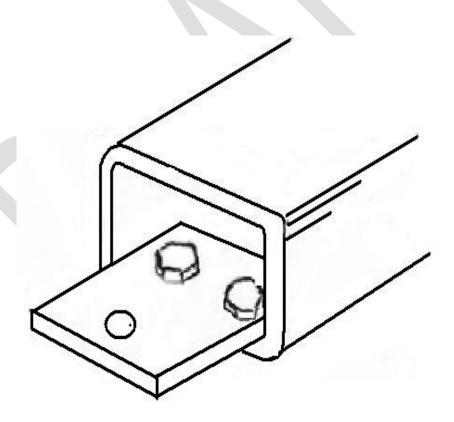
- When fitting the front anti-roll bar, the holes in the mounting plates need to be enlarged to suit the bolts for the chassis mounting points. Use a ½ " drill for this. Make sure the anti-roll mounting bolts are nice and tight before fitting panels, as they are difficult to reach afterwards.
- Two of these are used to secure the front anti-roll bar, to fit them simply tape to a strip of wood or metal and feed it down into the chassis when secured simply pull the wood free.

The rear suspension convoluted rubber-bump stop can now be screwed to the underside of the chassis. The chassis is pre-drilled to accept the hexagon headed self-tapping screws supplied. It is sometimes necessary to fit a larger washer than a captive one already on the hexagon-headed screw. Use the black auto sealer as an adhesive, and don't over tighten the hexagon headed self-tapping screw. (Otherwise it will pull through).



When the chassis is resting on its, wheels, tighten all the mounting bolts since this ensures there is no pre-set twist on the various rubber bushes.

• The prop shaft can now be fitted. Depending on the type of prop shaft used, make steel tube spacers for the centre support. They may need to be sawn at an angle to suit your support bracket. Also make 2 flat plates to bolt to the ends of the chassis members to carry the prop shaft support as shown.



• If you are using a non-Ford engine/gearbox it is better to have a one-piece prop-shaft

made and so eliminate the Cortina center support bearing.

- Simply measure the distance from the driving flange on the back axle to the back of the gearbox and quote this to your prop-shaft supplier. From our vast experience the one-piece prop-shaft is far superior, and is worth fitting, no matter which engine/ gearbox you fit. (We carry all prop-shafts in stock).
- Check to make sure that all chassis/suspension bolts are tight before you start to mount the body panels.



### FITTING THE STRAIGHT 6 DATSUN/NISSAN ENGINE

The Nissan straight six series of engines are ideally suited to the Beauford. These engines and their gearboxes can be obtained from the Nissan Laurel, Nissan/Datsun 240Z, 260Z or 280Z. Some details specific to this series of engines have been included as an appendix to this manual.

- Remove the engine mounts from the Datsun cylinder block and fit, the new ones as supplied by us - use standard Ford engine mounting rubbers, not the Datsun ones. (There are so many different types it's not possible to adapt our mounts to use them).
- The Datsun engine is inclined over to the right and it is perfectly acceptable to straighten it up a little so it looks better. However, don't make it completely upright as it will upset the carburetion. It's usually O.K. to split the difference between the original angle and upright, the bottom of the sump is flat and horizontal when the



engine is in its original inclined position. In most cases, the standard Datsun gearbox cross-member can be used and simply cut to length if it's too long.

 Make up spacers as necessary to bolt the cross-member to the angle section rails, spacers can be made from tube. If the gearbox cross-member cannot be modified to fit, then we will supply you with a simple one made from angle section steel, this will need to be drilled to suit the Datsun gearbox rubber mount.

