



KVA Limited
81 Hendrefoilan Road Tycosh Swansea SA2 9LU
Phone - 0792 - 203118

Your ref:

Our ref:

Date:

Dear Customer

These sheets are to help you to start collecting the parts that can be used in the construction of your car. The chassis was designed to use the Ford V6 2.8 litre engine, but many other engines are at present being installed by enthusiasts ranging from Saab turbo to large American V8's. In such cases, it will be necessary to carry out some modifications to the brakes, chassis, and suspension etc.

If at some stage during the assembly, you feel doubtful about some item, please seek advice from some experienced person before continuing. as you could take an action that would be dangerous when on the road.

After completing the engine installation, it is essential to ensure that engine is safely constrained within the engine bay. When travelling at speed, the engine develops great potential, and kinetic energy. Violent impact at the front of the car could cause the engine to tear from its location and into the passenger compartment with disastrous consequences. I have seen one car that had the entire bukhead framework cut away to fit a large engine, and no alternative structure to replace it. PLEASE - If in doubt - ask!

A complete road going car can be built by Phoenix Automotive.Ltd. If you intend racing, A car can be built to racing spec. using the original type suspension with cast alloy struts etc. by CHEVRON eng Ltd. (see inside for addresses)

Best Regards,

Ken Attwell.



KVA Limited
81 Hendrefoilan Road Tycosh Swansea SA2 9LU
Phone - 0792 - 203118

Your ref:

Our ref:

Date:

Parts Suppliers :-

Engines & Gearboxes/transaxles --New or second hand.	SG Garage 109a Roxeth
Adaptor plates, mounting brackets etc. -----	Green Ave, S.Harrow Middx.
Brakes, drums, discs, hoses, servos etc -----	Phone 01 907 8604.
Suspensions and shock absorbers, springs. -----	" " " "
Steering columns and brackets -----	" " " "
Aluminium Panels -----	" " " "
Original type door handles, bonnet catches -----	" " " "
Rubber seals, light units. ---	" " " "
Wiper mechanisms, Exhaust systems -----	" " " "
Nuts Bolt Bushes, Silent blocs.etc. -----	" " " "
Windscreens -----	Sebik Automotive Developmts
	Unit 7 Clive Rd Reddich.
	Phone (0527) 60401.

Most other parts can be supplied by Phoenix Automotive Ltd.

The Grange Industrial Estate,
Rawcliffe Road,
Goole,
N.Humberside, WN14 6UA. Phone 0405 69901.

For Cars built to racing specifications with original type suspension
engines transmissions etc :-

Chevron Engineering (Mr Robin Smith)
West Crundle Dyke Farm
Newmains,
Lanarkshire. Phone 0698 384549.

For Racing type suspension but using road usable components,
and original type seats.

Ray Christopher,
Holywell Close,
Poole,
Dorset. Phone 0202 697741.

#2 AC
Gravel Hill
Police Station
Just Behind



KVA Limited

70 Hendrefoilan Road Tycosh Swansea SA2 9LU

Phone - 0792 - 203118

Your ref:

Our ref:

Date:

List of items used in the construction of the Mk 111. replica include :-

- (1) Engine:- Ford V6, 2.8 or 3.0 litre. XR3, C.V.H. Kent (1850 cc)
chev 350 LT Most short block V8's The Rover V8 is handicapped by its length, caused partly by the crankshaft damper, and distributor.
- (2) Gearbox:- V.W. Variant, Citroen I.D.23, or 24, (both 5 speed) If the XR3
ZF engine is used, then the transaxle can be used complete (5 speed) The V.W.411 type box although very good presents a few problems when fitting, so is best not used.
- (3) Front Suspension :- Cortina (Post 1973). This ensures that the anti-roll
GTD + chev front bar is already fitted. The entire sub frame is used complete.
- (4) Rear Suspension:- This is provided with the space frame unit.
GTD + Vette drivetrain
- (5) Dampers:- Adjustable dampers (SPAX) or similar, front and rear.
GTD
- (6) Springs:- Cortina coil springs are used front
GTD
- (7) Steering Column:- A Leyland Marina or Triumph are suitable.
Delmite
- (8) Gear linkage:- A 'Paddy Hopkirk' or similar remote gearchange adaptor.
per ray With the aid of Mollart, or similar universal joints, and $\frac{1}{2}$ " diameter tube a gear linkage is easily fabricated.
- (9) Door Locks:- Again, Leyland 1800 or Maxi Exterior and interior locks are
GTD both reliable, and easy to fit. They are a burst proof type.
- (10) Lighting:- On the original Mk 111. the lighting was pathetic when compared with the earlier Mk 11. It was partly due to the 3" inner lights, and the perspex covers. On my car I have used four 5" diameter quartz halogen. 70 watt main beam, 50 watt dipped. To prevent the perspex covers from misting up on the inside, drill 5 small holes near the top and bottom to vent the area in front of the lights. (approx a sixteenth dia.)
- (11) Windscreens:- 'Triplex' Obtainable from Gerald Ace Screens. Side and rear are made from polycarbonate (e.g Macralon) (0527) 60401.
- (12) Rubber Mouldings :- Edgware Motor Accessories Phone 01.952.4789



KVA Limited
70 Hendrefoilan Road Tycosh Swansea SA2 9LU
Phone - 0792 - 203118

Your ref:

Our ref:

Date:

- | | | |
|--------------------------|--|---|
| (13) Engine Adaptors :- | Hewland Engineering
M.E.H
Lyncar
Z.F. Transmissions
U.V.A. | Phone 0628-3268
0784-56099
0753-34984
0602-322153
0635-201666 |
| (14) Interior Trimmers:- | Aston Martin Tickford Ltd.
Hotspur Armoured Products.
Chisholm Trimmers. | 0908-614688
0639-4101
0908-312303. |
| (15) Exhausts | Janspeed
Mike The Pipe
A.Archer Ltd. | 0722-21833
01-669-1719
0371 2802 |
| (16) Wiring Looms:- | Angell Fabrications.
Parks & Hamilton.(Midhurst)
Magneto Repairs Ltd. | 0244-532714
6311
01-624-4911 |
| (17) Engine Balancing:- | Oselli Engines Ltd. | 0865-48100 |
| (18) Carpeting;- | John Wood Co Ltd. | 051-428-7429 |
| (19) Universal Joints:- | Mollart eng. Co. Ltd. | 01-397-4333 |
| (20) Wire Wheels:- | Octagon Sports Cars Ltd.
Cox & Buckles
" " " | 0622-843445
01-878-7949
021-477-7966 |
| (21) Completed Cars | Phoenix Automotive Ltd.
Grange Indust Estate,
Rawcliffe Rd.Goole Yorks. | |
| (22) Large Tyres:- | Grays Tyre Service | 01- 807 - 9155 |
| (23) Fasteners etc. | Complete Automobilist Ltd. | 07786-312 |
| (24) Alloy Tanks etc. | Grand Prix Metalcraft Ltd. | 01-609-0384 |
| (25) Instrumentation | Princess Services (Brant Broughton Lincs) | 72674 (Loveden) |
| (26) Chroming & Wheels | Service Replacements Ltd. | 021-632-6684 |

THE FOLLOWING IS A SELECTION OF THE PARTS THAT PHOENIX MANUFACTURE
OR CAN SUPPLY FOR THE "GT40" REPLICA.

WINDSCREEN	(ex works Redditch)	230.00
ADHESIVE FOR ABOVE		43.00
WINDOWS ..(2 x side windows, inner and outer rear windows, cut to size and drilled, made from Lexan poly-carbonate material, including roll of sealing tape & rivets)		97.50
WIRING LOOM		P.O.A.
TYRES ..(Avon TurboSpeed 215/70VR15).....		74.50 ea
Other sizes available - prices pro rata		
WHEELS - three piece alloy appropriate look alike 7", anodised for protection.		
FRONT.....(including sealing ring)		114.50 ea
REAR.....(including sealing ring)		117.50 ea
WING NUT/DUMMY SPINNER.....(polished)		10.50 ea
WHEEL NUTS.....(black, per set)		3.90
DRIVE SHAFTS		P.O.A.
REPLICA STEERING WHEELS(including boss).....		49.50
FUEL TANK ..(including fixing bolts, washers, buffers, sleeves, brackets, cap, openings for sending unit & suction, painted grey Hammerite)		98.50
Sending unit and float.....		P.O.A.
Suction plate and filter		P.O.A.
QUARTZ HALOGEN HEADLAMPS ...(including housings, adjusting screws & retaining rims)		49.45 ea
HEADLAMP TO BODY main fixing bolts & spacers incl. drilling and cut out templates		12.50 ea
SPOTLIGHTS		21.00 ea
FRONT FLASHERS		6.50 ea
ADJUSTABLE FIXING BRACKET & cutting out & fixing template for Spotlight & Flasher position		11.50 ea
REAR LAMP ..(combined stop, tail & flasher including fixing clamp)		13.50 ea
INSTRUMENTS - FUEL GAUGE		13.75
OIL PRESSURE		24.80
WATER TEMPERATURE		14.00
BATTERY CONDITION KIT		8.60
CLOCK.....		13.75
FRONT COIL SPRINGS		28.00 ea
REAR COIL SPRINGS		24.50 ea
FRONT SHOCK ABSORBERS ..(adjustable with 12 positions)		24.50 ea
REAR SHOCK ABSORBERS ...(adjustable with 12 positions and spring tension adjusters)		39.50 ea
ALUMINIUM REAR FIRE WALL		P.O.A.
PEDAL BOX ASSEMBLY		79.50

PLEASE NOTE: ALL PRICES ARE EXCLUSIVE OF V.A.T. AND ARE EX-WORKS GOOLE UNLESS
OTHERWISE STATED.
PHOENIX SHIPPING (GOOLE) LTD. CAN ARRANGE CARRIAGE OF ALL PARTS
INCLUDING KITS TO ALL AREAS OF U.K. AND WORLD.
ALL PARTS ARE NORMALLY EX-STOCK.
PRICES AND SPECIFICATION LIABLE TO CHANGE WITHOUT PRIOR NOTIFICATION.
FULL PAYMENT REQUESTED WITH ALL PARTS ORDERS.

FOR ALL PARTS NOT LISTED KINDLY ENQUIRE.

A few pointers to consider when constructing your car

- - - - -

To complete the car requires a number of standard items from either Ford or B.L. in the main.

If you decide to use second-hand parts, then as a matter of course, replace all bushes, bearings, ball joints, etc. Don't accept the first item you see because it appears to be a bargain, it could cost almost as much to recondition as if you had bought new - so choose carefully!

If you are stuck for a part and have to order it, don't be tempted to replace the old, leave it alone until the new part arrives, and start on something else. Such as fitting the door locks, some electrical work, etc. So many kits or rebuilds are spoilt by short cutting.

Leave the paintwork until almost last, because you are sure to scratch or knock the body surface during assembly. The final work should be the trimming. It is very easy to do yourself, and is very rewarding when completed. Use good quality materials, especially the carpeting. There will be more about trimming later.

An important point about welding. If you decide to carry out welding yourself, make up a few test pieces and show them to an expert before you continue. Most important of all, don't weld hard materials such as high tensile bolts, brake or clutch levers, etc. by using ordinary rods. Only use argon gas such as M.I.G. or T.I.G. or better still give it to an expert. Nitrogen or Carbon inclusion can cause brittleness that will lead to sudden failures with disastrous results.

List of parts required:-

Engine:-

- The Ford V 6 2.8 or 3.0 litre is strongly recommended for several reasons,
- a. It's very tough and durable,
 - b. It can be very easily tuned at relatively low cost.
 - c. Very free revving without harm to the engine.
 - d. Spares are available throughout Europe (Engines are also made in Germany)
 - e. Adaptors are 'Off the shelf' From U.V.A. Lyncar etc.
 - f. Will fit to Citroen, V.W. Hewland or Z.F. gearboxes with minimum bother.
 - g. It is a very short engine and allows plenty of access for maintenance.
 - h. With a pair of 2" pipes and 3" tail pipes it makes the right type of sound.

If you intend to use a second hand engine, it's worth replacing the fibre timing gear, and the oil pump and drive shaft as a matter of course. I am also a great believer in the use of jointing compound. If used in moderate quantities you will never have the irritation of oil leaks or blown gaskets. Some 'purists' condemn it, but when you have a failure half way through France, you would wish you had. In all my engines I have replaced the gaskets with Instant gasket or equivalent. Of course, with the exception of the head gasket. (Hermatite)

Gearboxes.

Up to approx. 200 h.p. a Variant box will cope with normal driving. If you intend to use the car for competition, or are inclined to drop the clutch at 4000 rpm. then its not the transaxle for you. But for normal daily or long distance use its ideal. Spares are easily obtained worldwide. If the box is used in the normal upright position, then the crownwheel will have to be swapped over to the other side of the drive pinion. This is needed to avoid having 4 reverse gears and one forward. This operation is not difficult, the only special tool required is a good quality pair of circlip pliers.

A much easier way of overcoming this problem is to mount the transaxle upside down. This action also lowers the engine as the input shaft is off-set by 2.5".

If you decide not to invert the gearbox, then you should follow a few obvious rules, the most important of which is absolute cleanliness. Before starting, thoroughly clean the all the outside surfaces including the inside of the bell housing. (Please remember that the bell housing will be full of asbestos dust from previous clutch wear) Use plenty of Gunk or similar, and a wire brush. The housing will never sparkle because it is manufactured from magnesium, so dont expect it to shine like aluminium. Using magnesium was one of the reasons for its success in racing over the years, even Honda used it in their early formula three cars. And many other specialists have used it for racing, sometimes using their own gear clusters. (e.g. Hewland)

When changing over the the two large side covers, make sure that the cover nearest the crownwheel ends up in the same relative position. As it is most important that the spacers are not mixed. Also watch out for those two small spacers behind the drive flanges.

It is well worth while investing in one of those excellent books by Haynes which gives pictorial instructions on rebuilding V.W. gearboxes. One last word of advice, Unless absolutely necessary, do not disturb the main internals of the box. Apart from worn synchro cones, (caused by a dragging clutch or sloppy gearchanging.) the V.W. box seems to go on forever. Finally, dont forget to fill with oil ---- a few do !

Alternative Transaxles

Other transaxles can be used such as Z.F. Hewland, etc., but if you want to avoid taking out another mortgage, then a suitable 5 speed unit is the Citroen I.D. 23 or 24. These have the advantage of inboard brakes (disc) and a right hand or left hand gear change connection. They are also a stronger box and would be more suitable for higher horse powers.

The bell housing is larger in diameter and will allow a Rover flywheel to fit inside, without the usual stand-off, that would be necessary with the Variant. This reduces the overall length of the engine transaxle unit by at least 2".

With a little imagination and some research, most transaxle units will fit, whether in-line, or transverse. (An XR3 is an example)

Clutch.

In the case of the Variant, The original clutch lever can be used. Most adaptors include a 'thimble' to ensure correct clutch movement. In all cases the cable operating the clutch should be disguardred and be replaced by a hydraulic actuated slave cylinder. (obtainable from a Leyland 1100.) Please remember to fit a flexible hydraulic pipe between the chassis mounted pipe and the slave cylinder. Otherwise, engine movement will fracture the connection.

Clutch (continued)

The clutch plate to be used will be specified by the manufacturers of the conversion equipment. Usually a Ford plate is used, but again the instructions of people such as Hewland who make a Ford adaption (and probably has the most experience in this field) must be heeded. If you can only obtain automatic engines, companies such as U.V.A. can supply a suitable flywheel. A final point to watch out for, make sure that the pilot bush in the end of the cranshaft is the correct diameter and lenth !

Hydraulics.

This simple job frightens off quite a lot of people, But if you invest in a good quality brake pipe making kit, and follow the instruction precisely, it will result in a professional job. When choosing your master and slave cylinders, check that the bore of the slave cylinder is not larger than the master. If this did occur, there would be insufficient movement to fully disengage the clutch. This would result in poor engagement of gears at best, and quickly worn synchro cones at worst. On the other hand, if the clutch movement is excessive, it can result in broken fingers on the diaphragm spring. In brief check everything thoroughly before moving onto the next job !

Again, cleanliness is of the utmost importance. Clean out all the cylinders surgically clean, using lint free cloth and brake fluid. Dont use any other liquid such as petrol. Finally, replace all rubbers. Remeber to avoid allowing the pipes to chafe against the chassis, and if passing through holes in the body, remeber to use rubber grommets.

Gearchange Mechanism.

To ensure that the gear change is the correct way round, that is, bottom gear is where it should be. The gear change linkage should pass down the left side of the car. A simple, yet very robust gearchange is made by Paddy Hopkirk. It was, I believe originally intended as a remote change adaptor for the Leyland Mini's. Anyway, it works beautifully, and allows slick positive gearchanging. The linkage from there back to the rear of the box is a series of universal joints and $\frac{1}{2}$ " diameter rod. (as shown in the sketches)

It will be necessary to have a sleeve somewhere along the linkage when using central gearchange. This should be a 1" bore tube with nylon bushing at either end. This will allow freedom of movement both longitudinally and rotationally. A very effect means of doing this is to use a steering column from a Marina. It has the nylon bush at both end, has 4 bolt mountings, and even splined ends for finely adjusting the gearchange positions. Again it's not purpose made, its something you can buy almost anywhere, After all, that is one of the main purposes of this exercise, to use as many production parts as possible.

Brakes.

Stopping power is normally provided by Cortina discs at the front and either Citroen inboard discs, or Variant drums at the back. The Cortina discs give adequate stopping power (especially when you consider that they were designed to stop a large family saloon with up to a 2.3 litre engine at the front) It is possible to fit vented discs and calipers from other Ford model, but so far I have not found it needed. Provided you use good quality pads, you will have no difficulty in locking the wheels.

The obvious advantage of inboard discs at the rear is less unsprung weight. It may cause you problems getting a decent handbrake. Another point to bear in mind is that the braking reaction is taken by the engine mountings. So please be sure to check that your mountings are up to the job.

The Variant drums are similar to those used on the Combi van and they somtimes have to stop loads up to a ton. You should not have problems stopping a much lighter vehicle. It also has a very powerful handbrake.

Brakes (continued)

A powerful handbrake is very reassuring, especially for a nervous passenger. Obviously, a servo should be fitted. I suggest that an in-line type should be fitted, as it allows plenty of access around the front suspension, and places the servo unit closer to the engine, resulting in a short vacuum pipe. The vacuum pipe on my car is run in 10mm. bore copper pipe, with rubber connectors at either end. The flexible connections must be able to withstand complete vacuum to prevent collapse of the pipe. Due to the turbo in my car, I have had to fit a non return valve in the line. It certainly would not do any harm in your car, as it can be very frightening when your engine dies on you, to find your brakes have abandoned you as well!

A clean place to mount the servo unit is in one of the cills. It's out of harms way, midway between engine and master cylinder, and easily accessible.

The brake pedal cluster can also be Marina as it a sturdy assembly. However, the pedals will be too long. They can be raised as an assembly, or the pedals themselves can be shortened. But please remember that they are quite hard material, so to avoid possible brittleness, use argon arc when rewelding. Better still, try and get an expert to carry out the work for you.

Steering.

The Mk III or Mk IV. rack and pinion steering is fine for your needs, it's ratio is just right, because it helps overcome the high resistance of large tyres when parking. The relatively low geared steering makes the car less "twitchy" at high speeds. Any free play in the rack can be removed by shim adjustment. If there is play in the ball and socket joints, this can be corrected by sliding back the rubber gaiters and drilling out the locking pins. The hexagon nut is screwed in until the track rod ends will just fall with a little assistance. Replace pin. Replace rubber gaiters if they show any sign of damage or leaks. If in any doubt, please refer to a Ford workshop manual, as your life could depend on incorrect procedure.

The column is normally determined by the cut-out in the dash panel. In the original car the driver sat as near to the center as the rules would permit. It should not cause you any problems provided you use the universal joints shown in the sketches and photographs. Again, the column can be Marina, but any suitable column could be used. The advantage of the Leland column is the standard splines they use, that allow final adjustment of the steering wheel position. It is a relatively simple task to grind the end of the shaft triangular to match up with the Cortina coupling. This must be done with care to ensure the correct interference between shaft and coupling. From the safety point you should allow a generous angle of off-set in the column, to give the column a chance to collapse and not enter your chest.

Front Suspension

Cortina front suspension was chosen for a number of reasons :-

- a. Very strong and easy to repair.
- b. Easily obtainable and inexpensive.
- c. Will accept solid or vented discs.
- d. The track is just right.
- e. Caster is easily adjustable in minutes.

The crossmember is bolted to the space frame by 4 bolts. The holes in the space frame are drilled to give neutral castor, which gives very responsive steering with almost no self centring action. This can be changed by repositioning the uppermost holes further to the rear by approx 15 mm & fine adjustment by the lower tie rods. Any adjustment to the tie rods will require re-tracking every time. To increase the stiffness of the unit, tubular struts are

Front Suspension. (continued)

welded into the sub-frame (as shown on sketch).

Throw away the original dampers & fit adjustables, for normal road use. Spax are inexpensive & easily adjustable in situ. On my car, I have removed one turn of the spring by grinding through the wire. This gives a ground clearance of approx 4". If you have problems with ground clearance in your area, then use unmodified coil springs. If you are a glutton for punishment, then 25% uprated competition springs can be used. In my opinion they are unnecessary and should be decided on after driving the car several miles.

Electrical.

This is the part that scares most people but is really quite simple if tackled in stages, making notes as you go along.

Just a few pointers again when carrying out any wiring. Some are very important, as bad wiring or poor insulation is the main cause of nearly all car fires. It would be a shame to see all your work going up in smoke.

- (a) Instal a battery isolator switch as close to you as possible. Say, between the seats. This will also keep the supply lead from the battery as short as possible. If anything major occurs a flick of the switch will shut off everything.
- (b) Connect the power supply to all the circuits except the Dynamo/Alternator starter & through one main fuse. An industrial 50 amp fuse is ideal.
- (c) Split the supply through a terminal block so that each individual supply passes through its own fuse. A minimum of ten fuses will be required. On the original car, the fuses were mounted on the dash panel.
- (d) Whenever a wire has to pass through a hole in a panel, drill the hole large enough to accept a rubber grommet to avoid chafing.
- (e) If you can obtain industrial multicore cable, then half your problems are solved. Ideal is the 25 core cable. Each wire is numbered 1-25 every few inches, so making wire tracing very easy.
- (f) Study a few wiring diagrams in something like the Excellent Haynes publications, then starting with wire N^o. 1 for ignition coil.
 - N^o.2 starter solenoid
 - N^o.3 oil warning
 - N^o.4 temperature warning
 - N^o.5 tail lights
 - N^o.6 Stop lights etc etc.

Make notes as you progress & allow plenty of excess wire as it can always be shortened later.

- (g) A wiring diagram can be drawn up later from your notes. You will probably find that trouble shooting is quicker & easier using your notes than a wiring diagram anyway.

Electrical.(continued)

- (h) One golden rule :- Over size the wire, under size the fuse. To calculate fuse size is simple just divide the watts by 12 to give amps.

For example:-

2 headlights	= 70 watt each	= 140 watts.
4 sidelights	= 6 watt each	= 24 watts.
2 number plate lights	= 6 watt each	= 12 watts.
Panel lights say	= 12 watt total	= 12 watts.
	Total	= 188 watts.

$$\frac{188}{12} = 15.5 \text{ amps approx.}$$

However you should not have too many items off one fuse.

- (i) Use good quality fitting & switches, some modern switches sold at approx 50p each are not much use except on very low amperages. People such as Lucas make good quality switches. It would be better to go to your local main dealer for switches instead of one of the "go-faster-goodies" shops for such items.
- (j) If all the above notes still make you feel a little frightened, then by all means call in the expert. But remember, it could be very expensive.

Wheels.

The original cars fitted 15" wheels, for road use, 6" front & 8" rear is fine. The original cars used rim widths up to 12" on the rear, but for road use, this would be unnecessary and would look ridiculous. Although wire wheels were used on some of the early MK1 & 11 cars, and most of the MK 111, the majority used magnesium alloy wheels. The nearest in pattern are the Rover or +8 Morgan. If you intend using spoked wheels, than "TRUSPOKE" make a very strong but heavy wire wheel. But the chrome is terrible & wont last long.

An idea used by Reliant on their Scimitars is a steel wheel with a false fibre glass insert. It looks alloy but is much cheaper & of course not so liable to damage as alloy. I am at present, investigating the possibility of obtaining steel wheels with the correct pattern fibre glass falsies. When ordering wheels, check off-sets, because the maximum distance the rim should protrude beyond the flanges is 4" (100mm). Dont be tempted to use narrow rims with oversize tyres & wheel spacers - a lethal combination. Finally, because of the potential high speeds you may be tempted use, balance all four wheels. Big wheels, even on the rear, can almost give you double vision, if not correctly balanced.

Cooling & Heating.

When on the move, the lower air scoops at the rear gulp enormous quantities of air. More than adequate for cooling your engine especially if you direct the air inside toward the radiator with simple aluminium sheet ducting. An electric fan is needed for heavy traffic conditions or when idling at traffic lights & so on. Any large radiator will suffice, ideally the one that was used with the original engine. I have used two radiators in my car, one on the nearside, & one in the rear. But, after all, the car was a prototype & I was'nt sure at the time if I would have a problem. The rear fan has never been necessary. Leave the choice & type of radiator to be used until the end, as the amount of space left will be the determining factor. The B.L. 2.2 litre six red. has a large area, but the header tank needs to be reversed

Cooling & Heating.(continued)

to improve the flow. Your local radiator repair shop will carry out this task for you. On all the original cars, the radiator was at the front. This has obvious advantages if you intend using very high power. The main disadvantage is the long run of piping to the front, and although the pipes can run through either cill, you will end up with built in central heating. Very nice in Winter, but like a mobile Sauna in Summer. Although it restricts access, I would plan to fit one large or two small radiators in the back, each with an electric fan.

Because the cabin is small, a relatively low powered heater will keep you warm in Winter. The Reliant (dare i say it?) Robin heater fits behind the dash quite easily as it must be the least bulky heater on the market. It can be recirculating (which tends to mist up the interior) or with an aid of flexilbe hose etc, can be a fresh air type. If an access panel is made in the top of the scuttle (approx 6" in front of the windscreen) about 9" x 5", it will allow easier access to heater pipes at a later date. The access can be closed off with a piece of 16g aluminium plate self tapered & sealed with a waterproof sealant.

Doors & Door locks.

The doors will be already mounted when you recieve the unit. However, door locks etc will have to be fitted. The flange around the door opening will have to be fitted with a rubber seal. The B.L. 1100 or Mini seal is adequate. The door adjustment will be made after you have fitted the locks & rubber seals. Door adjustment can be a very frustrating job, and can take a couple of hours per door. Half an hour if you are very lucky. So be prepared for using a lot of patience. I find the easiest way is to slacken the adjustment bolts just enough to hold the door in position, then using a piece of mild steel bar or tube & hammer, gently tap the adjusting plate in the direction you want, then without moving the door, nip up the bolts. You may find it easier to adjust one plate at a time, the bottom one first. Once adjusted, the doors can be quickly removed & replaced by simply removing the hinge pin, as this does not affect adjustment once it has been set.

The internal & external door lock mechanism is B.L. 1800 or Maxi. Fitting is simple once you have made notes & sketches of the donor car method of fitting.

The flows of air up and over the screen & roof induces a low pressure area above the doors. This can cause the top of the doors to flex upwards by as much as $\frac{1}{2}$ " (12mm) at speed in excess of 100mph. On the original cars this was cured by pop rivetting an aluminium plate onto the roof to hold the doors down. It looks awful & plays havoc with the paintwork. An equally effective & tidier method is to pop rivet the plate under the top of the door. This engages under the car roof and holds the door down at all speeds. The original cars were notorious for water pouring in except when on the move. In some pit stops it was normal to see someone holding out the umbrella. The slipstream affect caused rain to pass over the top without entering the car. It could have been a fiendish plot by the manufacturers to ensure that the drivers kept moving as fast as possible. Some cars had no rubber seals at all. Dont be despondent. The car can be made waterproof provided you are thorough, especially with fitting the doors & labarinth seals shown on the enclosed sketch. I must addmit it took me more than a month to cure mine. The most difficult leak to cure turned out to be a loose nut on the

Door & Door locks.(continued)

windscreen wiper shaft. So look inside before fitting carpets etc. whilst a friend or wife gently sprays a garden hose over the car. It is essential that this is done before fitting seats & carpets. Nothing irritates me more than wet carpets.

Front & Rear Covers.(Bonnet & Hood)

Again these are fitted to the unit when supplied but will have to be adjusted after fitting wheels & latches etc. The method is simple, just slacken the clamps or bolts & move to the final position. The latches are Triumph Herald or Spitfire. (See sketch). "Dzus" fasteners were used on some cars, & or Rally Pins on others. Choice is up to you, but keep it looking as original as possible.

General Notes.

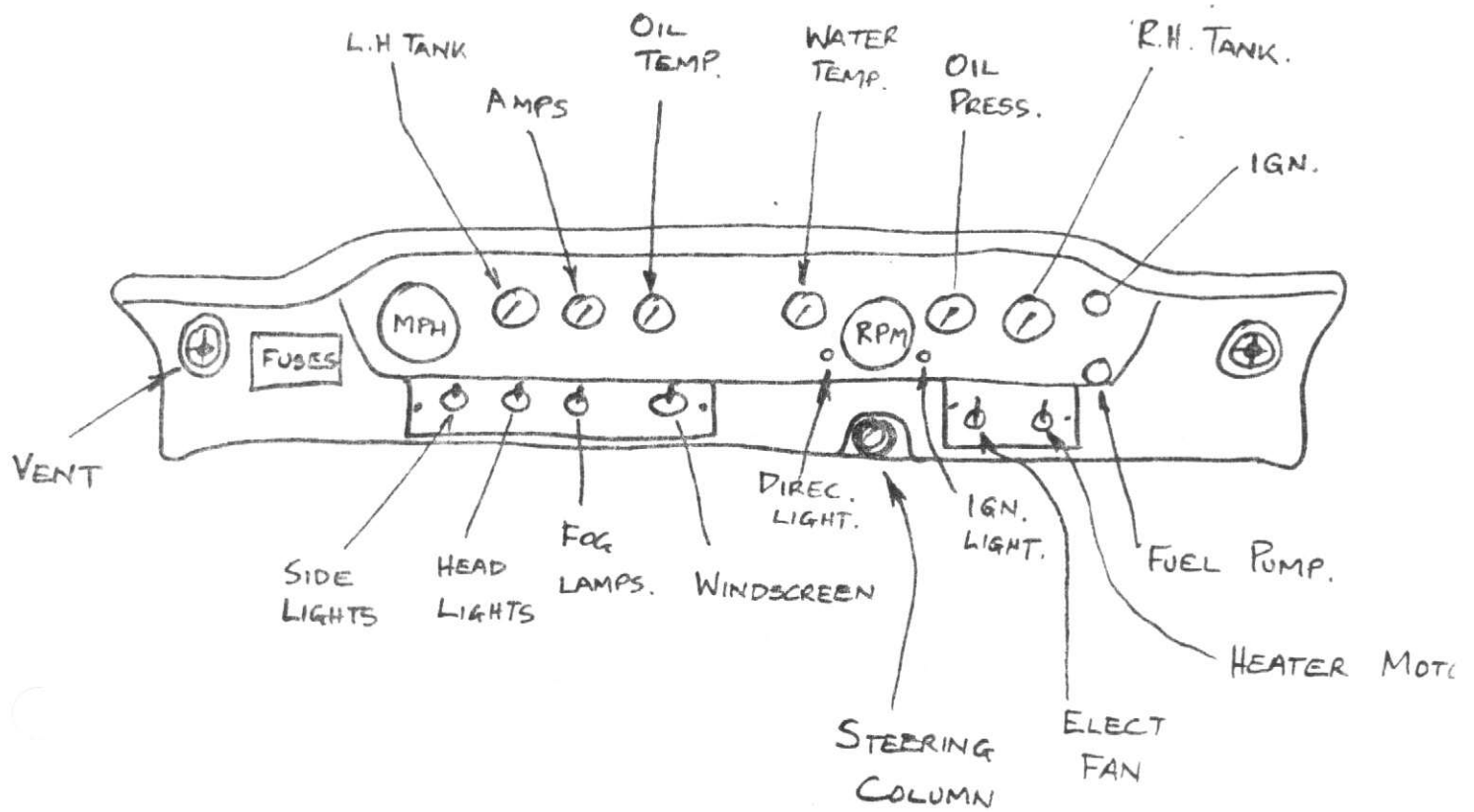
- (a) Fit soft seals around the doors & seal with gun type water proof sealant after fitting.
- (b) Make up splash shield in front of leading edge of the doors using 16 or 18g aluminium according to sketch.
- (c) By religion, I am a devotee coward, I always use high tensile, or cap head bolts everywhere. In addition I use spring washers, self locking nuts, & Locktite on Suspension ports. DO NOT overtighten any bolt as it could snap without warning if suddenly stressed.
- (d) When using pop rivets, use 4 mm long type. Do not use steel especially on fibre glass, as the rivet will pull through before breaking off. Use aluminium rivets & the correct size drill.
- (e) Self tapping screws are fine for certain applications where no stress is involved. Use stainless steel, not chromed steel. Although they are much more expensive, they don't rust of course. This makes them easily removed in a few years time. Push a spot of grease through the hole & on the screw. It will lessen the chance of shearing off the screw when fitting.
- (f) Side screens can be fitted without metal frames. Only 7 cars were fitted with window frames, the rest were pop riveted to the door with sealant. Clear Bostick or similar. The main problem with pop riveting perspex is the danger of cracking the perspex. So either use self tapping screws, or polycarbonate sheeting.
- (g) The rear vents of the engine cover were normally left open, but look better with expanded metal grilling fitted. The grills can be held in place using a small quantity of glass fibre matting & resin around the edge of the expanded metal. It should be done in such a way that the matting is not visible from outside the car.
- (h) The exhausts should exit through the two side vents, and should be at least 2" dia. Some were up to 3" in dia as they appeared through the rear cover. This, not only looked more original, but gave a lovely 'Vee' sound.
- (j) Finally, PLEASE don't rush the job! If I can be of any help, Just give me a phone call, or drop me a line. I will help any way I can.

BEST OF LUCK WITH YOUR NEW PROJECT , & I HOPE THAT
IT GIVES YOU AS MUCH DRIVING PLEASURE AS I HAVE HAD
DURING THE LAST TWELVE MONTHS.

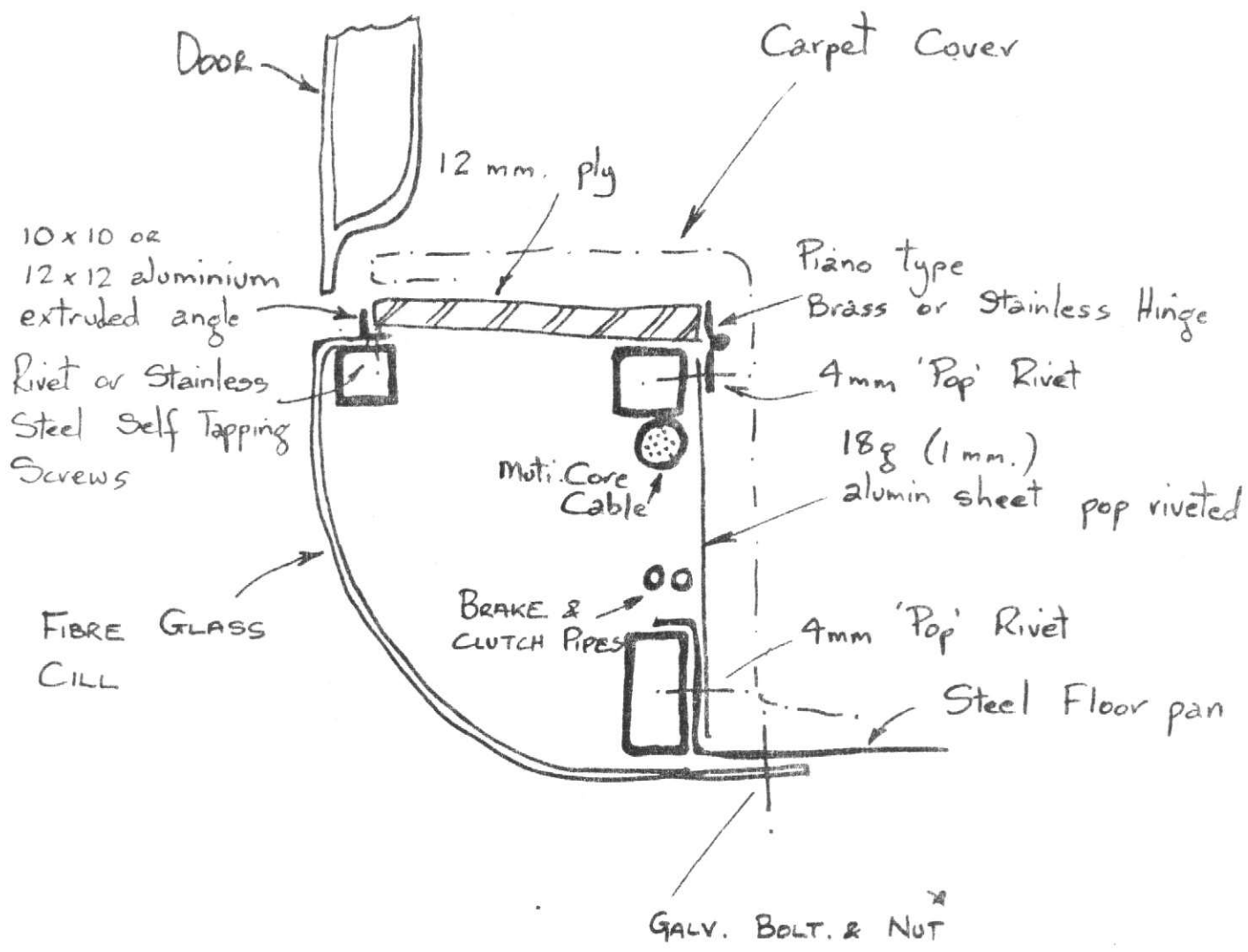
YOURS ----- Ken Attwell

For K.V.A. Ltd.

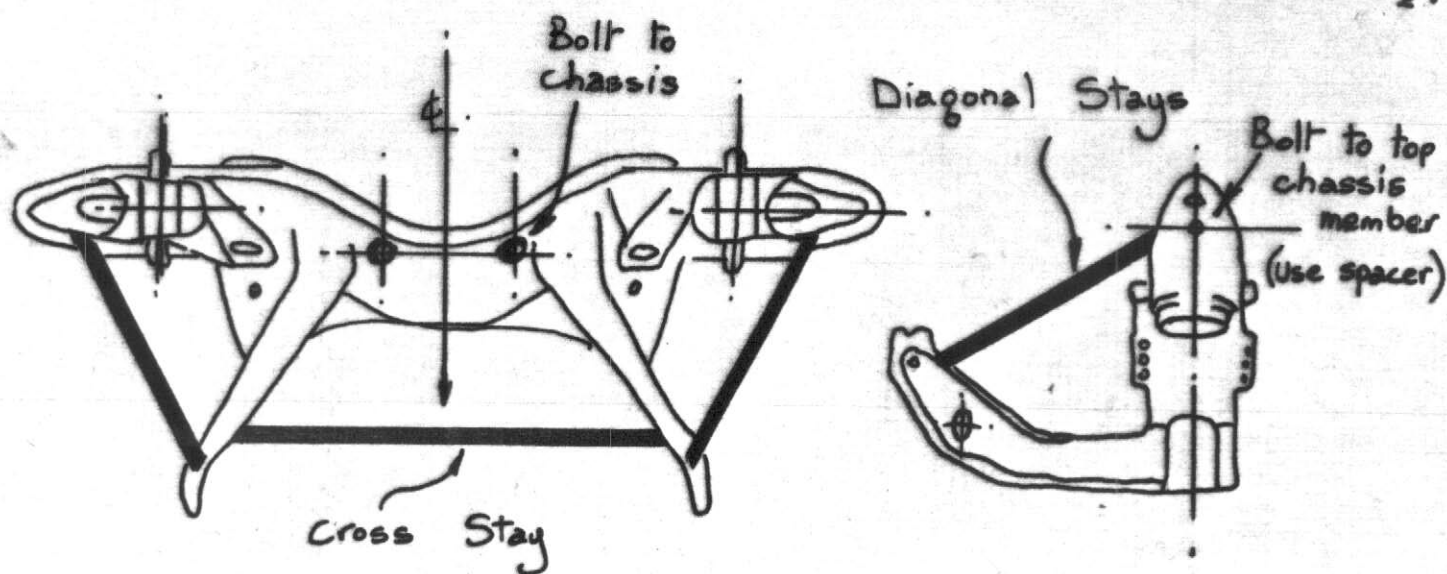
The company reserves the right to incorporate changes.



DASH BOARD LAYOUT.



TYPICAL CROSS SECTION OF CILLS



Method of stiffening 'Cortina'

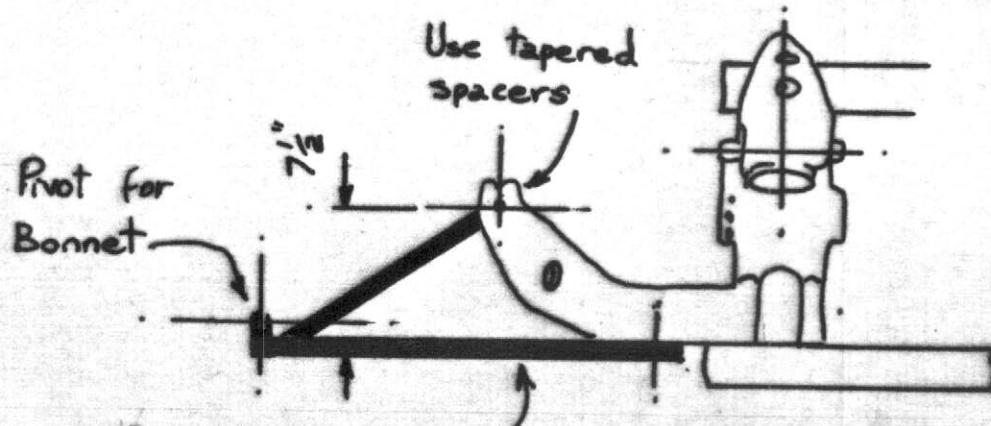
Cross Member

(USE 'LOCTITE' !)

Diagonal Stays	—	25mm. x 25 mm. R.H.S. (394 long.)
Cross Stay	—	25mm. x 25 mm. R.H.S. (584 long.)

Weld R.H.S. Stays into position before fitting cross member to chassis. (Stay will help to support antiroll bar.)

K.V.A.
MK III.

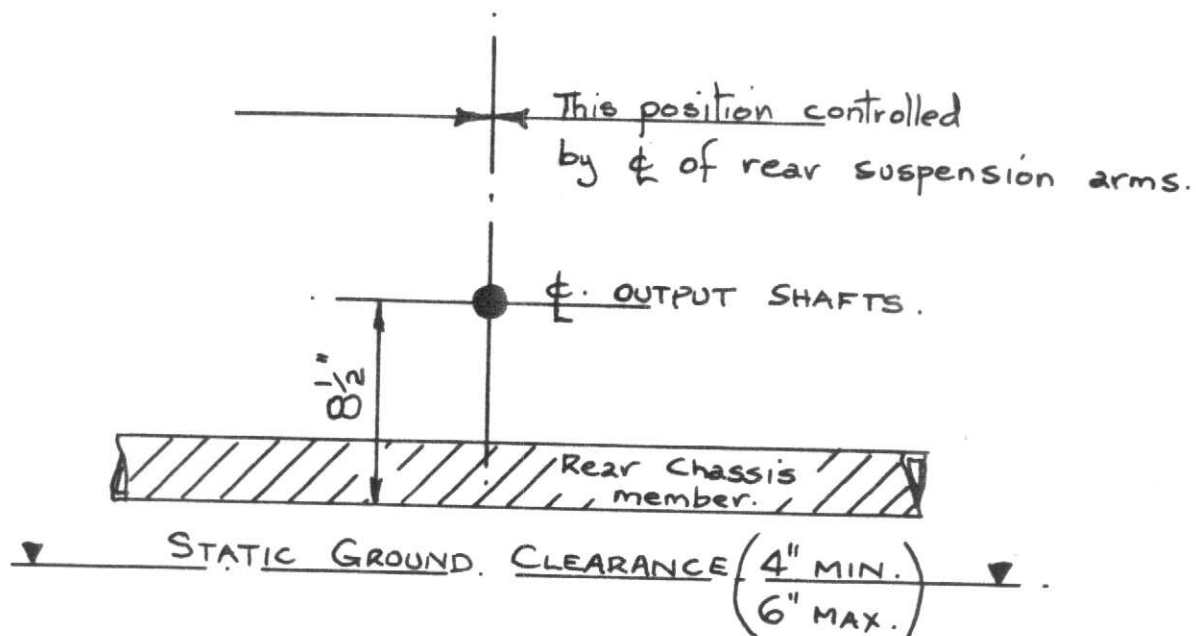


(Use high tensile bolts)
& Loctite

Sub-frame (Supplied)
bolt to existing holes
in Ford cross member

K.V.A.
MK III.

3.

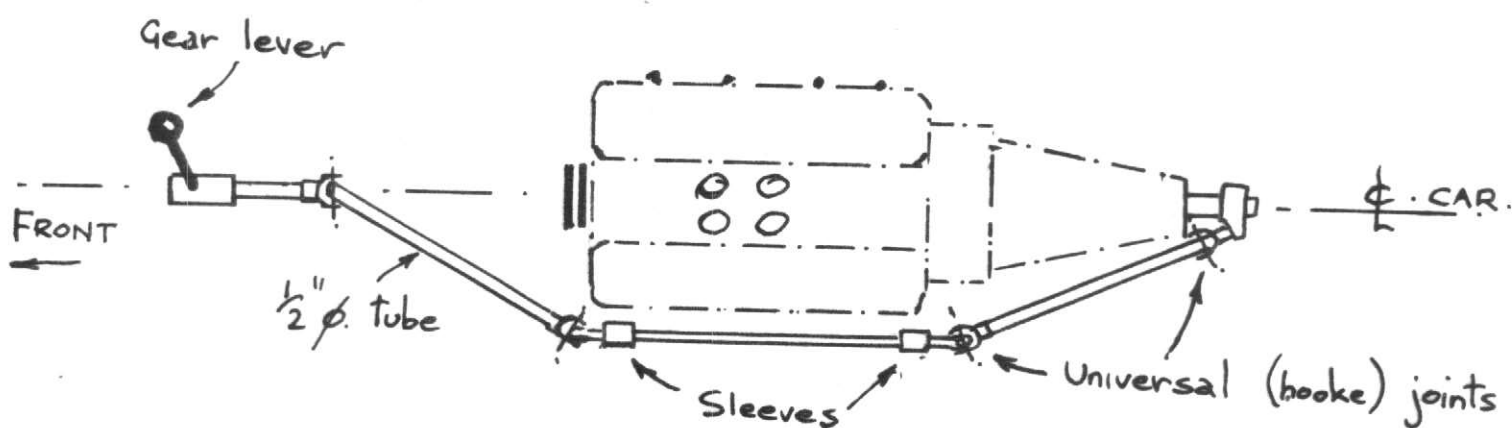


The $8\frac{1}{2}"$ Dimension Determines position of engine & box.

KVA.
MKIII

GEAR LINKAGE.

4.



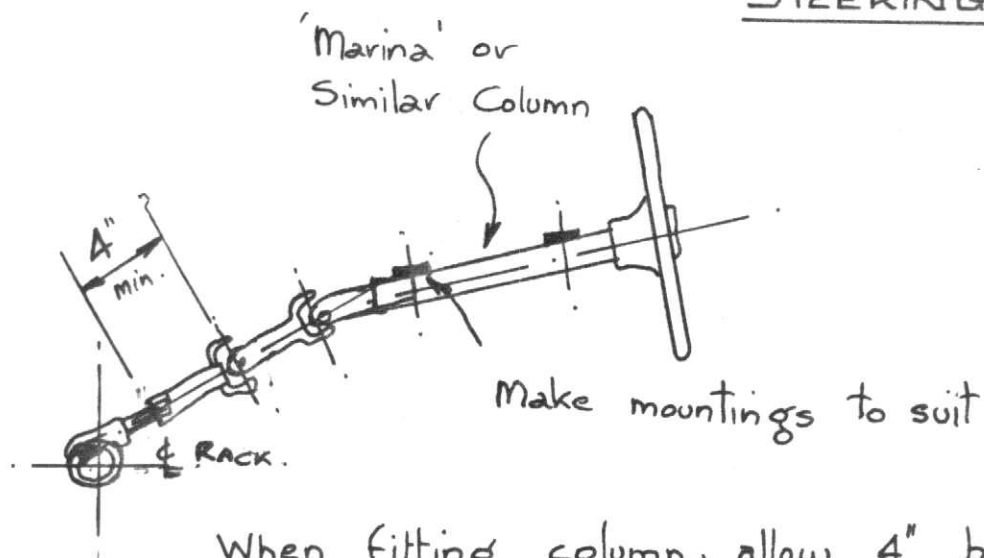
Pass gearchange rods down nearside
of car to retain gearchange pattern



GEAR LINKAGE CAN BE CONSTRUCTED
USING STANDARD STEERING COLUMN PARTS
USING SPLINED COUPLING (CORTINA, MARINA, HERALD ETC.)

KVA.

STEERING COLUMN 5.



When fitting column, allow 4" before first universal for pedal clearance etc.

KVA.
Mk III.

6.

REAR SUSPENSION

LUBRICATE WITH BRAKE FLUID BEFORE FITTING.

TRANSIT REAR SPRING BUSHES

SHIMS

SHIM

TUBULAR SPACER
(THIN WALL TUBE)

WARNING!

USE ONLY HIGH TENSILE BOLTS & SECURE NUTS WITH LOCTITE OR SIMILAR

SUSPENSION ARM.

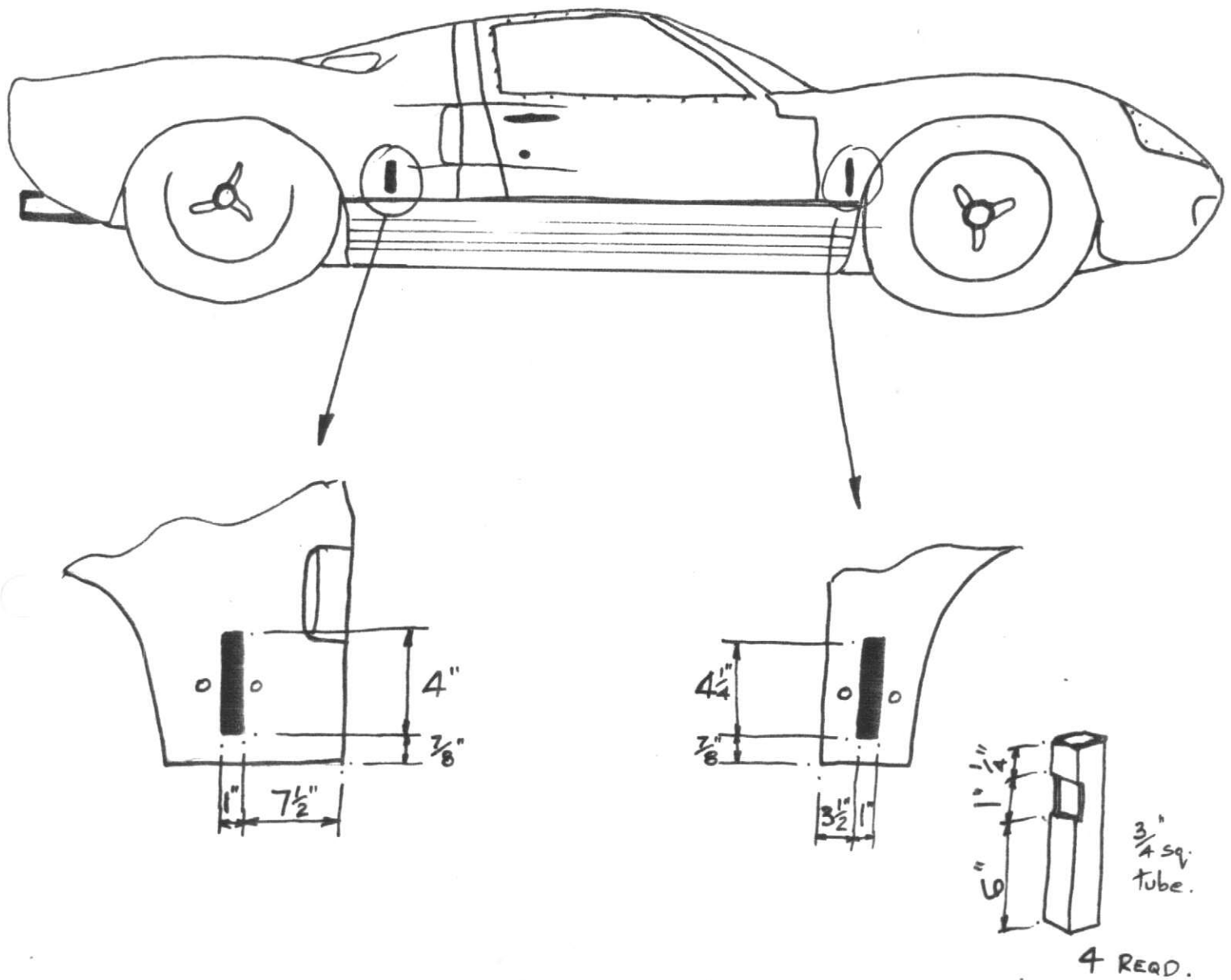
VARIANT HUB ASSY.

(TWIN BALL RACE TYPE)

SIZE OF SHIMS DETERMINED BY TYRE WIDTH & DRIVE SHAFT END FLOAT (APPROX. 20 mm).

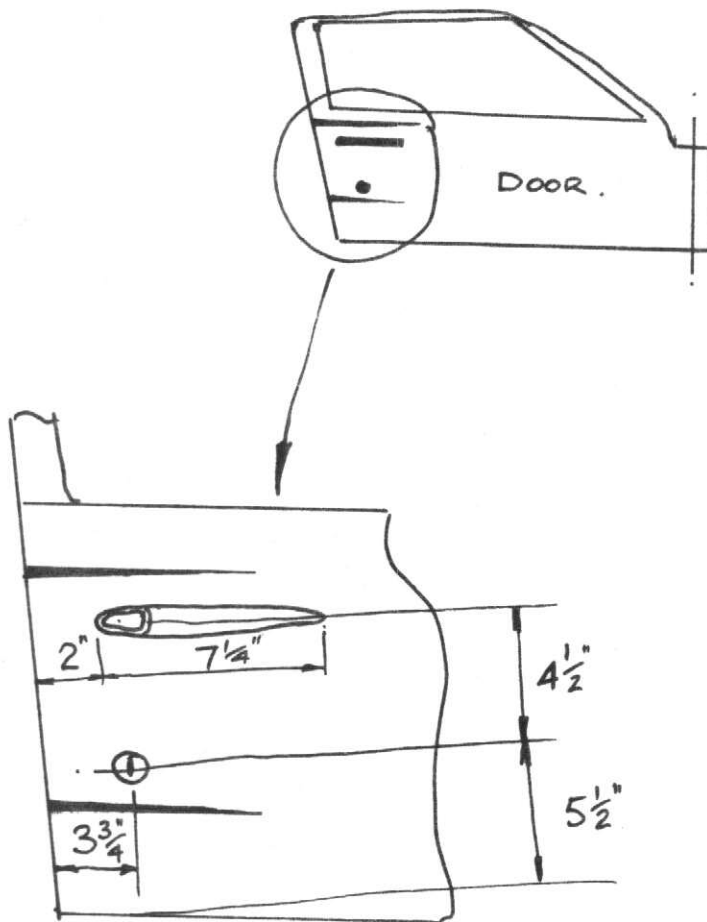
Mk III.
KVA.

POSITION OF BONNET LATCHES.

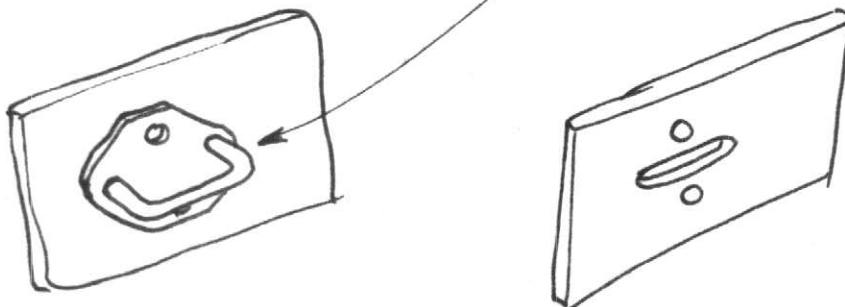


- (a) Position & Size of cut-outs for Triumph Herald or Spitfire bonnet latches. (the rear is $\frac{1}{4}$ " smaller due to body curve.)
- (b) Drill holes in fibre glass after final position of latches.
- (c) Saw & file hole in 4 pieces of sq. tube and weld to $1\frac{1}{2}$ " sq chassis member for latch location.

POSITION OF DOOR HANDLE & LOCK.



- (a). Use entire door lock mechanism from LEYLAND '1800'
- (b) Mount a plate from the 1 1/2" sq. roof support to accept the striker plate from the door mechanism.



A neater way is to use 1 1/2 mm plate (reinforced) & mount striker plate at the back with 'U' piece showing thro.

JACKING.

