

BUILD SEQUENCE

- ① Clean & Drill Holes in Mouldings
- ② Fit Master Cylinders & Pedal Assembly
- ③ Fit Jack Nut Fasteners (except Hardtop Front)
- ④ Fit Pipework, Cables, Gear Change down the tunnel
- ⑤ Fit Stainless Pipe to Rear Bulkhead
- ⑥ Front Subframe Assembly & Dashboard Framework
- ⑦ Rear Subframe Assembly & Top Mounts for Rear Seatbelts
- ⑧ Fit Wheels
- ⑨ Seat Belt Mountings
- ⑩ Engine Steady
- ⑪ Brake & Clutch Pipes to Front Subframe Assembly
- ⑫ Brake & Clutch Pipes to Rear Subframe Assembly
- ⑬ Complete Gear Change to Engine
- ⑭ Fit Header Tank & Pipework to Engine
- ⑮ Fit Heater Pipes to Engine, Top & Bottom Hoses
- ⑯ Complete Radiator Pipe Connections
- ⑰ Fit Heater to Dash Frame & Pipe Heater
- ⑱ Fit Throttle Pedal & Cable (both ends)
- ⑲ Handbrake, Lever, Cables complete
- ⑳ Front Bumper Moulding
- ㉑ Radiator & Piping
- ㉒ Battery, Battery Cables

- 23 Wiper Motor, Drive Shaft & Gear Boxes
- 24 Washer Bottle, Jets & Pipes
- 25 Petrol Tank, Pipes to Tank & Fuel Pump
- 26 Exhaust System
- 27 Rear Bumper & Bracket
- 28 Wiring Harness except Dash & Bonnet
- 29 Screen Vent Frameworks & Vents
- 30 Build & Fit Doors
- 31 Assemble Dashboard
- 32 Fit Dashboard & connect all Cables
- 33 Complete Electrics in Dashboard
- 34 Bonnet & Boot Hinges to Tub
- 35 Bonnet
- 36 Boot
- 37 Interior Light to Screen Surround
- 38 Hard Top
- 39 Adjust Doors
- 40 Soundproofing
- 41 Carpets
- 42 Rear Inner Moulding
- 43 Set Car Mechanics
- 44 Fill all Systems, Water, Brake & Clutch Fluid, Petrol etc.

ROSSA - MINI DONOR COMPONENTS

Front:

Subframe, pre-face lift, twin bolt fixing.
Front suspension complete.
Front hubs and brakes, disc or drums (discs preferable).
Mini steering rack, and clamps, steering arms, and track rod ends.
Brake light switch and banjo.
Flexible brake hoses, (subframe to hubs).
Battery
Shock absorbers (standard Mini front).
Pedal assembly.
Master cylinders to suit disc or drum.

Mini headlight assembly including rear bowls.
Side lights in the headlight unit.
Wiper motor and one gear box drive plus drive link.
Petrol tank.
Door window regulators and handles.
Door window rubbers.
Heater (preferably steel casing type with feeder tube).
Handbrake (twin cable).
Screen vent ducts x 3
Screen vent tops x 3
Screen vent air tubes x 3.

Rear:

Subframe, pre-face lift, twin bolt fixing.
Suspension complete.
Mini rear brake assembly and back plates (modified).
Drive shafts to suit engine.
Engine and gear box plus mountings and all accessories i.e.
 alternator
 distributor
 coil
 carburettor and inlet manifold
 gear change (twin shaft) plus remote linkage
 gear stick and gear stick housing
 engine steady
 engine mounted heater switch
 flexible brake pipes (subframe to hubs)

Handbrake scissors EAU 5728/9

Body

Mini Heater Dashboard Facia Vents x 3 GZH 623 Unipart.

ROSSA - NON MINI DONOR COMPONENTS

Allegro Steering Column and Rod Stalk Assembly
Allegro Steering Column Universal Joint
Metro Radiator and Fan
Metro Header Tank
Metro Thermostat Housing
Metro Interior Mirror
Metro Interior Light Switches
Metro Instrument Pod
Metro Switch Pod
Metro Switches
Metro Printed Circuit Board and Fuses
 Only the board with a single hazard warning light/
 indicator flasher unit will fit.
Metro Flasher Unit
Metro Sun Visors
Metro Seat Belts
Metro Light Switch
Ford Fiesta 'Ghia' Wing Mirrors x 2
Ford Escort Fresh Air Vents x 4
Ford Escort Fresh Air Tubes x 4
Wiper Arms - TRICO TWA~~1~~
Wiper Blades - TRICO NV20 (20")
Wiper Gear - Allegro 1973 onwards not Estate Mk II/Mk III WGB 229
Citroen Visa Windscreen
Seats and Runners
Wheels and Tyres (Tyre Pressure Rossa 18F and 24B)
Metro Top Hose GRH 651
Standard Metro Bottom Hose GRH 645 for engine
Honda Accord Fog Lights (rear)
Dim Dip SRB 450 Lucas
Pre 1984 Metro Inner Door Handles.

Recommended:

Super Mini Fins no longer made - Try Janspeed (available secondhand).

NAME	CHASSIS No.	COLOUR.	DATE.

BODY MOULDINGS

Main Body Section	1
Bonnet & Inner Mould	1
Boot & Inner Mould	1
Front Bumper & Radiator Mould	1
Rear Bumper	1
Exhaust Cover Mould	1
Hard Top & Headlining Mould	1
Outer Door Moulds	2
Inner Door Moulds	2
Dashboard	1
Centre Console	1
Rear Seat Mould	1
Windscreen Surround Moulds	3
Quarter Light Moulds	2

REAR SUSPENSION PACK

Tie Rods	2
Track Rod Ends - Mini	2
Track Rod Ends - Special	2
Inner Track Rod End Mtg. LH	1
Inner Track Rod End Mtg. RH	1
Hand Brake Cable Mtg. Brkt LH	1
Hand Brake Cable Mtg. Brkt RH	1

METAL WORK PACK

Window Regulator Stop	4
Inner Door Frame - Passenger	1
Inner Door Frame - Driver	1
Dashboard Support Frame	1
Dashboard Support Frame Spacer	4
Rear Bumper Support Frame	1
Shock Absorber Mtng. Brackets	4
Radiator Mounting Brackets	2
Petrol Tank Strap	1
Boot & Bonnet Hinge Plates (Tub)	4
Handbrake Lever Mtg. Bracket	1
Door Hinge Backing Plates	4
Exhaust Mounting Bracket	1
Throttle Pedal Assembly	1
Air Vent Mounting Bracket	1
Clutch Pipe Mounting Bracket	1
38mm Exhaust Clamps	2
Steering Rack Mtg. Brackets	2
Screen Jets	2
Ashtray	1
Tunnel Bars (Pipe retainers)	2
Chassis Plate	1
GTM Badge	1
Front Bumper Support Frame	1
Door Hinges	4
Battery Mounting Rods	2
Battery Mounting Angle	1
Header Tank Mounting Bracket A	1
Header Tank Mounting Bracket B	1
Shock Absorber Pins	4
Shock Absorber Spacers	4

GEAR CHANGE PACK

Main Gear Change Tube	1
Main Shaft Collet	1
Gear Change Drop Bar	1
Tension Bar	1
Gear Box Bracket	1
Pivot Assembly Gear Change	1
Housing Support Brackets	
Gear Change	2
Rubber Mounting Bobbins	2

CABLE PACK

Speedo Cable	1
Throttle Cable	1
Choke Cable	1
Heater Cable	1
Handbrake Cables	2

BRAKE AND CLUTCH PIPE PACK

Kunifer 84" 3/16" dia.	1
Kunifer 23" Long 3/16" dia	1
Kunifer 25" Long 3/16" dia	1
Kunifer 20" Long 3/16" dia	1
Kunifer 20" Long 3/16" dia	1
Kunifer 22" Long 3/16" dia	1
4 Connector 3/8" UNF	1
3 Way Connectors 3/8" UNF	2
Bleed Nipples 3/8" UNF	2
3/16" Brake Pipe Clips	10
3/8" Clips	4
Kunifer 97" Long 3/16" dia	1
Kunifer 37" Long 3/16" dia	1
Kunifer 124" Long 3/8" dia	1
Master Cylinder Ext. Rods	2

SEAT BELT MOUNTING PACK

Seat Belt Mounting Plates	6
Top Seat Belt Mtg. Plates	2
Spreader Plate Rear Subframe	1
Spreader Plate Rear RH LH	1
Top Seat Belt Mtg. Rod	2

DOOR HARDWARE PACK

Door Outer Handle - Driver	1
Door Outer Handle - Passenger	1
Lock and Key Set	1
Door Lock Mechanism - Driver	1
Door Lock Mechanism - Passenger	1
Door Link Inner - Driver	1
Door Link Inner - Passenger	1
Door Strikers	2
Door Lock Retaining Spring	4
Door Button	2
Door Button Grommet	2
Door Pulls	2
Door Bezels	2
Door Rods	2
Pod Clips	2

BONNET & BOOT HARDWARE PACK

Bonnet & Boot Striker	2
Bonnet & Boot Lock Mechanism	2
Bonnet Safety Catch	1
Bonnet Stay	1
Boot Stay	1
Boot & Bonnet Hinges Dr.	2
Boot & Bonnet Hinges Pass.	2
Glove Box Lock & Key Set	1
Glove Box Hinge	1
Glove Box Striker	1
Lock Rods	2
Bonnet Striker Plate Bracket	1
Boot Lock Mech. Plate	1
Bonnet Safety Catch Bracket	1
Boot & Bonnet Stay Clip	2

PIPING PACK

Stainless Steel Pipe A	1
Stainless Steel Pipe B	1
Rubber Radiator Pipe 16'x 1"dia	1
Heater Pipe 20'x 1/2" dia	1
Header Tank Pipe 2'6"x 1/2"dia	1
Petrol Pipe 2'x 1/4" dia	1
Header Tank Pipe 2'x5/16" dia	1
Metro Top Hose	2
Heater bend 90'	2
Ferrules 1"	2
Ferrules 1/2"	4
Neoprene Hard Top Seal	1

TRIM PACK

Carpet Set	1
Soundproofing	1
Weatherseals, Door, Boot, Bonnet.	1
Carpet Pieces - Doors (in carpet set)	2

EXHAUST PACK

Silencer Box	1
Manifold Pipe	1
Tail Pipe	1
Exhaust Clamp 35mm	1
Exhaust Clamp 38mm	1

LIGHT PACK

Peugeot Rear Light Unit RH	1
Peugeot Rear Light Unit LH	1
Rear Lamp Mounting Bracket	2
Sierra Ghia Fr. Indicators RH	1
Sierra Ghia Fr. Indicators LH	1
Bulb Holders Front Indicator	2
Headlamp Holder	2
Number Plate Light	1
Interior Light	1
Driving Light Mtg. Rod A	1
Driving Light Mtg. Rod B	1
Indicator Light Mtg. Rod	2

WIRING PACK

Wiring Harness	1
Battery Cables	1

GLASS PACK

Door Windows x 2	2
Hardtop Rear Window	1

FASTENER PACK

Complete Set of Nuts & Bolts	
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EXTRA'S

GLASSFIBRE

TOOLS AND EQUIPMENT

FILES

To cut effectively, files should be of coarse metal-cutting type, and new. The life of a file used on glass fibre is very limited, and it should be discarded when it shows signs of becoming blunt.

DRILLS

Glass fibre must be considered as metal for the purpose of drilling. Only high speed steel twist drills should be used, with the lowest possible drilling speed (particularly with larger drill sizes). Drilling should always be done from the gel side, and the other side of the moulding backed up with a block of wood to limit the extent of tearing or cracking when the drill breaks through. A hole drilled from the opposite side will almost invariably damage the gel coat, even if backed up.

Drills used for drilling glass fibre should always be sharp, and ground to the same point angle as for cutting metals. In the case of drill sizes of $\frac{3}{8}$ in. and above, the point angle of the drill can be reduced with some advantage. No lubricant is normally required, but if a drill does show signs of running hot, water can be used to cool it.

ABRASIVE PAPERS

Any "finish sanding" on GRP mouldings should always be done with wet and dry abrasive papers, used wet and frequently rinsed off to clean. Some authorities also recommend the addition of a little soap to the rinsing water to act as a lubricant.

For "rough" sanding 240 grit will be suitable. Progressively, finer grades down to 800 or even 1000 grit can be used for final smoothing. The surface can be further improved by buffing and polishing with metal polish, polishing compound or jeweller's rouge. A final overall finish can be given by wax polishing, provided this is acceptable to the application.

There is no laminating to be done on the Rossa but some finishing of edges, flattening of external seams and drilling of holes will be necessary.

FINISHING EDGES

Although all edges are ready trimmed to size we advise you smooth them to neaten the moulds and reduce the risk of cuts from handling raw edges of glassfibre. This operation can be done with either production paper (dry) or wet and dry paper and simply requires rubbing around all the moulds which have open edges. Take care not to scratch the finished gel-coat of the moulds with the production paper.

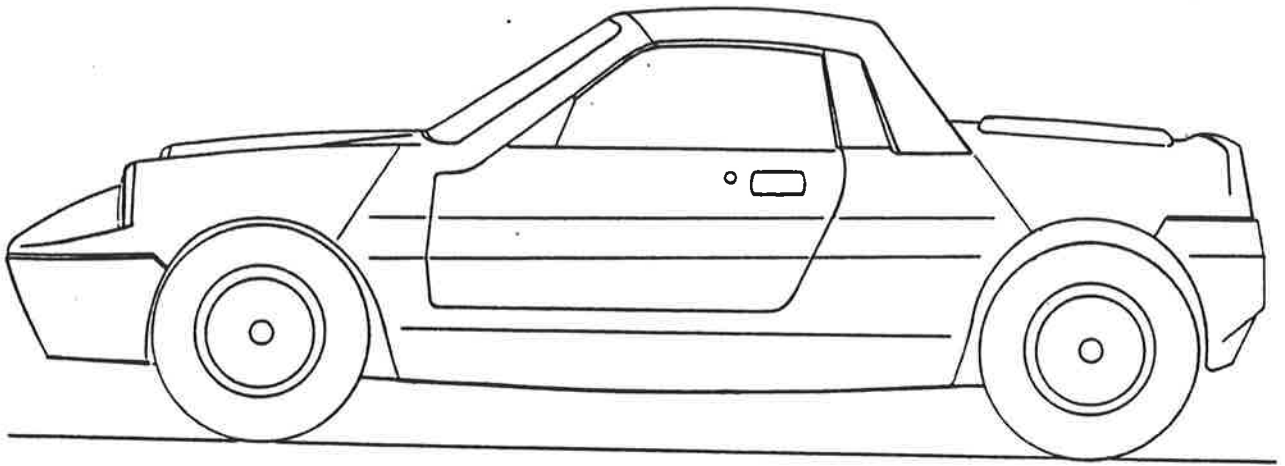
FLATTENING SEAMS

The external seams caused by the joining of the mould i.e. front edge of door to front wheel arch, need to be removed with wet and dry paper. Start with 600 grit paper and work up to 1000 grit, smooth the seam until it is flat and then rub with "T" cut or rubbing compound to bring back the shine. A strip of masking tape run down either side of the seam will ensure that only the seam line is removed and reduce the area to be polished.

DRILLING HOLES

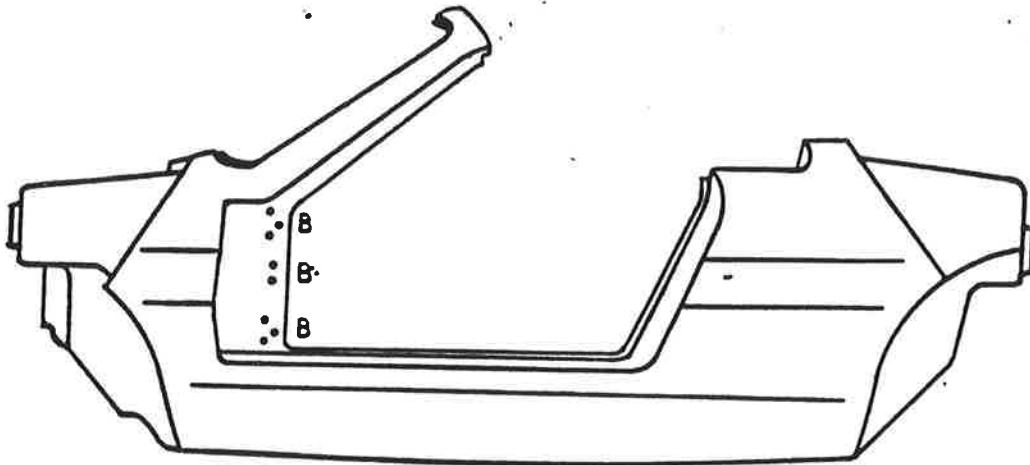
All holes are marked on the mouldings and sizes are indicated in the manual. When drilling large holes in glassfibre it is advised to put masking tape over the area to be drilled to stop chipping of the gel coat.

ROSSA - CLEAN AND DRILL HOLES

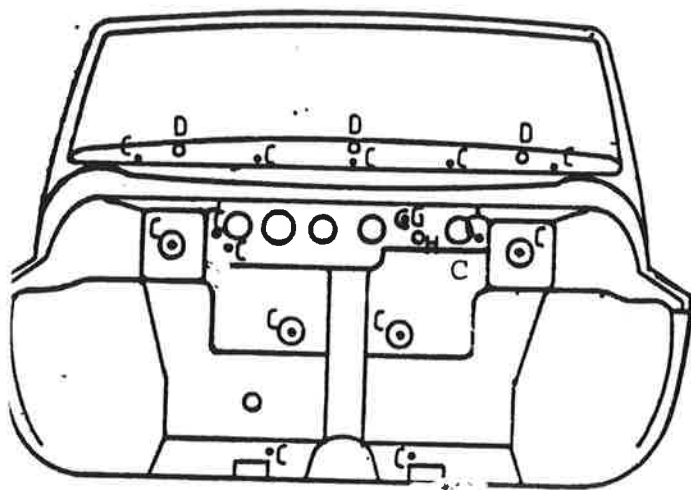


CODE	DRILL SIZE
A	$\frac{1}{4}$ "
B	$\frac{5}{16}$ "
C	$\frac{3}{8}$ "
D	$\frac{7}{16}$ "
E	$\frac{1}{2}$ "
F	$\frac{3}{4}$ "
G	1"
H	$1\frac{1}{4}$ "

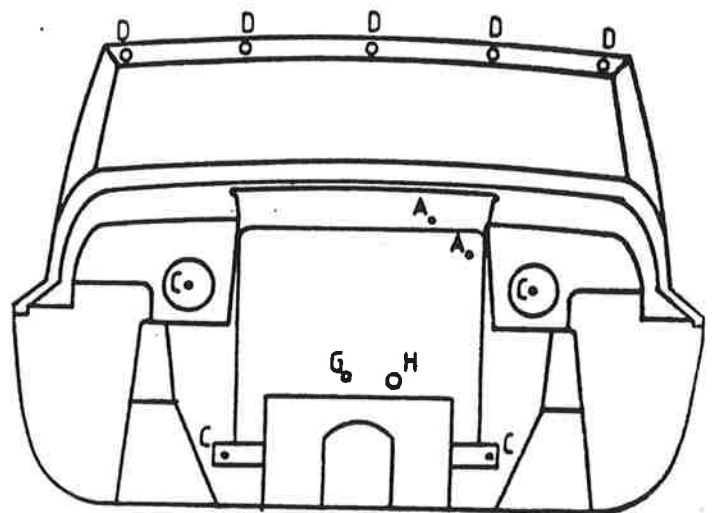
SIDE VIEW



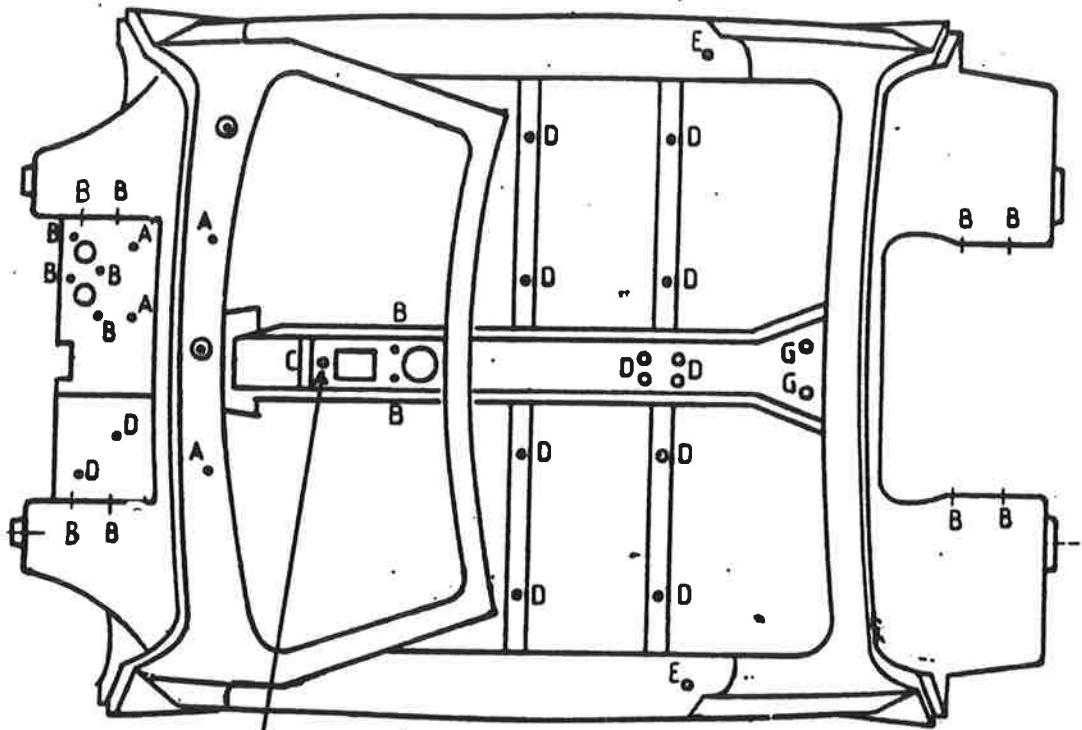
FRONT VIEW



BACK VIEW

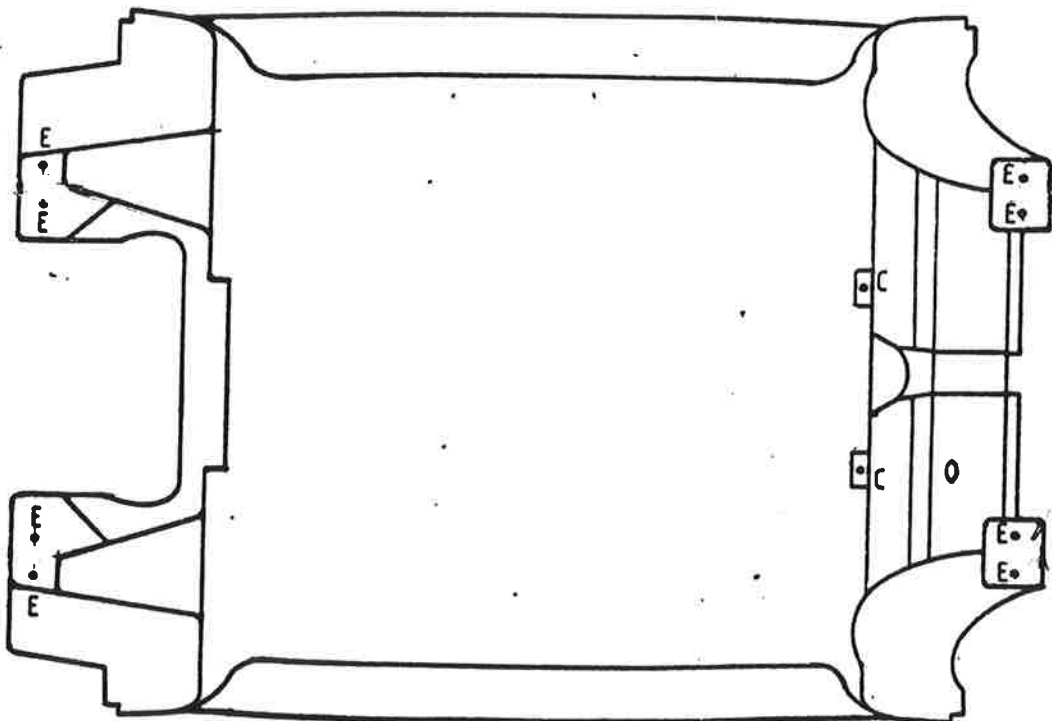


PLAN VIEW



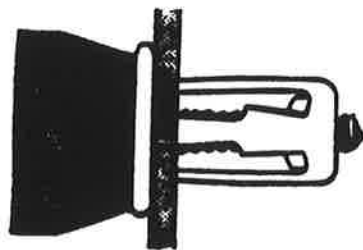
NB. This is best drilled when fitting dashboard frame.

BASE VIEW

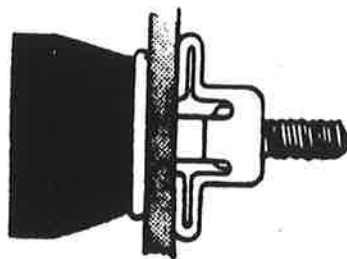


JACK NUT®

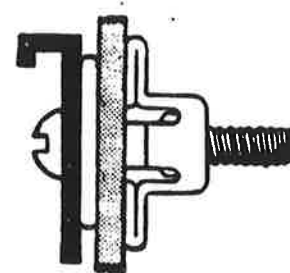
HERE'S HOW JACK NUT WORKS...



Position the Jack Nut on the mandrel of the installing tool. Then insert the Jack Nut in a pre-drilled hole, with its flange against the outer surface of the panel material. Since Jack Nut is a blind fastener, there's no need for access to inner side of the work.



Jack Nut is set in seconds, using either power or hand tools. Very large contact area under the legs makes Jack Nut ideal for use in very soft materials; pull-through is virtually impossible.



When using Jack Nut as a threaded insert, component can be assembled, using an ordinary machine screw.

JACK NUT

- Installs "blind"...can be set from only one side of work.
- Can be used in thin sections of almost any material from film-thin to $\frac{3}{8}$ inch.
- Won't distort or deform plastics or other soft materials.
- Can be installed with simple hand tools or power tools.
- Compensates for oversize or sloppy holes.
- Provides dependable action in presence of burrs, tube surface, or uneven substrate.
- Replaces more expensive, hard-to-install fasteners.
- Resists component stress and vibration.
- Lowers installed costs.
- Excellent for plastics, wood, sheet metals, etc.

WHAT IT IS...



Jack Nut is a minimum-cost blind fastener/insert designed to provide maximum pull-through resistance in very thin, soft or brittle materials. Jack Nut is engineered for fast, easy installation in either assembly line or field applications.

Available in zinc-plated 1010 steel, 730 brass, or coated steel (Painite®) to provide a positive seal against weather or to absorb vibration and shock. Other materials/finishes are available upon special request.

APPLICATION

Seat Mountings			
Hardtop Mountings - Front Screen Section	6 mm	11 mm	8
Hardtop Mountings - Rear Bulkhead Section	6 mm	11 mm	4
Wiper Motor Mountings	6 mm	11 mm	5
Handbrake Mounting	6 mm	11 mm	2
	6 mm	11 mm	4
Rear Seat Panel	5 mm	10 mm	9
Inner Door Panels	4 mm	8 mm	8
Quarter Lights	4 mm	8 mm	4

SIZE	HOLE SIZE	QTY
6 mm	11 mm	8
6 mm	11 mm	4
6 mm	11 mm	5
6 mm	11 mm	2
6 mm	11 mm	4
5 mm	10 mm	9
4 mm	8 mm	8
4 mm	8 mm	4

PIPES AND CABLES

The entire pipe and cable network throughout the ROSSA consists of:-

PIPING - Radiator Pipes
Heater Pipes
Fuel Overflow Pipe
Brake Pipes
Clutch Pipes
Header Tank Pipes

CABLES - Heater On/Off Cable
Speedo Cable
Throttle Cable
Choke Cable
Handbrake Cables
Battery Cables

The fitting of pipes and cables cannot be completed in one operation when the car is fully assembled, it is therefore necessary to complete part of the operation when the car is in the sub assembly stage and complete the connections as the assembly proceeds. The diagram (Page) showing the pipework through the tunnel, specifies which pipes and cables have to be fitted before proceeding with the full assembly. The following operations assume this operation has been completed.

RADIATOR PIPES (see Diagram Page)

The two rubber radiator pipes located in the tunnel are connected to the stainless steel tubes with jubilee clips and are secured to the rear bulkhead in the engine bay. When the rear subframe assembly complete with engine has been fitted, the two stainless steel pipes can be connected to the Mini Metro standard top and bottom hoses. When the front subframe assembly and front bumper moulding have been assembled, the radiator and fan (Mini Metro) can be assembled into the cavity at the front of the bumper mould. The top mounts are marked in the mould and should be drilled to $\frac{3}{8}$ " diameter with the radiator pushed and held in position by the standard radiator grommets. The bottom radiator mounts are held in position by the two brackets supplied in the kit. These brackets support the bottom of the radiator on the standard mountings, using standard grommets. The two Metro top hoses supplied in the kit are fitted to the outlets on the radiator with jubilee clips, the other end of the hoses can then be connected to the radiator pipes protruding from the front end of the tunnel. Two 1" diameter ferrules are supplied in the kit for this purpose. 'P' clips are supplied in the nut & bolt pack to secure the loose rubber pipes to the base of the front subframe. The bleed pipe for the top outlet of the radiator, should be fitted and bunged at the open end.

HEATER PIPES (see Diagram Page)

Once the dashboard framework has been secured in position, the Mini heater can be mounted using the three mounting points on the heater case. The front two mounts are secured to the dashboard framework centrally, on the top foremost bar using two $\frac{1}{4}$ " dia. x $\frac{1}{2}$ " long nuts and bolts. The rear right hand mounting on the heater case is secured to the drop bar on the framework.

The two heater pipes protruding through the square hole in the tunnel can now be secured to the heater. Two 90° bend hoses are supplied in the kit to enable a clean pipe run without excessive bends. These are secured to the heater with jubilee clips and then the hoses are joined to them with $\frac{1}{2}$ " dia. brass ferrules and jubilee clips. If possible, bring the hoses around the back of the heater and over the top, as this will leave more room for the other items behind the dashboard. The fresh air intake pipe can now be connected to the heater and secured to the air intake hole in the collector box (jubilee clips or hot glue gun).

The two heater hoses protruding from the tunnel in the engine bay can be connected once the rear subframe/engine assembly has been assembled to the main tub. The hose from the top of the heater is then connected to the heater switch on the engine, and the hose from the bottom of the heater is connected to the small outlet pipe on the Metro bottom hose. This pipe run should go around the clutch housing and be secured to the centre of the subframe where it is connected to the Metro bottom hose.

FUEL and OVERFLOW PIPES (see Diagram Page)

When the front subframe assembly and front bumper have been assembled, the standard Mini petrol tank can be fitted. The front bumper is shaped to form a cavity to hold the base of the tank and a tank strap is supplied in the kit to secure it in position. The main outlet from the tank passes through a hole in the base of the mould, (location marked on mould, drill $\frac{1}{2}$ " dia.) and the rubber fuel pipe is connected between the tank and the fuel line protruding from the front of the tunnel. The tank overflow is also connected and passed through a hole in the base of the front bumper mould.

The fuel pipe protrudes out of the tunnel at the rear into the engine bay. When the subframe and engine have been fitted, the fuel pipe can be secured to the base of the subframe avoiding the jacking points. The rubber fuel pipe then connects it to the mechanical fuel pump.

ENSURE THE RUBBER SECTION OF THE FUEL LINE IS WELL CLEAR OF THE EXHAUST

BRAKE PIPES (see Diagram Page)

The brake and clutch master cylinders are modified with the special push rods supplied in the kit, this enables full movement of both the pedals ensuring efficient brakes and clutch. Once the master cylinders have been modified, they can be mounted to the main tub. Drill the holes marked in the collector box area and mount the cylinders, attaching them to the pedal assembly on the inside of the tub. The pedals can then be connected with the standard clevis and retaining pins. To complete the brake pipe system, the front and rear subframe assemblies need to be already fitted. The pipe lengths and connections are all indicated on the Brake Diagram - page . Once the wheels, hubs, and flexible brake pipes (connecting hub and subframe) have all been fitted, the brake system can be filled and bled, procedure as per standard Mini.

CLUTCH PIPE (see Diagram Page)

The clutch diagram shows the system and connections. The rear pipe is mounted to the subframe next to the slave cylinder using the bracket supplied in the kit. The system can then be filled and bled, procedure as per standard Mini.

HEADER TANK PIPES

The Metro header tank (unipart no. FAM 7637) is mounted onto the main tub in the engine bay, just forward of the engine cover hinge. Two brackets are supplied in the kit for this purpose. The two holes used to mount the tank are marked on the hub and should be drilled to $\frac{1}{4}$ " dia. The main feed pipe into the base of the header tank is passed around the front end of the engine and into the smaller outlet pipe on the Metro bottom hose. The second outlet at the top of the header tank is connected to the small outlet on the Metro thermostat housing.

AVOID TIGHT BENDS IN ALL PIPES AND CABLES TO ENSURE EFFICIENT OPERATION

HEATER ON/OFF CABLE

The heater cable should be located close to the heater controls either on the centre console, or dashboard, and is connected onto the heater on/off switch on the top of the engine block.

SPEEDO CABLE

The speedo cable is connected from the rear of the dashboard once the instrument pack has been fitted, and the other end connected to the standard drive point at the base of the engine.

THROTTLE CABLE

First, fit the throttle pedal using the holes for mounting which are marked on the tub. These should be drilled to $\frac{1}{4}$ " dia. Once the pedal assembly and stop have been fitted, the cable can be connected. The other end is connected to the carburetor as standard.

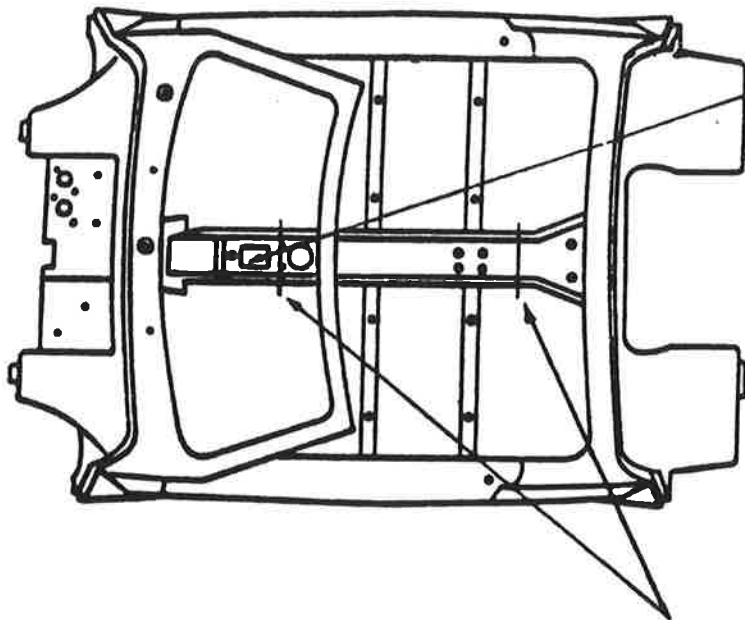
CHOKE CABLE

The choke cable has to be fitted to the steering column cowling prior to feeding down the tunnel. This can be done by removing the cowling when the column is being fitted. The other end is connected to the carburetor as standard.

HANDBRAKE CABLES

Once the handbrake plate has been mounted to the tunnel section of the tub, the handbrake lever and cables can be connected as in the standard Mini. The cables are then passed through the two drilled holes in the rear bulkhead of the tub and connected to the rear hubs. (see Diagram Page)

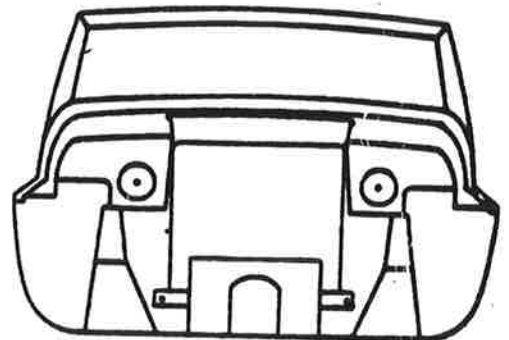
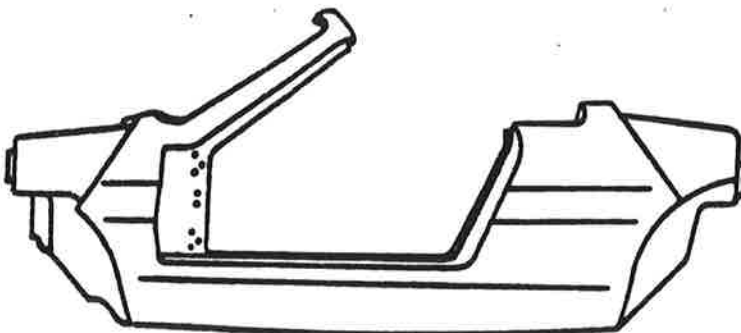
PIPEWORK THROUGH THE TUNNEL



PIPES C, D, I, K, & L EXIT THROUGH THE SQUARE HOLE IN THE TOP OF THE TUNNEL AND LINK TO THE RELEVANT CONNECTIONS BEHIND THE DASHBOARD.

PIPES A, B, E, F, G, H, & J EXIT THROUGH THE FRONT OF THE TUNNEL.

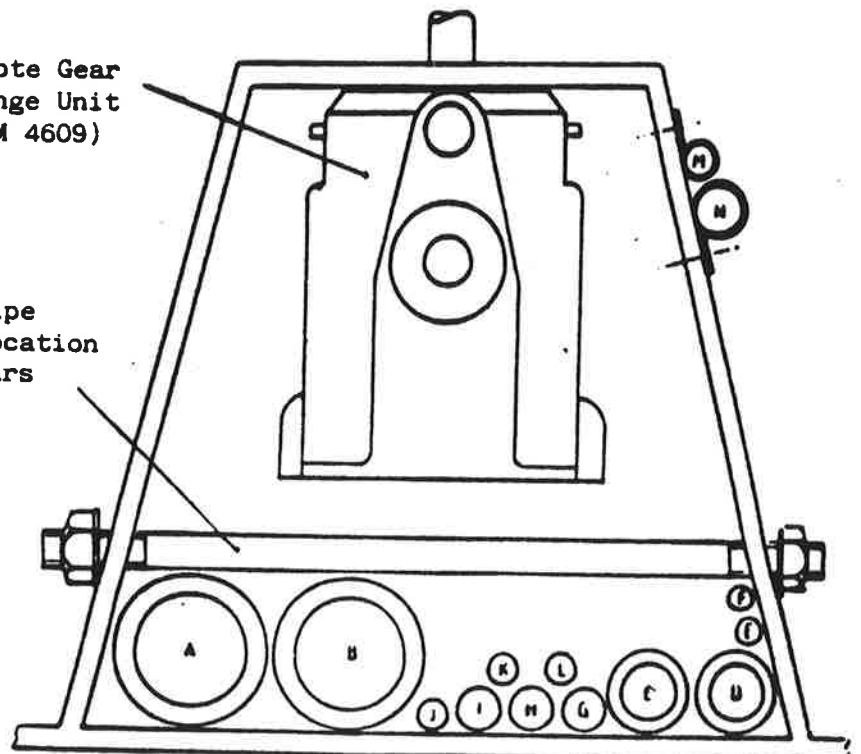
Pipework Location Bars



- A RADIATOR PIPE - RUBBER
- B RADIATOR PIPE - RUBBER
- C HEATER PIPE - RUBBER
- D HEATER PIPE - RUBBER
- E BRAKE PIPE - KUNIPER
- F CLUTCH PIPE - KUNIPER
- G BATTERY CABLE - POSITIVE
- H BATTERY CABLE - NEGATIVE
- I SPEEDO CABLE
- J PETROL PIPE - KUNIPER
- K CHOKE CABLE
- L HEATER CABLE
- M THROTTLE CABLE
- N WIRING HARNESS

Remote Gear Change Unit (DAM 4609)

Pipe Location Bars

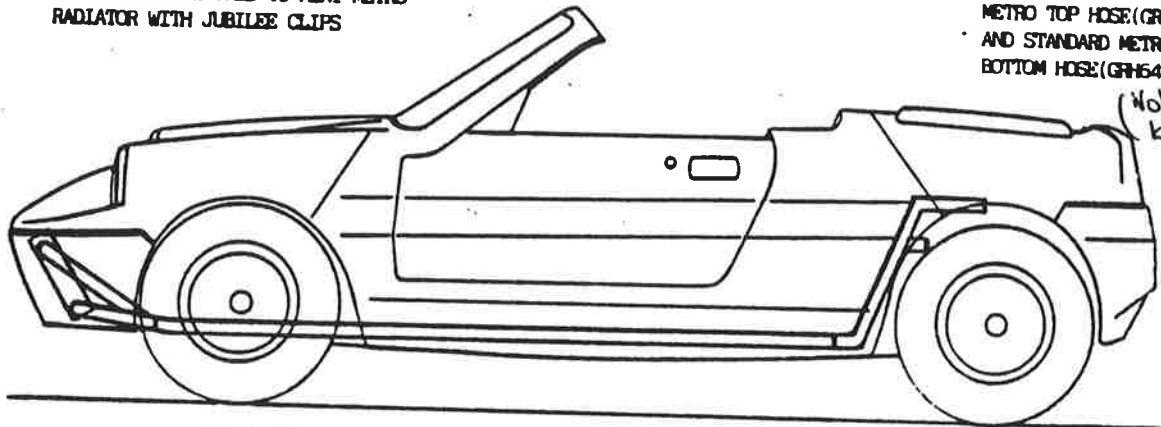


ROSSA RADIATOR PIPING KIT

HOSES A & B SECURED TO MINI METRO RADIATOR WITH JUBILEE CLIPS

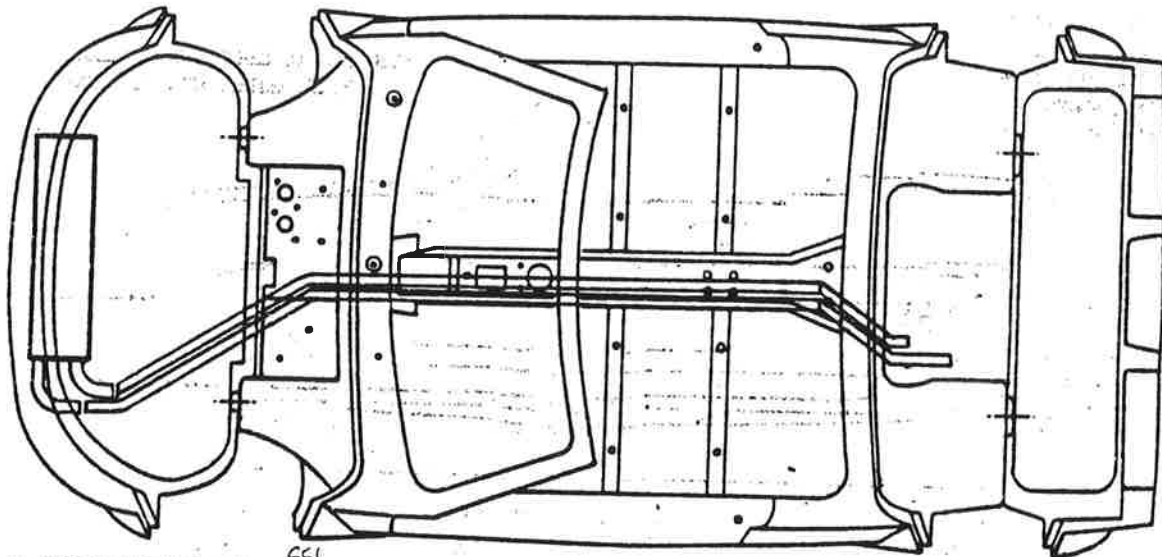
STAINLESS PIPES FIT DIRECT TO STANDARD METRO TOP HOSE (GRH651) AND STANDARD METRO BOTTOM HOSE (GRH645)

(Not in kit)

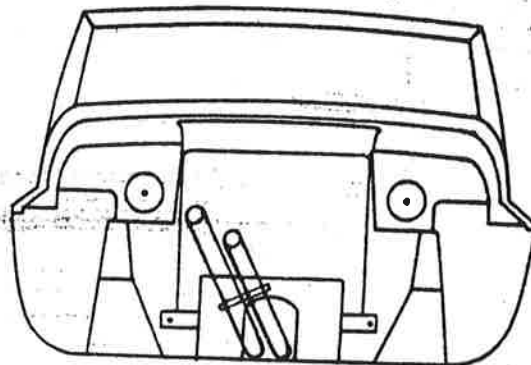


BRASS FERRULE 1" DIA CONNECTING ELBOW HOSES A & B TO RUBBER HOSES C & D SECURED WITH JUBILEE CLIPS

RUBBER HOSES C & D CONNECTED TO STAINLESS STEEL PIPES E & F WITH JUBILEE CLIPS



- A RUBBER ELBOW HOSE (GRH 248) 651
- B RUBBER ELBOW HOSE (GRH 248) 651
- C RUBBER HOSE 1" INTERNAL BORE
- D RUBBER HOSE 1" INTERNAL BORE
- E STAINLESS STEEL PIPE 19 1/2" LONG
- F STAINLESS STEEL PIPE 28 1/2" LONG
- G MINI METRO RADIATOR (ATP 5029)

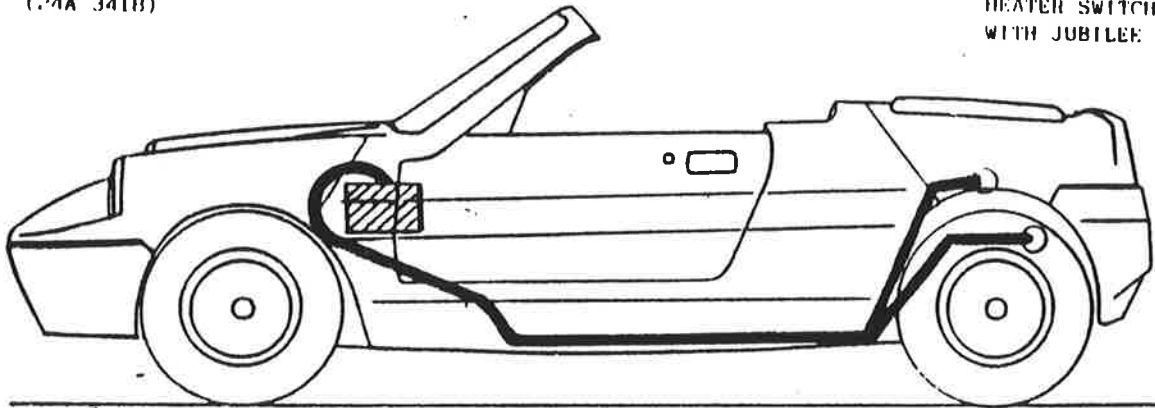


SECURE STAINLESS PIPES WITH TWO "1" CLIPS INTO THE REAR GLASSFIBRE BULKHEAD

ROSSA HEATER SYSTEM

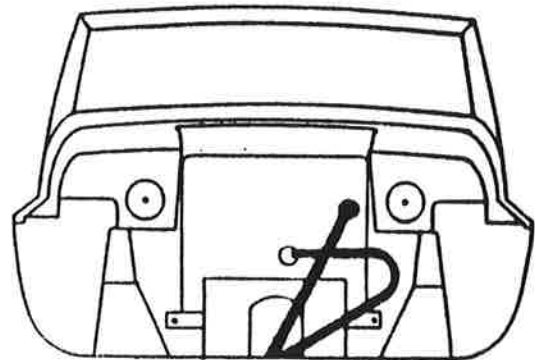
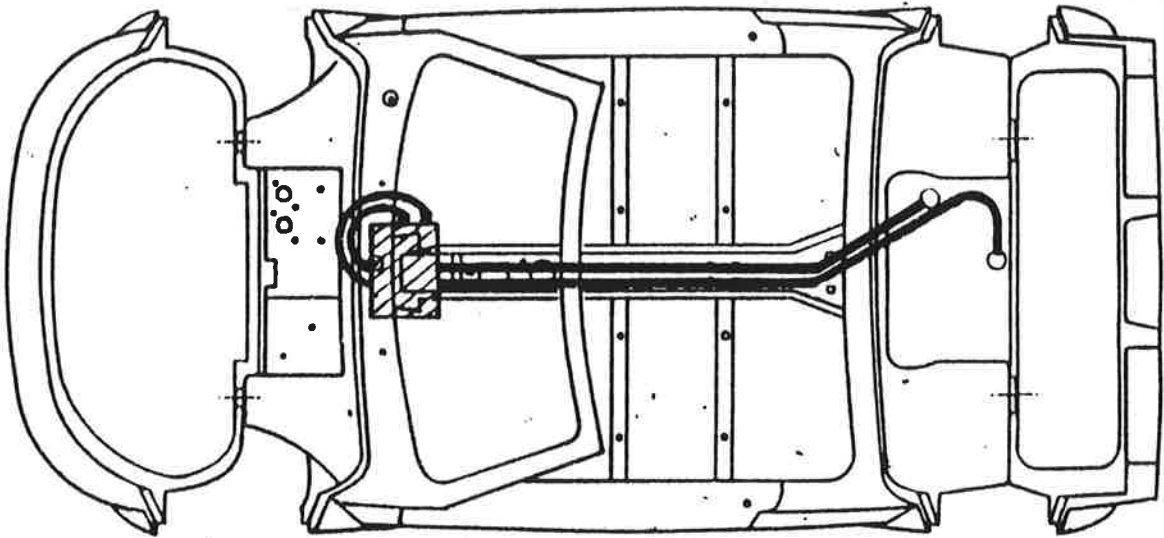
STANDARD MINI FRESH AIR HEATER
(24A 3418)

CONNECT TO
STANDARD MINI
HEATER SWITCH
WITH JUBILEE CLIPS

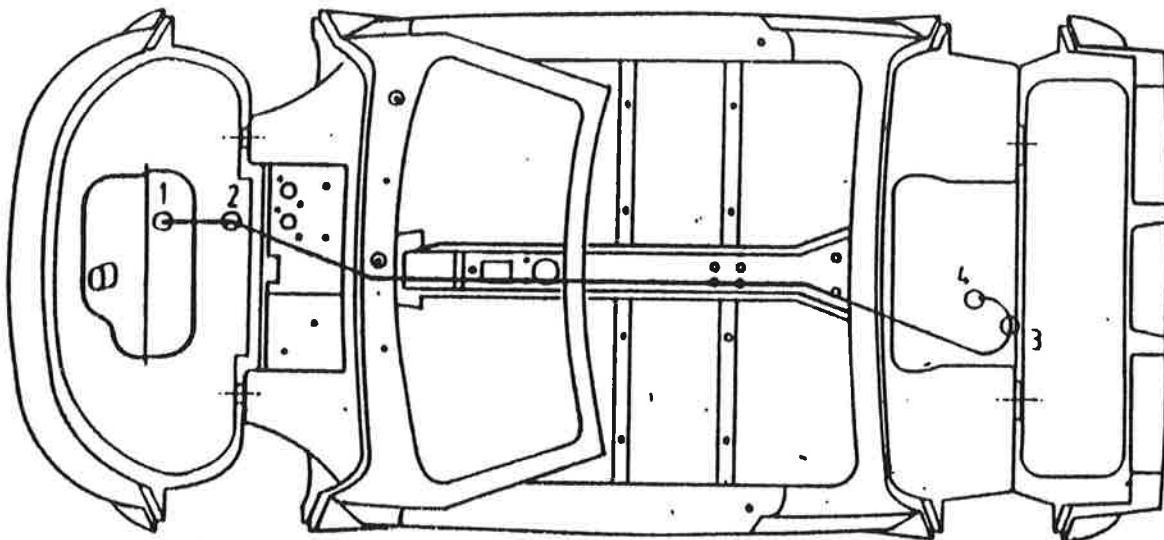
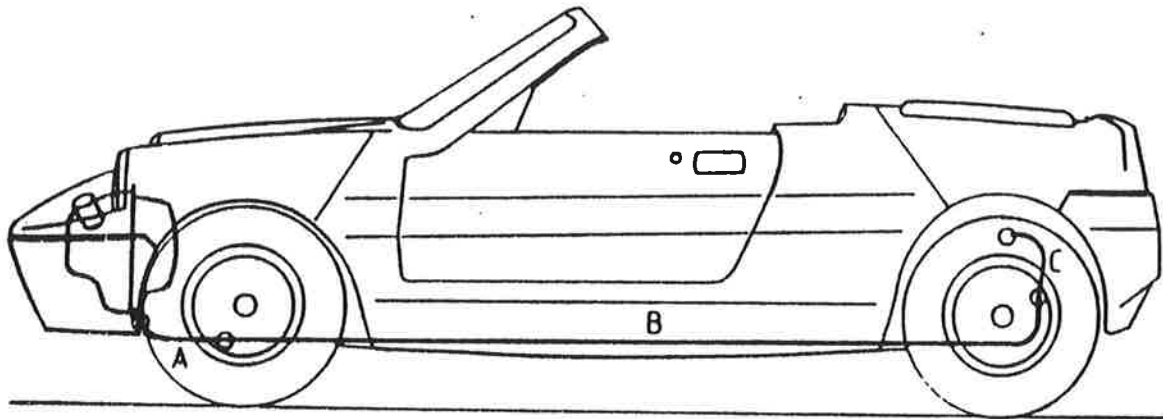


TWO 90° BENDS(137876) INTO THE
HEATER JOINED TO THE HEATER 1/2"
DIAMETER PIPE WITH TWO BRASS
FERRULES AND JUBILEE CLIPS

CONNECT TO MINI METRO BOTTOM
HOSE (GHH64) AND SECURE TO
MINI SUBFRAME. USE 1/2" DIA.
FERRULE AND JUBILEE CLIPS



ROSSA FUEL SYSTEM



- A RUBBER FUEL PIPE
- B 124" LONG BUNDY PIPING 1/4" BORE
- C RUBBER FUEL PIPE

- 1 MINI PETROL TANK (ARP 1043)
- 2 JUBILEE CONNECTOR RUBBER PIPE TO BUNDY TUBING (SECURE ONTO FRONT SUBFRAME)
- 3 JUBILEE CONNECTOR RUBBER PIPE TO BUNDY TUBING (SECURE ONTO REAR SUBFRAME)
- 4 RUBBER FUEL PIPE CONNECTED TO STANDARD MINI MECHANICAL FUEL PUMP (AUF 812) AND GASKET (1264520)

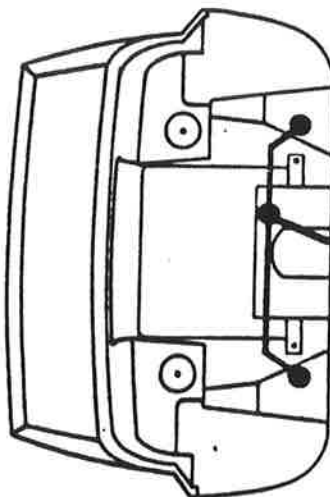
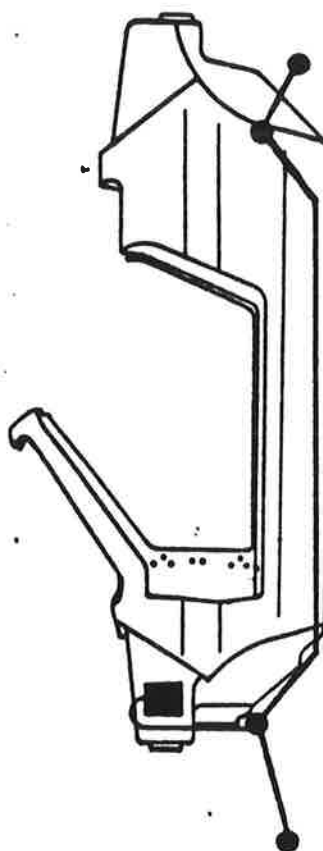
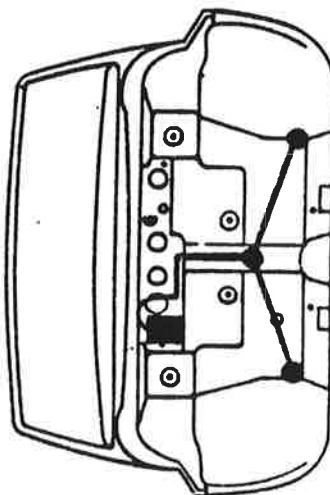
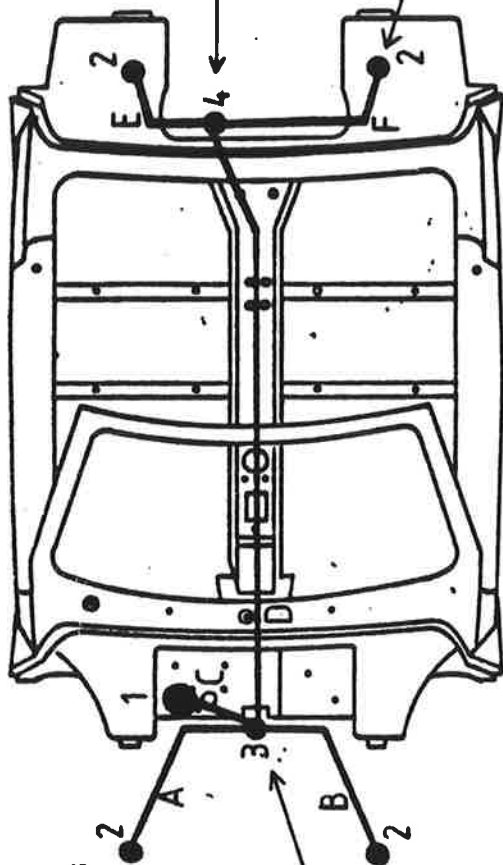
ROSSA BRAKE SYSTEM

THESE ARE THE STANDARD POSITIONS ON THE SUBFRAME WHERE THE MINI FLEXIBLE HOSES ARE CONNECTED.

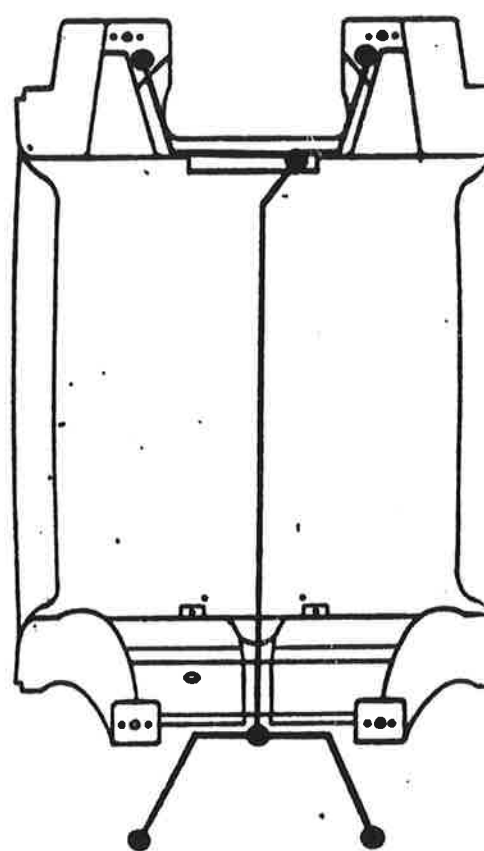
THE FOUR WAY CONNECTOR IS MOUNTED TO THE TOP CENTRE OF THE FRONT SUBFRAME.

THREE WAY CONNECTOR IS BOLTED TO THE REAR FIBREGLASS BULKHEAD AT THE EXIT OF THE TUNNEL.

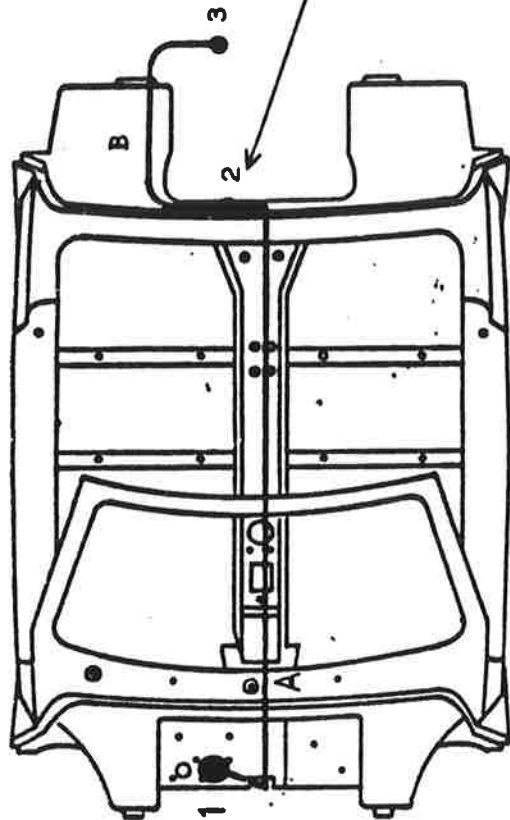
MINI BRAKE LIGHT SWITCH(C150 62A) AND BANJO (21A 654)AND BOLT (11D 52 64) ARE ALL LOCATED AT THIS POINT. THE BLEED NIPPLE SUPPLIED IN THE KIT FITS IN THE OPEN END OF THE BANJO.



- A - 20" LONG, CONNECTORS AT EACH END
 B - 20" " " " " " "
 C - 22" " " " " " "
 D - 84" " " " " " "
 E - 22" " " " " " "
 F - 25" " " " " " "
 1 - MINI MASTER CYLINDER (GMC171)
 2 - MINI FLEXIBLE BRAKE HOSES(GBH170)
 3 - FOUR WAY CONNECTOR
 4 - THREE WAY CONNECTOR

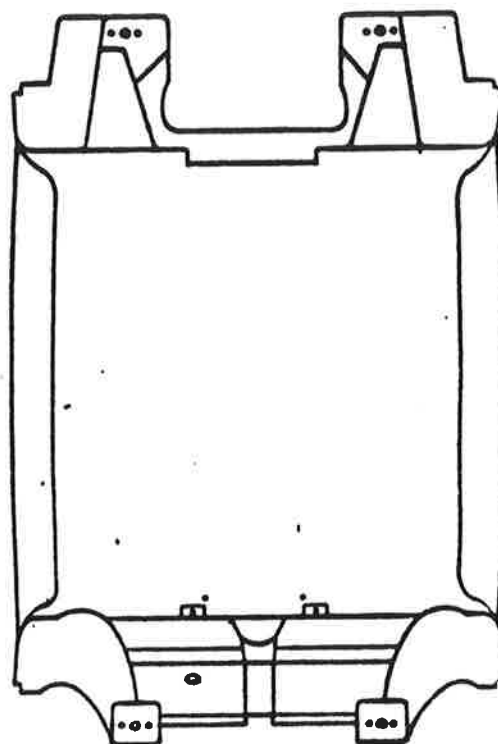
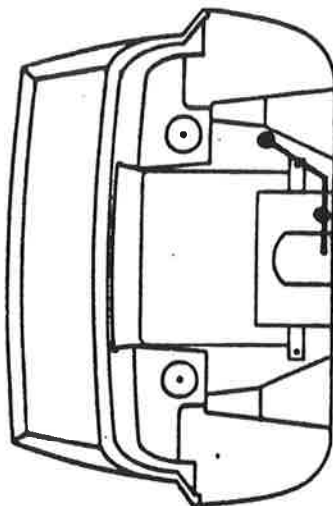
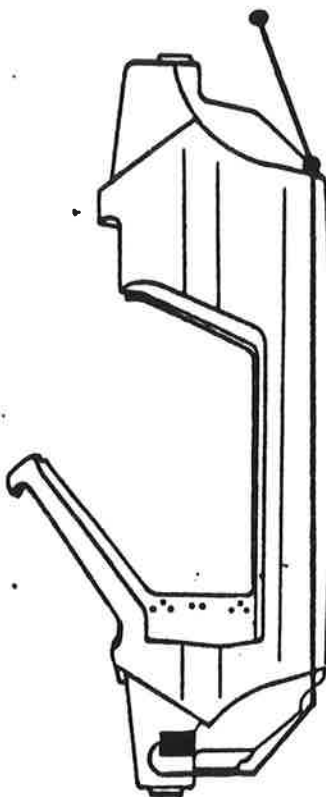
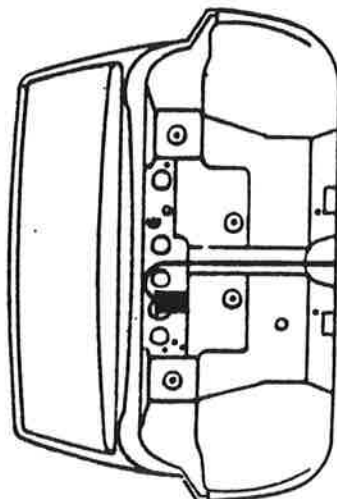


ROSSA CLUTCH SYSTEM



FLEXIBLE PIPE TO CLUTCH CYLINDER IS MOUNTED TO THE SUBFRAME NEXT TO THE CLUTCH CYLINDER.

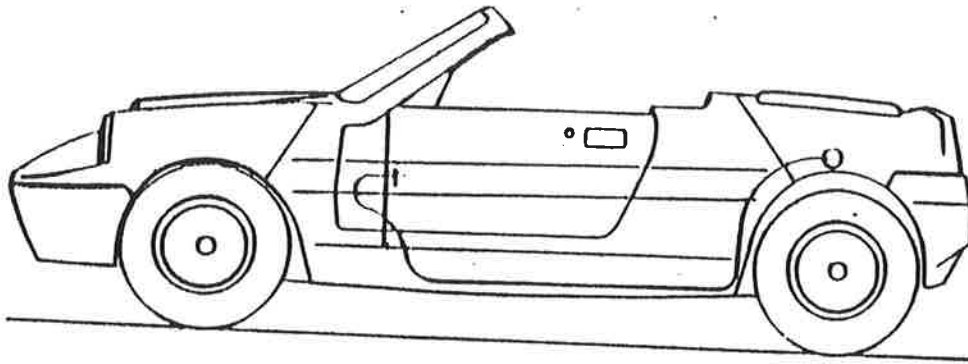
THREE WAY CONNECTOR IS BOLTED TO THE REAR FIBREGLASS BULKHEAD, THE BLEED NIPPLE SUPPLIED IN THE KIT IS ALSO CONNECTED TO THIS UNIT.



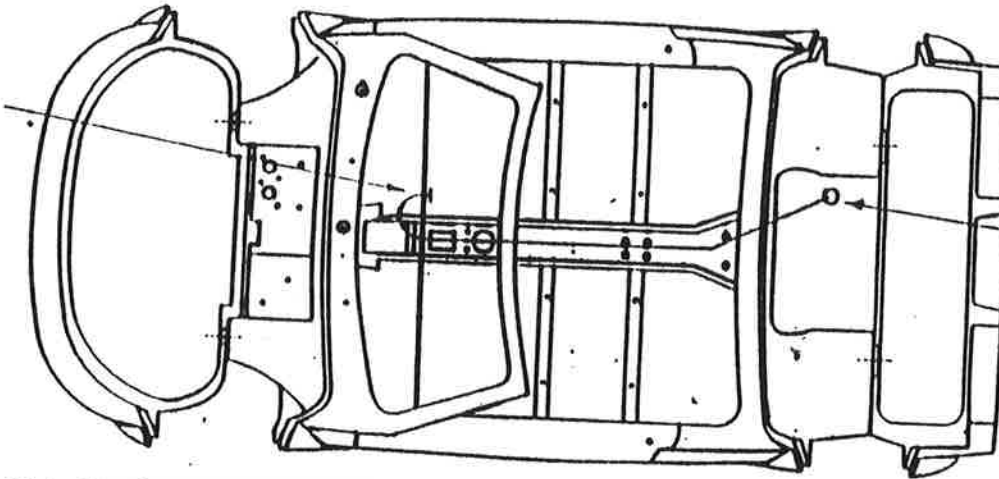
- A 97" LONG PIPE WITH CONNECTORS AT EACH END.
- B 37" DITTO
- 1 MINI MASTER CYLINDER(AAU4969)
- 2 THREE WAYCONNECTOR
- 3 MINI FLEXIBLE TO CLUTCH CYLINDER (13H 300)

RUSSA HEATER CABLE

16

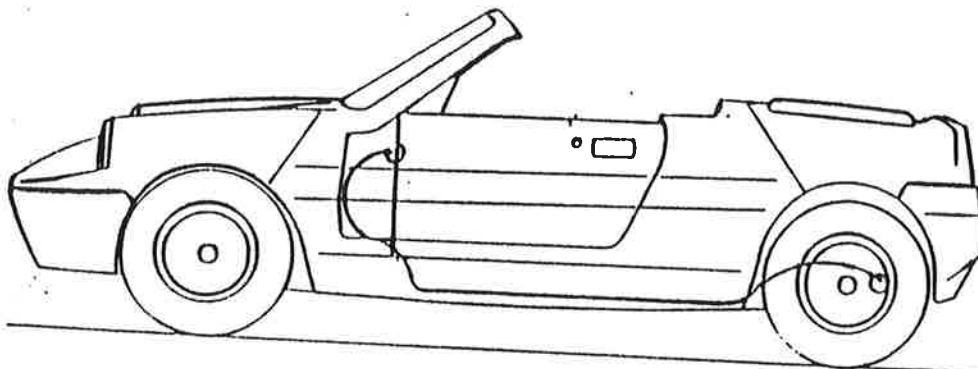


SEE TEXT TO
LEFT OF DASH-
WOOD CENTRE
SOLE

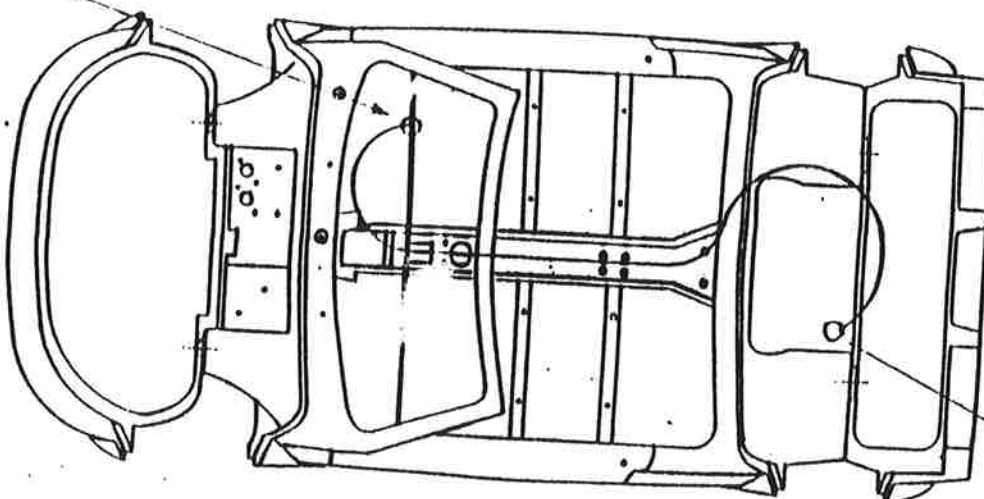


CONNECT TO
STANDARD MINI
HEATER SWITCH ON
THE ENGINE

RUSSA SPEEDO CABLE

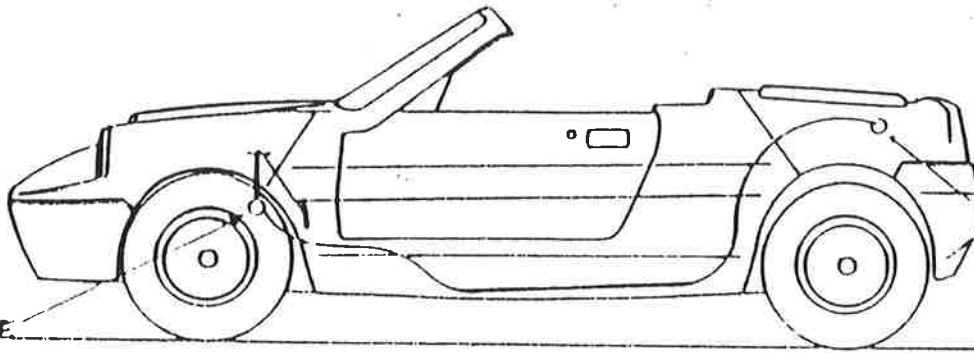


SEE TEXT TO
LEFT OF DASH-
WOOD CENTRE
SOLE



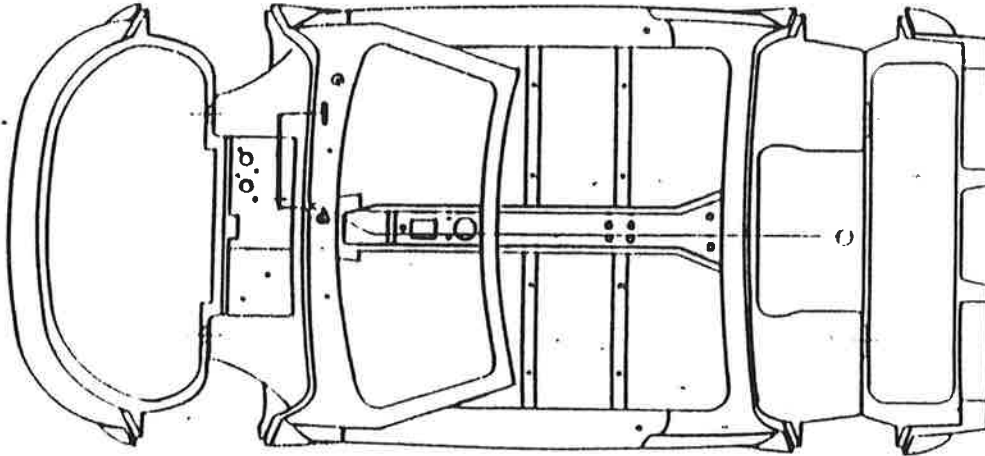
CONNECT TO
STANDARD MINI
SPEED DRIVE

ROSSA THROTTLE CABLE

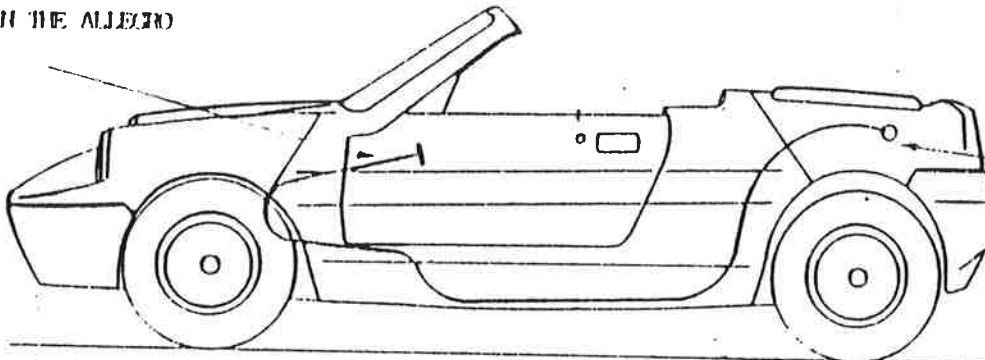


CONNECT TO
STANDARD THROTTLE
MOUNTING ON THE
CARBURETOR

CONNECT TO THROTTLE
MOUNTING ON THE
CARBURETOR

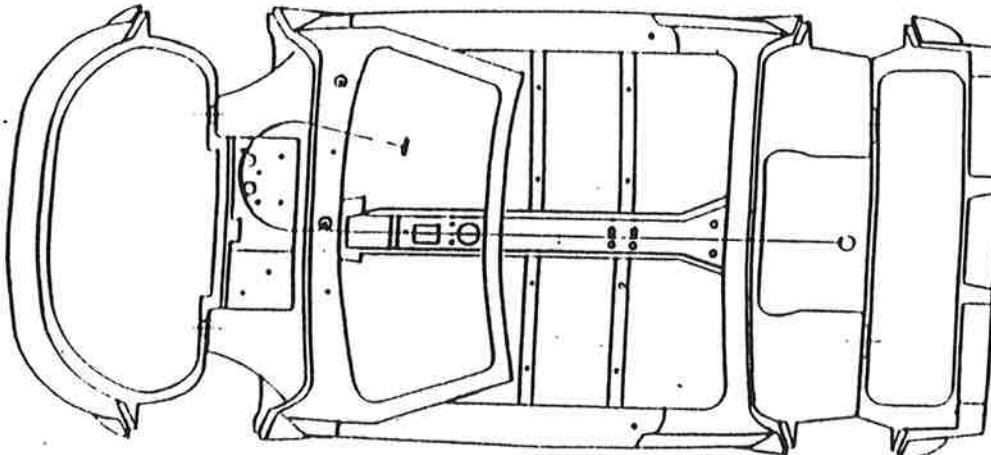


ROSSA CHOKE CABLE

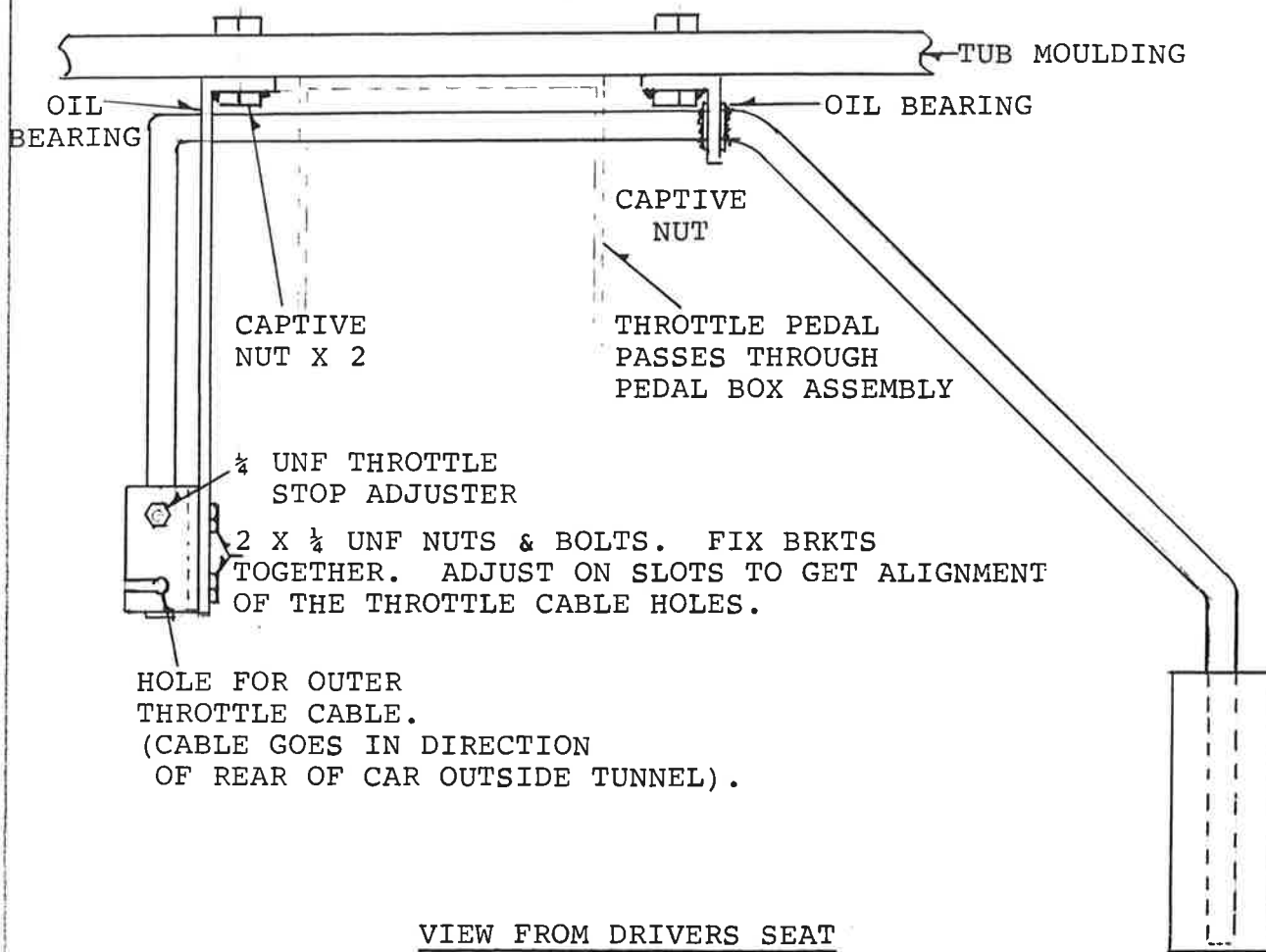


CONNECT TO
STANDARD CHOKE
MOUNTING ON THE
CARBURETOR

CONNECT CHOKE CABLE TO EXISTING
CHOKE LOCATION IN THE ALBERTO
REAR COLUMN

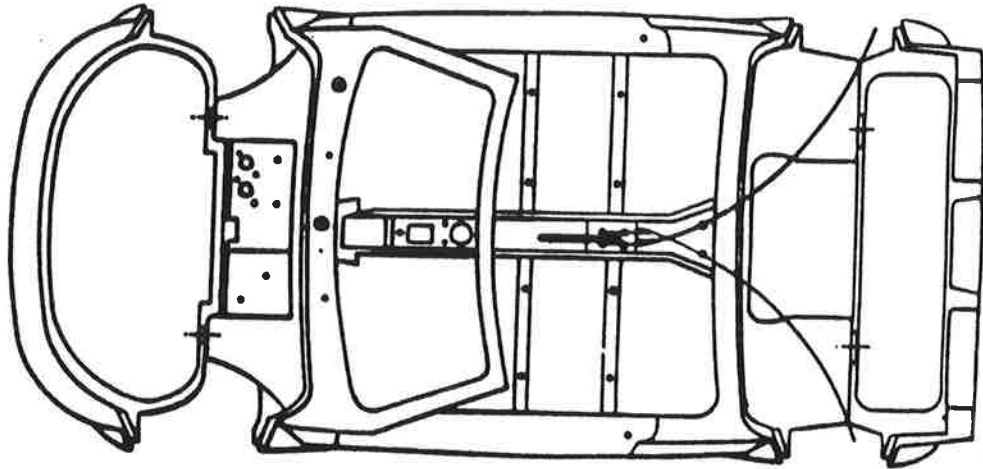
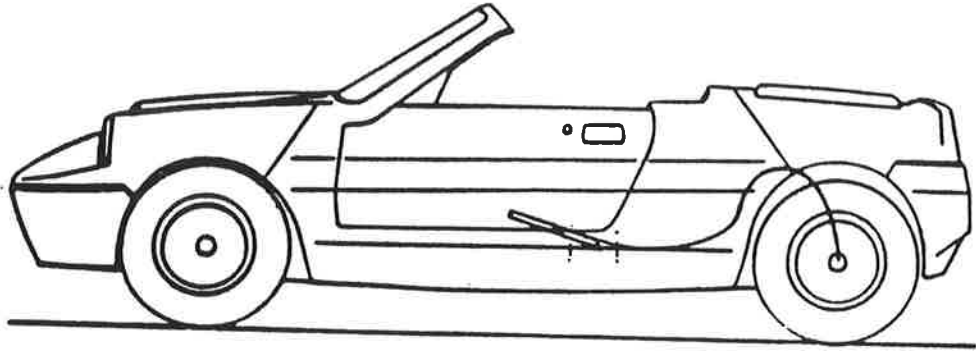


ROSSA THROTTLE PEDAL ASSEMBLY



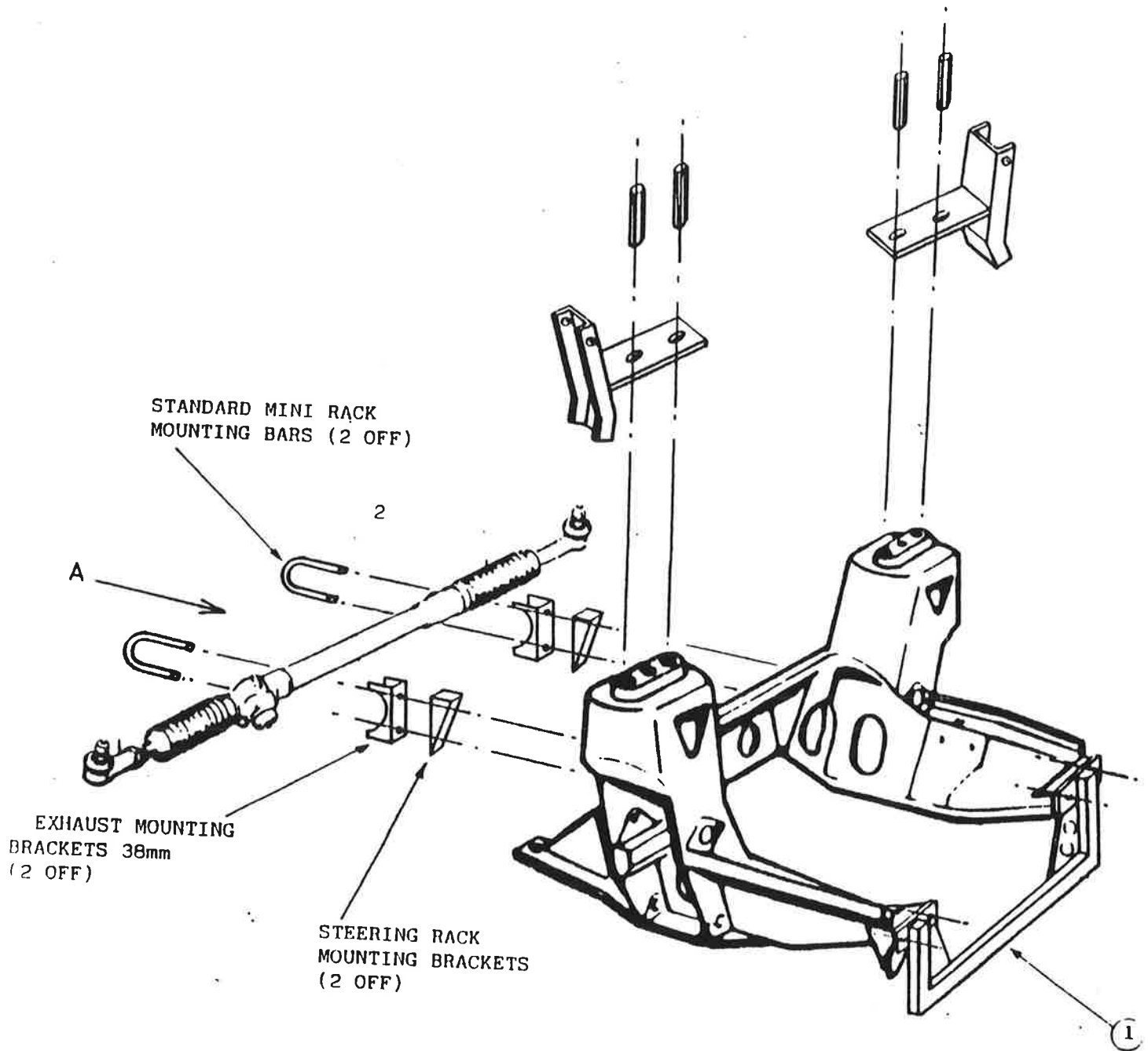
N.B. One hole is marked on the tub for this bracket. The second hole is drilled from inside once the pedal works without binding. (Very important).

ROSSA HANDBRAKE CABLES

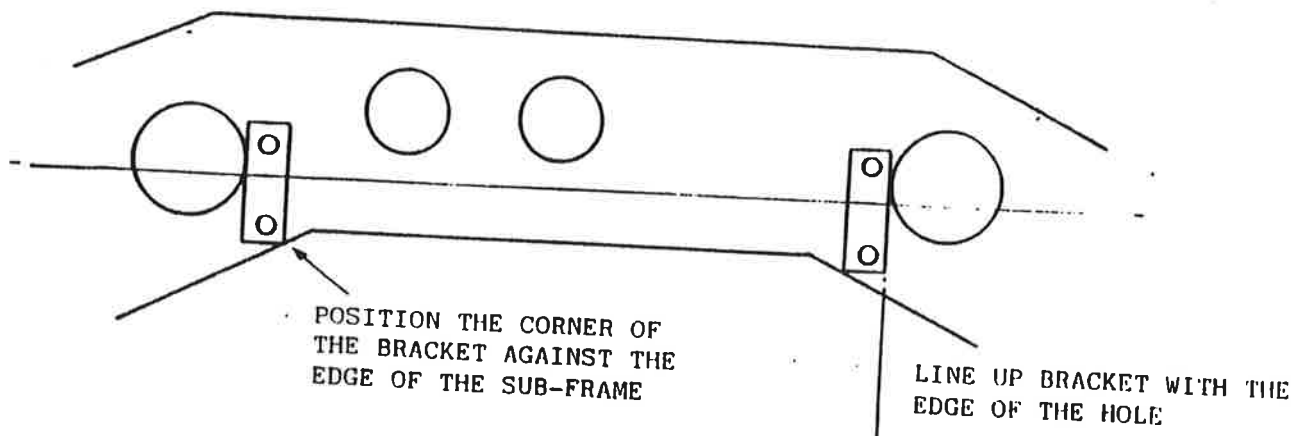


FRONT SUB-FRAME PREPARATION

1. DROP BAR
2. STEERING RACK
3. SHOCK ABSORBER MOUNTING BRACKETS
4. SUB-FRAME MOUNTING STUDS



VIEW OF SUB-FRAME FROM POSITION 'A'



FRONT SUB-FRAME ASSEMBLY

A number of small modifications have to be made to the mini front sub-frame prior to assembling the suspension units.

1. DROP BAR

The front cross-member of the sub-frame is removed and replaced with a drop bar which is supplied in the kit. This modification is necessary to allow a standard mini petrol tank to be used in the front of the Rossa.

Fit the drop bar onto the front cross-member of the sub-frame using the two outer holes on the drop bar, these line up with the front mounting points on the sub-frame.

Mark and remove the section of the sub-frame between the drop bars inner edge (as shown in the diagram) using a hacksaw.

Drill through the inner holes of the drop bar mounting plates and secure with an additional pair of $\frac{1}{8}$ " diameter bolts.

2. STEERING RACK

The steering rack is standard mini and locates onto the mini front sub-frame as opposed to the body shell on the original mini. This enables the front sub-frame to be fitted and removed as a complete unit.

The position of the mounting brackets and assembly procedure are shown diagram , some of the rack casing has to be removed to allow the rack clamps to fit properly this is done with a file.

The rack is then assembled to the sub-frame but left loose and should be tightened when the column is fitted and the rack is centralised.

3. SHOCK ABSORBER MOUNTING BRACKETS

Four brackets are supplied in the kit and are assembled between the sub-frame and the glassfibre body as shown in diagram

The bottom edge of the mounting bracket should be bolted through into the sub-frame turret, use the hole in the bracket to mark the position of the hole use $\frac{1}{8}$ " diameter bolts to secure.

4. SUB-FRAME STUDS

Four studs are supplied for mounting the front sub-frame, these should be screwed into the four upper mounting holes on the sub-frame until the studs bottom on the base plate.

5. FRONT SUB-FRAME ASSEMBLY

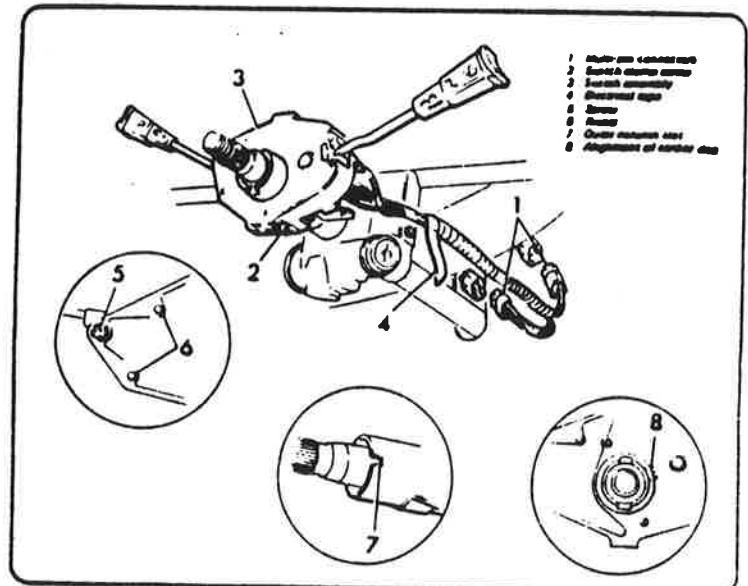
The assembly procedure for the front sub-frame is identical to a standard mini, the following section covers the suspension and steering in detail, if there is any doubt regarding the procedure we recommend reference to a 'HAYNES' manual.

The assembly stops where the constant velocity joint in the front hub connects to the drive shaft, the remains of the constant velocity joint within the front hub are removed by braking the ball housing (a sharp blow with a hammer will suffice, eye protection will be required).

- 1 Steering wheel
- 2 Nut
- 3 Lockwasher
- 4 Clip - pad to wheel
- 5 Steering wheel pad
- 6 Column upper bush
- 7 Inner column
- 8 Cowl - upper half
- 9 Cowl - lower half
- 10 Screw - cowl to column bracket
- 11 Screw - lower to upper cowl
- 12 Screw - cowl to column
- 13 Shear bolt
- 14 Steering lock
- 15 Outer column
- 16 Locknut
- 17 Bolt - column to upper support bracket
- 18 Column lower bush
- 19 Intermediate shaft
- 20 Pinch bolt and spring washer

DET 19 (INTERMEDIATE SHAFT) IS MODIFIED TO SHORTEN THE SHAFT TO 7½" BETWEEN CENTRES

- | | |
|----------------------------|----------------------------|
| 1 Balljoint | 14 Rack bearing |
| 2 Locking nut | 15 Bearing retaining screw |
| 3 Retaining clip | 16 Damper cover plate |
| 4 Rubber gaiter | 17 Shims |
| 5 Retaining clip | 18 Thrust spring |
| 6 Bell housing | 19 O-ring seal |
| 7 Tie-rod | 20 Rack support yoke |
| 8 Ball-seat | 21 Pinion end cover |
| 9 Locknut and grooved pin | 22 Gasket |
| 10 Thrust spring | 23 Shim - standard |
| 11 Rack | 24 Shims |
| 12 Rack housing | 25 Pinion bearings |
| 13 Rack centring hole plug | 26 Pinion |



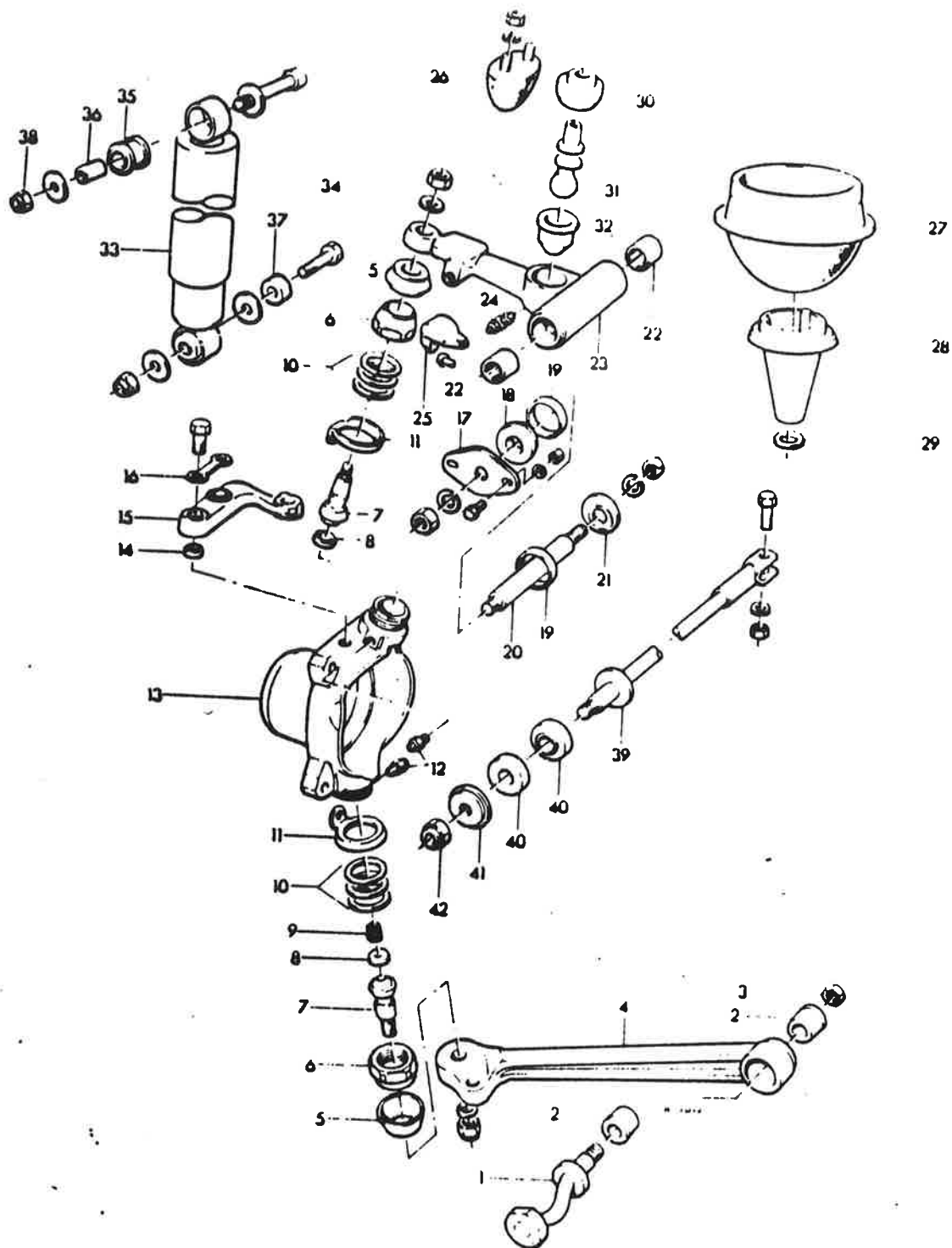


Fig. 11.1 Exploded view of the front suspension – rubber cone spring type (Sec 1)

- | | | | |
|------------------------|---------------------------|--------------------------|-------------------|
| 1 Lower arm pivot pin | 12 Grease nipple | 23 Upper suspension arm | 33 Shock absorber |
| 2 Bushes | 13 Swivel hub | 24 Grease nipple | 34 Upper mounting |
| 3 Locknut | 14 Ring dowel | 25 Rebound buffer | 35 Upper bush |
| 4 Lower suspension arm | 15 Steering arm | 26 Bump buffer | 36 Sleeve |
| 5 Dust cover | 16 Lockwasher | 27 Rubber cone spring | 37 Distance piece |
| 6 Ball-pin retainer | 17 Retaining plate | 28 Cone strut | 38 Locknut |
| 7 Ball-pin | 18 Thrust collar | 29 Spacer (where fitted) | 39 Tie-bar |
| 8 Ball-seat | 19 Sealing rings | 30 Dust cover | 40 Tie-bar bushes |
| 9 Spring | 20 Upper arm pivot shaft | 31 Knuckle | 41 Cup washer |
| 10 Shims | 21 Thrust washer | 32 Ball socket | 42 Locknut |
| 11 Lockwasher | 22 Needle roller bearings | | |

1 General description

The front and rear suspension assemblies and associated components are mounted on subframes which are bolted to the underside of the bodyshell. The subframes are of welded all-steel construction, the front subframe also providing mounting points for the engine/transmission assembly.

The front suspension on all Mini models is of the independent type, each side consisting of a lower wishbone and single upper link. The lower wishbone is supported in rubber bushes at its inner end, while the inner end of the upper link pivots on two caged needle roller bearings. The outer ends of the two suspension arms are bolted to the tapered shanks of the upper and lower swivel hub balljoints. Fore-and-aft movement of each front suspension assembly is controlled by a tie-bar bolted at one end to the lower wishbone and mounted at the other end, via rubber bushes, to the subframe. The swivel hub contains tapered roller or ball bearings which support the outer ends of the driveshafts, and also provides mounting points for the drum brake backplate or disc brake calipers. Suspension and steering movement of the swivel hub is catered for by adjustable upper and lower balljoints.

While all Mini models share the same suspension component layout, two different types of springing and damping have been employed. All models are now equipped with dry suspension, whereby a rubber cone spring and telescopic shock absorber are fitted to the suspension assembly at each wheel. Early Clubman and 1275GT

The steering gear is of the conventional rack-and-pinion type and is secured by a U-bolt at each end of the rack housing.

Tie-rods from each end of the steering gear housing operate the steering arms, via both exposed and rubber gaiter enclosed balljoints. The upper splined end of the helically toothed pinion protrudes from the rack housing and engages with the splined end of the steering column. The pinion spline is grooved and the steering column is held to the pinion by a clamp bolt which partially rests in the pinion groove.

3 Suspension and steering components - inspection for wear

Steering

1 First check for wear in the steering tie-rod outer balljoints. Turn the steering to left or right lock sufficiently to allow the joints to be observed. Now have an assistant turn the steering wheel back and forth slightly. If there is any side movement in the balljoint it must be renewed. Similarly place your hand over the rubber gaiter at the end of the rack housing and feel for any excess free play of the inner balljoint. If the condition of this joint is suspect, a further investigation should be carried out with the gaiter removed. If necessary, adjust as described in Section 30.

Front suspension

2 To inspect the front suspension, jack up the front of the car and support it on axle stands.
3 Grasp the roadwheel at the 12 o'clock and 6 o'clock positions and try to rock it. If any movement is felt it is likely to be in one or more of the following areas:

Wheel bearings

4 Continue rocking the wheel while your assistant depresses the footbrake. If the movement disappears or becomes less severe, then the wheel bearings in the swivel hub are at fault. If the movement felt at the roadwheel is greater than 0.25 in (6.3 mm), the bearings should be renewed.

Swivel hub balljoints

5 Wear of the swivel hub balljoints is fairly common on Minis and will be quite obvious on inspection because the whole swivel hub will appear to move in relation to the suspension arms as the wheel is rocked. If this is the case, the balljoints should be adjusted, or if badly worn, renewed as described in Section 6.

Suspension arm mountings

6 Check for wear of the lower arm inner mounting bushes where the arm is bolted to the subframe. If the bushes are worn, the arm will appear to move in and out as the wheel is rocked.

7 The upper arm inner roller bearings cannot be inspected without partially dismantling the suspension because the rubber cone spring or displacer unit holds the arm in tension and any wear will not be evident. It can be removed for closer inspection if required as described in Section 9; however, wear of the upper arm and its bearings is uncommon.

8 With the brakes still firmly applied, try to rotate the wheel back and forth. If any movement is now felt, examine the tie bar between the lower suspension arm and subframe for wear or deterioration of the rubber bushes.

4 Front swivel hub - removal and refitting

- 1 Remove the wheel trim and slacken the roadwheel retaining nuts
- 2 Extract the split pin and then undo and remove the driveshaft retaining nut and thrust collar (photo).
- 3 Working under the wheel arch, undo and remove the single retaining screw and lift out the upper suspension arm rebound rubber. Insert a solid packing piece of approximately the same thickness in its place.
- 4 Jack up the front of the car and support it on axle stands placed under the subframe. Remove the front roadwheel.
- 5 On disc brake models, undo and remove the brake caliper retaining bolts. Lift off the caliper complete with brake pads, and tie it out of the way from a convenient place under the wheel arch. On models fitted with drum brakes, clamp the flexible brake hose with a proprietary brake hose clamp or a self-gripping wrench with its jaws suitably protected. Now slacken the brake hose union, at the wheel cylinder by half a turn.
- 6 Undo and remove the steering tie-rod outer balljoint retaining nut and then separate the taper of the balljoint shank from the steering arm, using a universal balljoint separator (photo). If a separator is not available, refit the retaining nut two turns and then firmly strike the end of the steering arm with a few sharp blows, using a medium hammer. When the shock has freed the taper, remove the retaining nut and lift off the balljoint.
- 7 Next undo and remove the nuts securing the upper and lower swivel hub balljoints to the suspension arms (photo), and release the balljoint shank tapers from the suspension arms, using the procedure described in the previous paragraph.
- 8 Carefully lift the swivel hub assembly off the two suspension arms. At the same time, tap the centre of the driveshaft, using a soft-faced mallet, until the driveshaft can be withdrawn from the rear of the swivel hub assembly.
- 9 On disc brake models, withdraw the swivel hub assembly and then lift off the driving flange and disc. On models fitted with drum brakes, support the flexible brake hose to avoid stretching it and then rotate the complete swivel hub assembly anti-clockwise to unscrew it from the hose (photo). The hub can now be lifted away and the end of the brake hose protected to prevent dirt ingress. Take care not to lose the copper sealing washer from the end of the hose as the hose is removed.
- 10 Refitting the swivel hub assembly is the reverse sequence to removal, bearing in mind the following points:

- (a) Ensure that the flexible brake hose is not twisted when refitting the swivel hub to models equipped with drum brakes, and bleed the hydraulic system at the appropriate wheel on completion of the reassembly
- (b) Tighten all retaining nuts and bolts to the specified torque
- (c) Finally, tighten the driveshaft retaining nut when the vehicle has been lowered to the ground (photo)

5 Front hub bearings - removal and refitting

Drum brake models

- 1 Remove the swivel hub assembly from the car as described in the previous Section.
- 2 With the assembly on the bench, slacken the brake adjusters, remove the two brake drum retaining screws and lift off the drum. If it is light, tap it gently using a soft-faced mallet.
- 3 Arrange two robust wooden blocks approximately 10 in (250 mm) high, on the bench, far enough apart for the drive flange to lie freely between them, with the brake shoes resting on the top of the blocks. Using a tube or drift of suitable diameter, tap the drive flange out of the hub. It is likely that the inner race of the outer bearing together with the oil seal and the outer bearing distance piece will come away with the flange. If this happens, carefully remove these items from the flange with the aid of a puller.
- 4 Now undo and remove the four bolts securing the brake backplate to the swivel hub and lift off the backplate with brake shoes still in position.

- 1 Swivel hub
- 2 Driveshaft
- 3 Water shield
- 4 Inner oil seal
- 5 Oil seal spacer

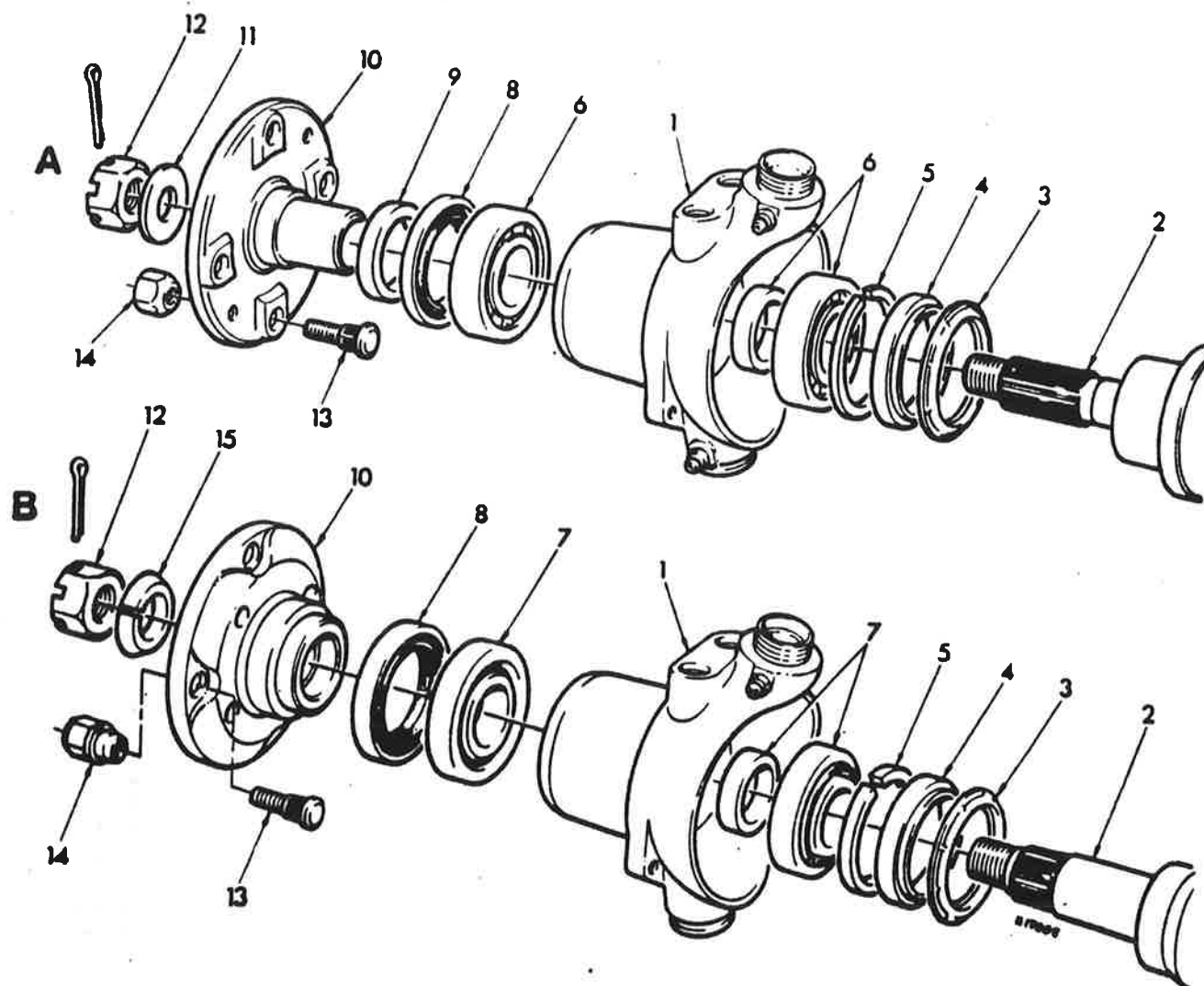
A Drum brake models

- 6 Ball bearing and spacer set
- 7 Taper roller bearing nut and spacer set

B Disc brake models

- 8 Outer oil seal
- 9 Distance ring
- 10 Driving flange
- 11 Thrust washer

- 12 Castorated hub nut
- 13 Wheel stud
- 14 Wheel nut
- 15 Thrust washer



5 Clean away any surplus grease from the centre of the hub between the bearings, and then prise out the two oil seals using a screwdriver. Note that there is a spacer fitted between the rear oil seal and the bearing outer race.

6 Using a tube or drift of suitable diameter tap out the bearing inner races away from the centre of the hub. Take care not to lose the balls which will be dislodged as the inner races are released, and recover the spacer fitted between the two bearings.

7 Firmly support the swivel hub in a vice and drift out the two bearing outer races from each side of the hub.

8 Clean the bearings and swivel hub thoroughly in petrol or paraffin and dry with a lint-free rag. Remove any burrs or score marks from the hub bore with a fine file or scraper.

9 Examine carefully the bearing inner and outer races, the balls and ball cage for pitting, scoring or cracks, and if at all suspect renew the bearings. It will also be necessary to renew the oil seals as they will have been damaged during removal.

10 If the old bearings are in a satisfactory condition and are to be re-used, reassemble the balls to the ball cage, place it in the outer race and then press the inner race into position.

11 Before refitting the bearings to the hub, pack them thoroughly with a high melting-point grease. Do not fill the space between the bearings in the swivel hub with grease.

12 Place one of the bearings in position on the hub with the word THRUST or the markings stamped on the outer race facing toward the centre of the hub. Note: Certain later models are fitted with bearings having lengthened inner races which butt against each other. On these assemblies the bearing spacer is omitted and the bearings are fitted with the identification markings facing away from the centre of the hub. Using a tube of suitable diameter or a drift, press the outer race into the hub between the vice jaws or very carefully tap it into position. Ensure that the outer race does not tip slightly and bind as it is being fitted. If this happens, the outer race will crack so take great care to keep it square. Ensure that the bearing seats firmly against the

shoulder in the centre of the hub when fitted.

13 Now place the bearing spacer in position and repeat the previous paragraph for the second bearing.

14 Tap a new oil seal into place over the outer bearing using a block of wood to keep it square. Note that both oil seals are fitted with their sealing lips inwards and that the inner seal has a second lip on its inner circumference.

15 Refit the split spacer against the inner bearing and tap in the inner oil seal using a tube of suitable diameter.

16 Refit the brake backplate to the swivel hub and secure with the four retaining bolts, tightened to the specified torque.

17 Place the distance piece over the driving flange with the chamfer towards the flange. With the inner race of the inner bearing suitably supported, tap the driving flange into the bearings. Ensure that the flange enters the distance piece between the two bearings squarely, otherwise the bearing inner race will be dislodged with possible damage to the oil seal.

18 The brake drum and its retaining screws can now be refitted and the complete swivel hub assembly refitted to the car as described in the previous Section. When refitting the hub assembly, ensure that the water shield on the driveshaft is packed with grease around its sealing face and positioned 0.25 in (6.35 mm) from the end of the shaft.

Disc brake models

- 19 Remove the swivel hub assembly from the car as described in the previous Section.
- 20 With the assembly on the bench, lift off the tapered collar (fitted to certain Cooper S models) from the front of the outer bearing and then prise out the two oil seals using a screwdriver. Now lift out the inner bearing spacer, the two taper roller bearings and the distance piece.
- 21 Using a suitable drift, tap out the two bearing outer races from each side of the hub.
- 22 Thoroughly clean the bearings and swivel hub in petrol or paraffin and dry with a lint-free rag. Remove any burrs or score marks from the hub bore with a fine file or scraper.
- 23 Carefully examine the bearing outer races, the rollers and roller cages for pitting, scoring, or cracks, and if at all suspect renew the bearings. It will also be necessary to renew the oil seals as they will have been damaged during removal.
- 24 Begin reassembly by refitting the bearing outer races to the hub, with their smaller diameter toward the hub centre. Press the outer races into the hub using a tube of suitable diameter and a vice, or very carefully tap them into place using a brass drift. Ensure that the race does not tip slightly and bind as it is being installed. If this happens, the outer race will crack so take great care to keep it square. The outer race must seat firmly against the shoulder in the centre of the hub when fitted.
- 25 Pack the two roller bearings with a high melting-point grease and position them in their outer races with the distance piece in between.
- 26 Install the two new oil seals with their sealing lips inwards and use a tube of suitable diameter to tap them fully home. Note that there is a spacer fitted behind the inner oil seal and that the inner seal also has a second lip on its inner circumference.
- 27 Position the tapered collar over the outer bearing (where fitted), and refit the swivel hub assembly to the car as described in the previous Section. When refitting the swivel hub, ensure that the water shield on the driveshaft is packed with grease around its sealing face and positioned 0.25 in (6.35 mm) from the end of the shaft.

6 Front swivel hub balljoints - removal and refitting

- 1 Remove the swivel hub assembly from the car as described in Section 4 and mount it firmly in a vice, with the balljoint requiring attention uppermost.
- 2 Remove the rubber dust cover, tap back the lockwasher, and using a large socket or box spanner, undo and remove the domed retaining nut.
- 3 Lift off the ball-pin, ball-pin seat, and if working on the lower balljoint assembly, the ball-pin seat tension spring.
- 4 Lift off the shims located over the lockwasher and then remove the grease nipple and lift away the lockwasher.
- 5 Clean all the components thoroughly and then carefully inspect the ball-pin, ball-pin seat and domed nut for pitting, score marks or corrosion.
- 6 If the components are worn, a balljoint repair kit, consisting of new ball-pin, ball-pin seat, spring, shims, lockwasher and retaining nut should be obtained from your local dealer. If the old parts are in a satisfactory condition they may be re-used and any slackness that may have been previously felt in the joint can be taken up by adjustment of the shim sizes.
- 7 Before final reassembly of the balljoint, it is necessary to determine the correct number and size of shims required to provide a snug fit of the ball-pin with the domed retaining nut fully tightened. This is done in the following way.
- 8 Place the lockwasher in position and refit the grease nipple. Now place all the available shims over the lockwasher and then refit the ball-pin seat, the ball-pin and domed retaining nut. Assemble all the parts without grease at this stage, and if working on the lower balljoint do not fit the ball-pin seat tension spring.
- 9 Fully tighten the retaining nut and then check the movement of the ball-pin. With all the available shims fitted, it should be quite slack with considerable up-and-down movement.
- 10 Using a trial and error process, remove the retaining nut, take out a shim and then refit the nut and recheck the movement of the ball pin. Continue doing this until it is possible to move the ball-pin in all directions, without binding, but with slight resistance to movement being felt.
- 11 Dismantle the joint again, lubricate all the parts with general purpose grease and finally reassemble the joint. If working on the lower assembly, the ball-pin seat tension spring should now be fitted (photos).
- 12 Tighten the retaining nut fully, check that the ball-pin still moves freely with only slight resistance, and if satisfactory bend up the lockwasher to secure the retaining nut (photos).
- 13 Refit the rubber dust cover to the ball-joint (photo) and then refit the swivel hub to the car as described in Section 4.

7 Front lower suspension arm - removal and refitting

- 1 Remove the wheel trim and slacken the roadwheel retaining nuts.
- 2 Working under the wheel arch, undo and remove the single retaining screw and lift out the upper suspension arm rebound rubber. Insert a solid packing piece of approximately the same thickness in its place.
- 3 Jack up the front of the car and support it on axle stands placed under the subframe. Remove the front roadwheel.
- 4 Undo and remove the nut and washer securing the swivel hub balljoint to the lower suspension arm. Release the taper of the balljoint shank using a universal balljoint separator. Alternatively refit the nut two turns to protect the threads, and then firmly strike the end of the suspension arm, using a few sharp blows from a medium hammer until the taper is released. Now remove the retaining nut.
- 5 Move the lower suspension arm downwards to disengage the balljoint shank.
- 6 Next undo and remove the nut and bolt securing the tie-bar to the suspension arm and then move the tie-bar sideways out of the way.
- 7 Undo and remove the nut and washer from the rear of the pivot bolt securing the lower suspension arm to the subframe (photo).
- 8 Lever the pivot bolt forward and off the subframe and then lift out the lower suspension arm.
- 9 Lift the rubber bushes off the suspension arm and inspect them carefully for swelling, cracks or deterioration of the rubber. Also inspect the pivot bolt for wear or damage. Renew any worn components.
- 10 Refitting the lower suspension arm is the reverse sequence to removal, bearing in mind the following points:
 - (a) Ensure that the flat of the pivot bolt head locates under the tab on the subframe
 - (b) Do not fully tighten the pivot bolt retaining nut until the car has been lowered to the ground
 - (c) Ensure that all nuts and bolts are tightened to the specified torque.

8 Front suspension tie-bar - removal and refitting

- 1 Remove the wheel trim, slacken the roadwheel retaining nuts, jack up the front of the car and support it on axle stands placed under the subframe. Remove the roadwheel.
- 2 Undo and remove the locknut securing the front end of the tie-bar to the subframe (photo). Now lift off the thrust washer and the rubber thrust bush.
- 3 Undo and remove the bolt, nut and spring washer securing the other end of the tie-bar to the lower suspension arm. Disengage the tie-bar from the suspension arm and subframe and then lift it off the car. Slide the remaining rubber thrust bush off the tie-bar end.
- 4 Carefully inspect the tie-bar thrust bushes for swelling, compression damage or deterioration of the rubber and check the tie-bar for straightness and elongation of the mounting bolt holes. Also check the securing bolt for wear of its shank. If any of the components are defective a new tie-bar kit should be obtained from your local dealer.
- 5 Refitting the tie-bar is the straightforward reverse of the removal sequence.

9 Front upper suspension arm - removal and refitting

If working on cars equipped with rubber cone suspension, special tool 18G5748 will be required to compress the rubber cone.

- 1 Remove the wheel trim, slacken the roadwheel retaining nuts and jack up the front of the car. Place axle stands under the subframe and then remove the roadwheel.
- 2 Undo and remove the nut and spring washer securing the swivel hub balljoint to the upper suspension arm.
- 3 Using a universal balljoint separator, release the taper of the balljoint shank from the upper suspension arm. Alternatively, refit the nut two turns to protect the threads and then sharply strike the end of the suspension arm using a medium hammer until the taper is released. Now remove the nut and disengage the balljoint shank from the arm.
- 4 The procedure now varies slightly depending upon whether Hydrolastic or rubber cone suspension is fitted.

Rubber cone suspension models

10 Undo and remove the nut and flat washer securing the shock absorber to the upper suspension arm. Now move the shock absorber sideways until it is clear of the mounting stud.

11 Working in the engine compartment, undo and remove the two bolts (or nuts) securing the subframe tower to the bulkhead crossmember. Lift off the locking plate and then refit the bolts (or nuts). On later models undo and remove the large hexagon-headed plug that is used instead of the two bolts or nuts (photo).

12 It is now necessary to compress the rubber cone spring using service tool 18G574B as follows. Position the body of the tool over the two subframe tower retaining bolts (or nuts) and turn the tool centre screw, nine complete turns, to engage the threads in the rubber cone. Now turn the ratchet handle of the tool until it contacts the tool body. Hold the centre screw and turn the ratchet handle clockwise until all tension is removed from the strut which interconnects the rubber cone and the upper suspension arm.

13 Undo and remove the single retaining screw and lift out the upper suspension arm rebound rubber.

refitment of the upper arm.

21 Refitting the upper suspension arm is the reverse sequence to removal bearing in mind the following points.

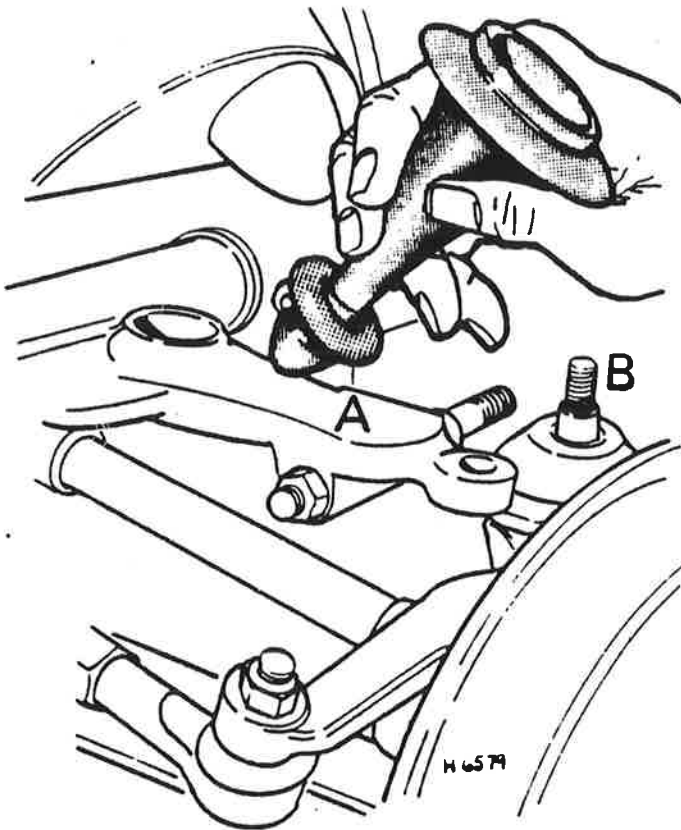
- Lubricate all the parts with general purpose grease during reassembly
- If the original knuckle joint is being refitted, pack the cup seal with Dextragrease Super GP available from BL dealers
- Ensure that the dust cover is correctly located over the knuckle joint cup, when refitting, otherwise dirt and road grit will enter the joint
- Ensure that all nuts and bolts are tightened to the specified torque

10 Front suspension rubber cone spring - removal and refitting

- Begin by removing the front upper suspension arm as described in the previous Section.
- The service tool 18G574B that is used to compress the rubber cone must now be released by turning the ratchet anti-clockwise until all tension in the rubber cone is released.
- Now unscrew the service tool and withdraw the rubber cone from its location in the subframe.
- Refitting is the reverse sequence to removal.

12 Front shock absorber (rubber cone suspension models) - removal and refitting

- Remove the wheel trim, slacken the roadwheel retaining nuts and jack up the front of the car. Place axle stands under the subframe and remove the roadwheel.
- Undo and remove the shock absorber upper and lower retaining nut and washers and lift off the shock absorber (photos).
- Examine the shock absorber for leaks or damage of the outer casing. Hold the shock absorber upright and fully compress and extend it six times. Now slowly extend and compress it again. If 'dead' areas are apparent, if there is free travel when changing direction, or if the unit is damaged or leaking, it must be renewed.
- Refitting is the reverse sequence to removal. Hold the shock absorber in an upright position and fully compress and extend it six times to expel any air before fitting.



Suspension strut removal - rubber cone spring suspension (Sec 9)

14 Lift up the rubber dust cover around the knuckle joint located at the base of the spring strut.

15 Withdraw the ball end of the knuckle joint from its seat in the upper arm and then lift out the spring strut assembly from the rubber cone. If it is tight, prise it out using a screwdriver.

16 Undo and remove the nut and spring washer from each end of the upper arm pivot shaft.

17 Undo and remove the two nuts, bolts and spring washers securing the pivot shaft thrust collar retaining plate, thrust collar and seal and then withdraw the pivot shaft forward and out of the upper suspension arm.

18 Now take out the rear thrust collar and seal and then manipulate the upper arm out of the subframe.

19 With the upper arm removed, inspect the pivot shaft and the needle roller bearings for wear, and if necessary renew them. The needle roller bearings can be removed from the upper arm by tapping them out of each side using a long thin drift inserted through the other side. Press in new bearings using a vice, or drift them in using a tube of suitable diameter or a shouldered mandrel. Ensure that the marked ends of the bearings face outwards.

20 Also carefully inspect the ball end of the knuckle joint and its plastic cup seat in the upper arm. If the ball end is corroded, worn or pitted or if the plastic cup seat is cracked or worn, renew the joint. The plastic cup seat can be removed by prising out with a screwdriver. The new knuckle joint will be supplied fully assembled and the plastic cup seat can be fitted to the arm with the joint in this condition. The rubber dust cover and ball end will then have to be removed to allow

13 Steering tie-rod outer balljoint - removal and refitting

Note: If any side movement is present in the outer balljoint, it will be necessary to renew the complete joint as it cannot be dismantled or repaired.

- 1 Withdraw the wheel arm, slacken the roadwheel retaining nuts and jack up the front of the car. Position axle stands under the subframe and remove the roadwheel.
- 2 Slacken the locknut on the steering tie-rod a quarter of a turn.
- 3 Undo and remove the balljoint shank locknut and separate the taper of the shank using a universal balljoint separator. Alternatively, refit the nut two turns and sharply strike the end of the steering arm with a medium hammer. When the taper is released, remove the nut and lift the balljoint off the steering arm.
- 4 Hold the steering tie-rod with a self-gripping wrench and unscrew the balljoint from the tie-rod.
- 5 Refitting is the reverse sequence to removal. It will be necessary to have the front wheel alignment reset by your local dealer on completion of this operation.

14 Steering rack rubber gaiter - removal and refitting

Note: Should the rubber gaiters at each end of the steering rack become damaged, split or show any other signs of deterioration, they must be renewed immediately, otherwise the lubricant will be lost from the rack unit, and water and road grit will enter the assembly, causing rapid internal wear.

- 1 Begin by removing the steering tie-rod outer balljoint as described in the previous Section.
- 2 Mark the position of the locknut on the tie-rod so that it can be refitted in the same place and then unscrew it from the tie-rod.
- 3 Place a suitable container beneath the rubber gaiter to catch any oil that may spill from the rack (early models only).
- 4 Now undo and remove the two retaining clips or cut off the wire clips and then slide the gaiter off the rack housing and tie-rod.
- 5 Refitting the rubber gaiter is the reverse sequence to removal. With the gaiter in position refill the rack with the appropriate lubricant as described in Section 31 before refitting the retaining clips or wire.

15 Rack-and-pinion steering gear - dismantling and reassembly

Note: It is not possible to make any adjustments to the rack-and-pinion steering gear unless it is removed from the car. With it removed, it is as well to dismantle and examine the whole unit before making any adjustments. This will save having to remove the unit again later because of initial non-detection of wear. If wear is very bad it is advisable to fit an exchange reconditioned unit. It must be pointed out that dismantling and reassembly of the steering gear is rather involved and may be beyond the scope of the average DIY enthusiast. Read through the complete Section first to familiarise yourself with the procedure and ensure that the necessary tools and equipment are available before proceeding.

- 1 Mark the position of the locknuts on the tie-rods so that the toe-out is approximately correct on reassembly.
- 2 Slacken the locknuts and, gripping the tie-rods firmly with a self-gripping wrench, unscrew the tie-rod balljoints. Now unscrew the locknuts also.
- 3 If the steering gear is fitted with black rubber gaiters, it will be filled with oil. If it is fitted with transparent rubber gaiters it will be filled with grease. If working on the oil-filled type ensure that a container is available before proceeding further.
- 4 Unscrew the clips or cut the wires that secure the rubber gaiters to the rack housing and tie-rods. Carefully remove the gaiters, and on oil-filled types, drain the oil from the housing.
- 5 On inspection it will be seen that the ball housing at the inner end of each tie-rod is secured to the rack by a locking collar. The locking collar is then peened into a groove in the ball housing on early models, or retained by a grooved pin on later types.
- 6 On early models punch or prise up the peening and then unlock the ball housing and collar using BL special tool No 18G1278. Alternatively, use two small Stilson wrenches, but take care not to damage the housing and collar faces.
- 7 On later models, it is first necessary to drill out the grooved pin. To do this use a 0.156 in (3.97 mm) drill, and drill to a depth of 1.6 in (4 mm). Now unlock the ball housing and collar using the procedure described in the previous paragraph.
- 8 Unscrew the ball housing and then lift off the tie-rod, ball seat and spring from the end of the rack. The locking collar can now be removed.

9 Repeat this procedure for the other tie-rod, noting that if these components are to be re-used they must be refitted to the same side of the rack from which they were removed.

10 At the base of the pinion housing, undo and remove the two rack damper cover bolts and spring washers. Lift off the damper cover together with its shims, and then withdraw the thrust spring, yoke, and O-ring seal from the rack housing.

11 Undo and remove the two bolts and lift off the pinion end cover together with its gasket and shims.

12 Carefully push out the pinion and lower bearing.

13 Withdraw the rack from the pinion end of the housing. **Note:** If the rack is withdrawn from the plain end of the housing the rack teeth will damage the support bush.

14 Extract the pinion upper bearing from the rack housing, followed by the oil seal.

15 From the plain end of the rack housing, undo and remove the small retaining screw and then withdraw the rack support bush. **Note:** On some models a rivet is used instead of a screw and this must be carefully drilled out.

16 Thoroughly clean all the parts with paraffin. Carefully inspect the teeth on the rack and the pinion for chipping, roughness, uneven wear, hollows, or fractures. Renew both components if either is badly worn.

17 Carefully inspect the component parts of the inner balljoints for wear or ridging, and renew as necessary.

18 The outer tie-rod joints cannot be dismantled, and if worn must be renewed as a complete assembly. Examine the component parts of the damper and renew any that show signs of wear. Pay particular attention to the oil seals; as a precautionary measure it is always best to renew them.

19 The rubber gaiters are particularly prone to damage and it is advisable to renew them as a matter of course.

20 Begin reassembly by refitting the rack support bush to the plain end of the rack housing. If the original bush is being refitted, align the screw holes in the bush and rack housing.

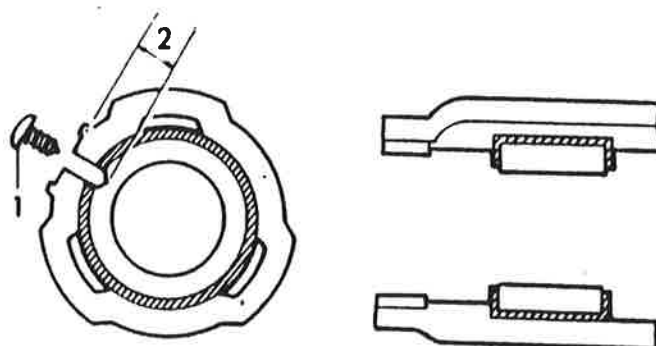
21 If a new rack support bush is being fitted, drill a 0.109 in (2.7 mm) hole, into the bush, through the retaining screw hole, to a depth of 0.142 in (10.5 mm).

22 Apply jointing compound to the threads of the support bush retaining screw. Refit and tighten the screw, then check that the bush bore has not distorted. Make sure that the screw does not break right through the bush into the bore.

23 Lubricate the upper pinion bearing and fit it into place in the housing. Use the pinion to push the bearing fully into position.

24 Insert the rack into the housing from the pinion end and then refit the pinion, splined end first.

25 Lubricate the lower pinion bearing and place it in position on the lower end of the pinion shaft.



Refitting the rack support bush

- 1 Retaining screw 2 Drill to a depth of 0.142 in (10.5 mm)

26 Refit the preload shims, using additional shims if necessary, until the shim pack stands proud of the pinion housing.

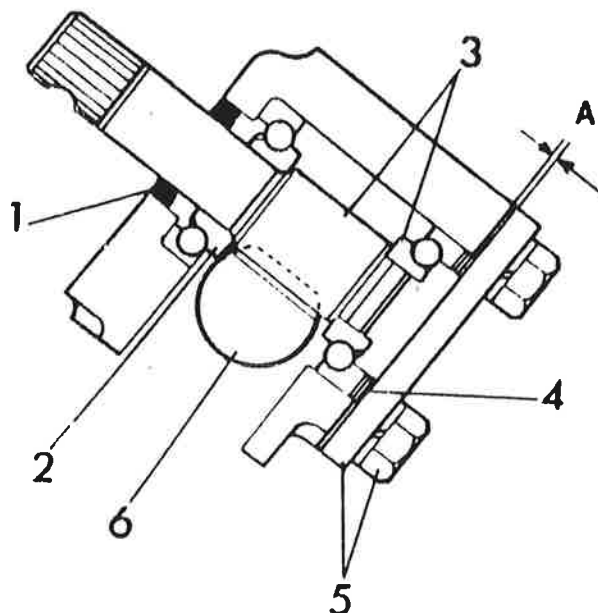
27 Refit the end cover and retaining bolts and tighten the bolts lightly and evenly until all pinion endfloat is taken up.

28 Using feeler gauges, measure the gap between the end cover and the pinion housing. Now take off the end cover and remove the appropriate number of shims until a gap of 0.011 to 0.013 in (0.28 to 0.33 mm) still remains.

29 With the correct shims in position, refit the end cover using a new gasket, and with the bolt threads lightly coated in jointing compound, tighten them fully.

30 Place a new oil seal over the pinion and insert it into the housing. The seal must be fitted with the seal lips toward the pinion bearing and with its top face flush with the end of the housing.

- 31 Lubricate the rack damper yoke and slide it into the housing. Refit the cover plate and retaining bolts, but do not fit the spring at this stage.
- 32 Tighten the cover plate bolts evenly until the rack is lightly clamped by the yoke. Turn the pinion two or three turns in either direction and check that the rack is not binding in any position. If necessary, slacken the cover plate bolts slightly to achieve this.
- 33 Take a feeler gauge measurement of the gap between the damper cover plate and the housing and then remove the cover plate.
- 34 Fit a new O-ring seal to the damper yoke and place the spring in position. Add shims equal to the gap measured between the cover plate and housing plus 0.002 to 0.005 in (0.05 to 0.13 mm). Refit the cover plate and tighten down the bolts. Turn the pinion through 180° in each direction from the centre and make sure there is no tightness or binding.
- 35 Screw one of the tie-rod ball housing locking collars onto the rack as far as it will go. If the original components are being re-used, make sure that the collar is being refitted to the end of the rack from which it was removed.
- 36 Lubricate the thrust spring and ball seat and then locate them in the end of the rack. Lubricate the tie-rod balljoint and the ball housing and refit these components.
- 37 Tighten the ball housing until the tie-rod ball is clamped and will not move without binding.
- 38 Now slacken the ball housing slightly (approximately $\frac{1}{4}$ of a turn) until the tie-rod is just free to move. Note: The tie-rod will still feel stiff to move because of the tension of the thrust spring, but there should be no trace of binding or endfloat.
- 39 Hold the ball housing in this position and screw the locking collar into contact with it. Tighten the locking collar using the same procedure used for removal, making sure that the position of the ball



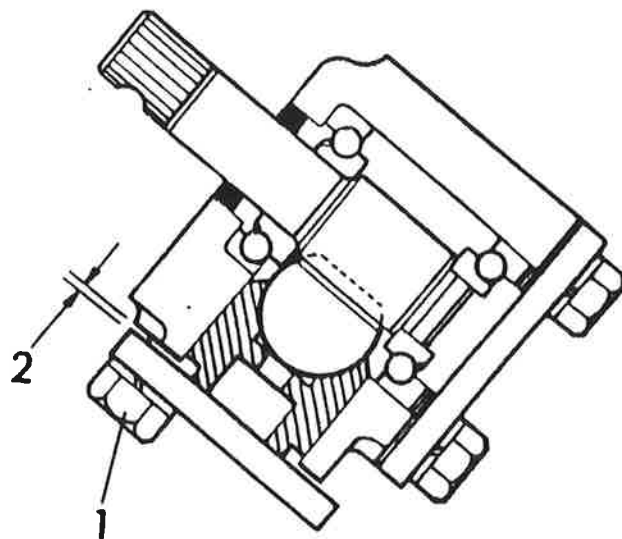
Reassembly of the pinion housing

- | | |
|----------------------------|--------------------------------|
| 1 Oil seal | 5 End cover and retaining bolt |
| 2 Upper pinion bearing | 6 Rack |
| 3 Pinion and lower bearing | A = 0.011 to 0.013 in |
| 4 Preload shims | (0.28 to 0.33 mm) |

housing does not alter.

- 40 If working on early type racks, peen the edge of the locking collar into the groove of the ball housing using a small punch.
- 41 On later type racks, protect the rack housing from swarf and drill a 0.156 in (3.97 mm) diameter hole, 0.312 in (8.0 mm) deep, between the locking collar and ball housing. The hole must be drilled on the side facing away from the rack teeth and at least 90° away from any previous hole. Note: The rack may be drilled a maximum of three times only. With the hole drilled, drive in a new grooved pin and retain it by peening over the edge of the hole.
- 42 Repeat the above procedure for the other tie-rod and ball housing.
- 43 Refit the rubber gaiter and retaining clips or wire to the plain end of the rack assembly.
- 44 Stand the assembly upright and fill it through the pinion end of the housing with the correct quantity and type of lubricant as shown in the Specifications.

- 45 Refit the remaining rubber gaiter and its retaining clips or wire.
- 46 If the original tie-rods have been refitted, screw on the tie-rod outer balljoint locknuts to the positions marked during dismantling. Now screw on the balljoints and tighten the locknuts.
- 47 If new tie-rods have been fitted, screw on the locknuts and then screw on the balljoints, by an equal amount each side, until the dimension between their centres is as shown in the Specifications. Tighten the locknuts.
- 48 The steering gear can now be refitted to the car as described in Section 29. It will be necessary to have the front wheel alignment checked and reset as described in Section 32 after refitting.



Reassembly of the rack damper

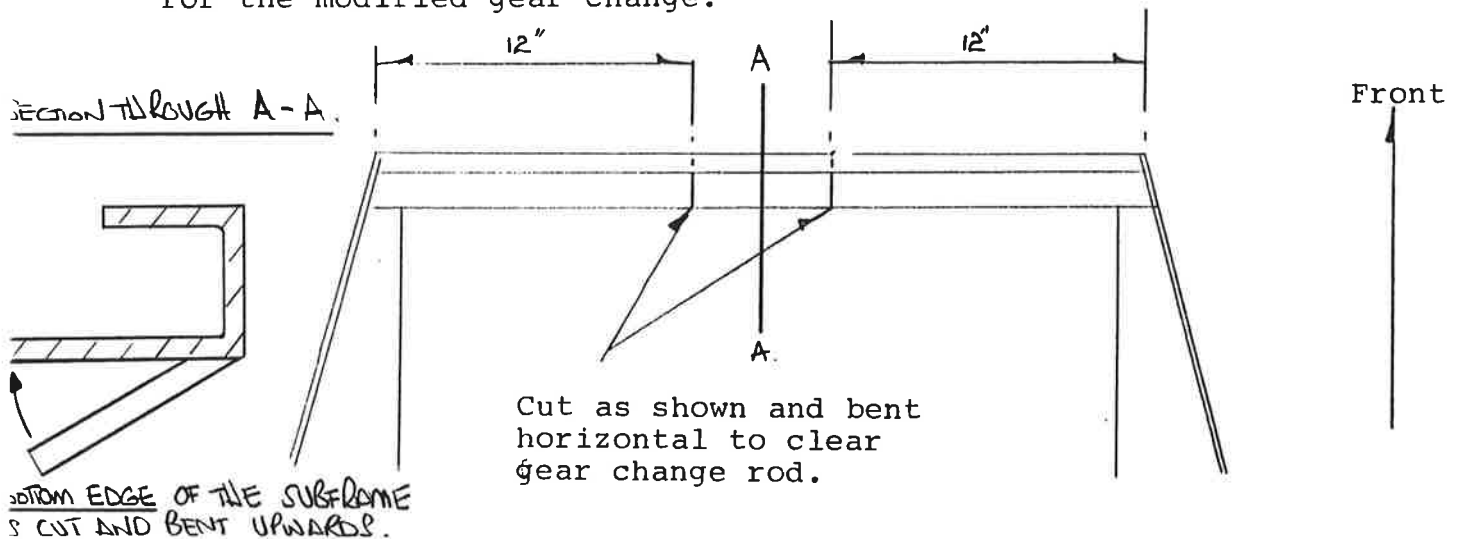
- 1 Damper cover plate retaining bolts
- 2 Measured gap plus 0.002 to 0.005 in (0.05 to 0.13 mm) - see text

16 Rack-and-pinion steering gear - lubrication

- 1 The steering gear is filled with lubricant during manufacture and then sealed. Additional lubricant will only be required in service if a leak develops, either from the rubber gaiters or from any of the joints, or if the steering gear has been dismantled.
- 2 The steering gear fitted to early models, identified by black rubber gaiters, is filled with oil. The equipment fitted to later models, identified by transparent rubber gaiters is filled with grease. The grade and quantity of lubricant for both types is given in the Specifications.
- 3 Should it be necessary to refill the rack, proceed as follows.
- 4 Jack up the driver's side of the car, suitably support it on stands, and remove the front roadwheel.
- 5 Centralise the steering gear so that the wheels are in the straight-ahead position.
- 6 Slacken the retaining clips or remove the wire securing the rubber gaiter to the rack housing and tie-rod. Slide the rubber gaiter down the tie-rod sufficiently to provide access.
- 7 Using an oil can or grease gun filled with the specified grade and quantity of lubricant, fill the rack housing.
- 8 Refit the rubber gaiter and secure it with the retaining clips or soft iron wire.
- 9 Turn the steering from lock to lock to distribute the lubricant, refit the roadwheel and lower the car to the ground.

REAR SUB-FRAME ASSEMBLY

The rear subframe used on the GTM is a front subframe from a Mini. It uses the four bolt fixing (4 x 3/8" UNF) pre face lift Mini subframe. It is used in the GTM with only the small modification shown below to give sufficient clearance for the modified gear change.



View from top of sub-frame

The subframe assembly is the same as that used on a standard Mini apart from the fitting of special tie rods and mounting plates as shown on drawing S109 (to lock up the rear end to stop it steering yet still allow adjustments at rear toe-in) and the fitting of modified Mini rear back plates S106 (to facilitate a separate mechanical handbrake).

The sub assembly complete with engine, gearbox, drive shafts, brakes etc. should be built up prior to fitting to the central tub.

The specific parts required for this sub assembly are detailed below:

a. Engine/gearbox unit

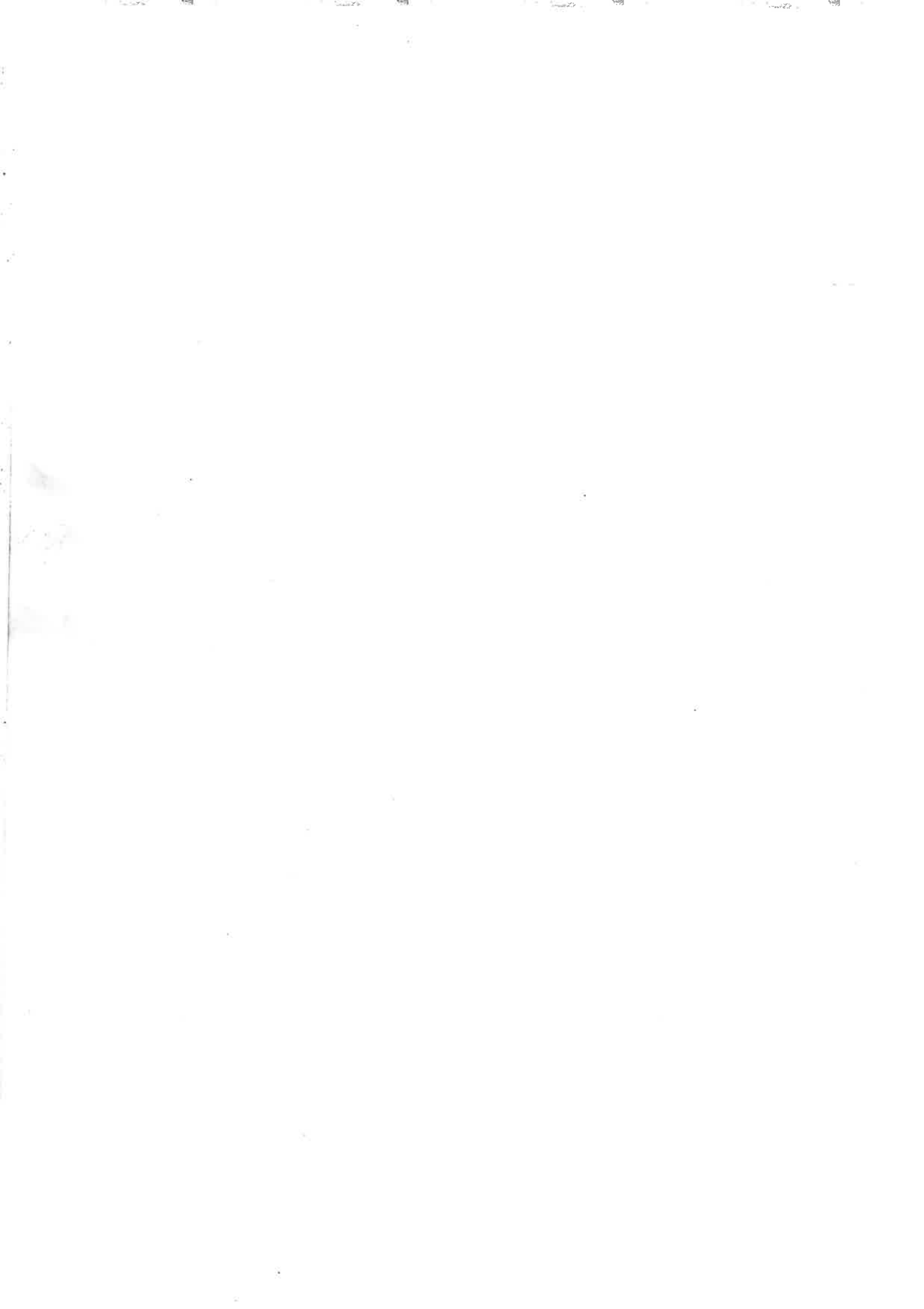
The GTM will take any "mini" type engine/gearbox unit but should the unit come from another vehicle other than a Mini (i.e. Metro , 1100 etc.) the engine mountings must be changed to standard Mini mountings prior to fitting to the Mini subframe. Only the relatively modern rod change gear box can be used on the GTM.

b. Hub assemblies

The hub assemblies used on the GTM must be from a Mini with drum brakes on the front wheels (i.e. disc brake hub assemblies cannot be used).

c. Brake drums

The brake drums used on the rear of the GTM must be the drums off a front of a Mini.



d. Brake back plates

The back plates used are Mini rear back plates modified as shown on drawing S106.

e. Brake shoes, cylinder springs etc.

The brake shoes, cylinder springs etc. must come from the rear of a Mini (i.e. front brake shoes cannot be used).

f. Drive shafts

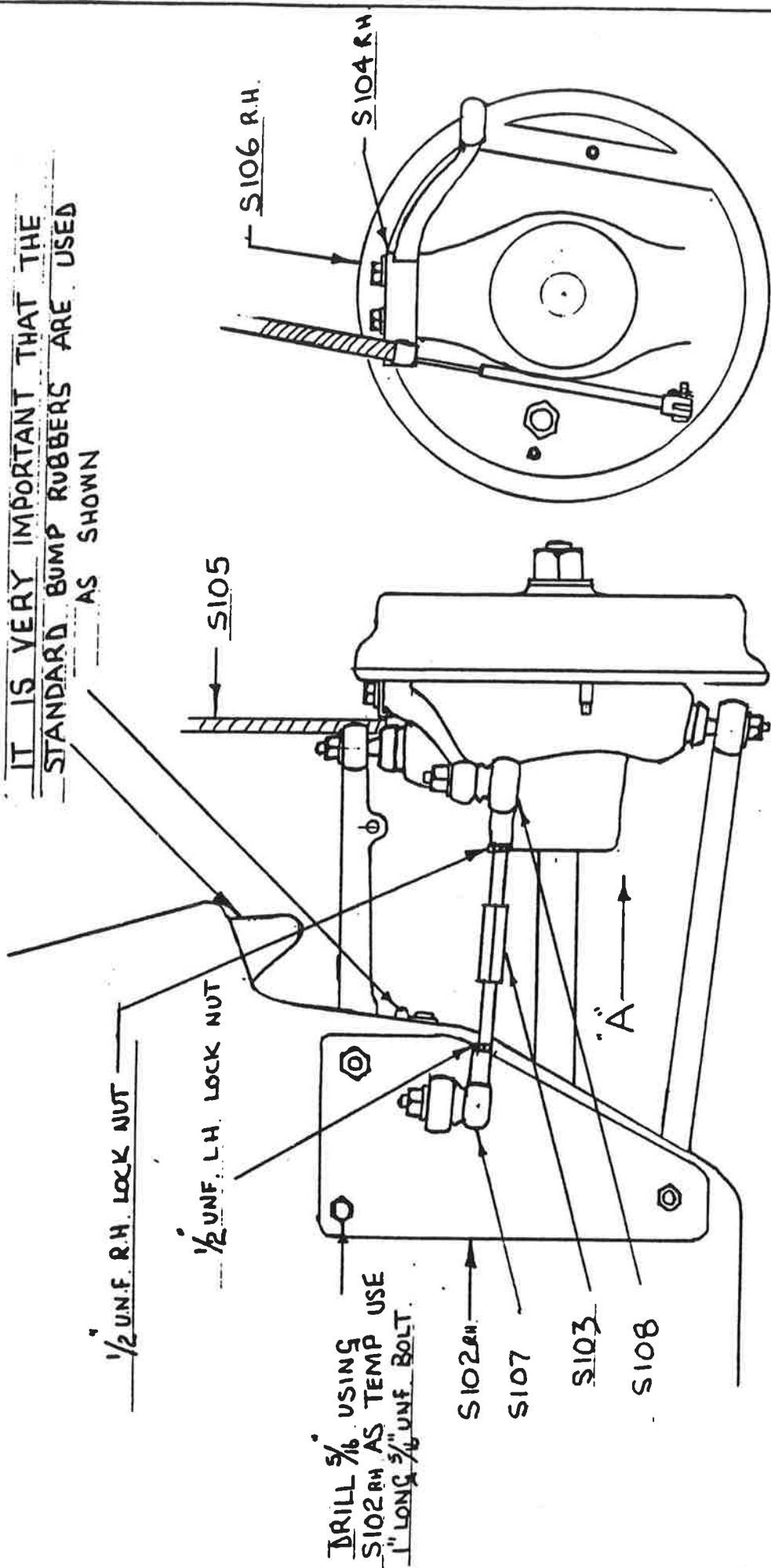
The drive shafts used must be from a drum braked Mini with suitable spines to fit the universal joint, pot joint arrangement on the engine being used.

Suggested assembly sequence

1. Clean subframe and check for rot/broken welds.
2. Modify front cross member as shown on drawing previously.
3. Paint subframe (Hammerite type paint has proved satisfactory).
4. Rossa only - fit shock absorber mounting brackets as described in chapter on front subframe.
5. Assemble front suspension arms top and bottom (refer to Hynes manual) with rubber springs and aluminium cones etc. Remember to fit the GTM suspension adjusters in place of the aluminium cones at this stage, should you chose to use them (highly recommended). It is important, if the car is to ride satisfactorily to use as new as rubber springs as possible as the rubber tends to age/workharden and this will result in a poor bumpy ride.
6. Attach the two special GTM inner track rod end location plates S102RH and S102LH to the subframe as shown on drawing S109. Use the plate as a template to drill the 5/16" D. hole.
7. Fit the hub assemblies to the suspension arms minus back plates, drums, steering arms etc. Pay particular attention to the condition at the top and bottom swivels. If in doubt replace with new ones. The wheel bearings must also be examined and replaced if worn.
8. Fit steering arms complete with GTM handbrake location brackets S104RH and S104LH as shown on drawing S109.
9. Fit tie-bars S103 complete with track rod ends between steering arms and GTM brackets attached to subframe. At this stage, make sure that there is full and sufficient adjustment available on the tie-rods and that the hexagon section of the tie-bars is in the middle of the track-rod ends. Tighten all nuts and bolts and check the assembly is "sound" by attempting to move the hub assemblies as if steering a car. It is best to set the suspension or the normal ride height (i.e. between the bump rubbers) before undertaking the above check.

10. Fit the modified rear back plates S106 to the hub assemblies as shown in drawing S109 and secure with a 3 x 5/16" UNF bolts and washers.
 11. Fit rear brake shoes, cylinders etc. to the back plates. It is advisable to fit the latest type of handbrake scissors EAU 5728/9 as these have a far greater leverage and have more efficiency than the older ones.
 12. The rest of the rear hub assemblies can now be completed as a standard drum braked Mini car. (refer to Hynes).
- NB It is extremely important that the standard bump rubbers are used to prevent over travel of the suspension and possible damage to the track rod ends.
13. The engine/gearbox drive shafts etc. can now be fitted to the subframe subassembly as in a standard Mini (refer to Hynes).
 14. The assembly is now ready to be fitted to the tub.

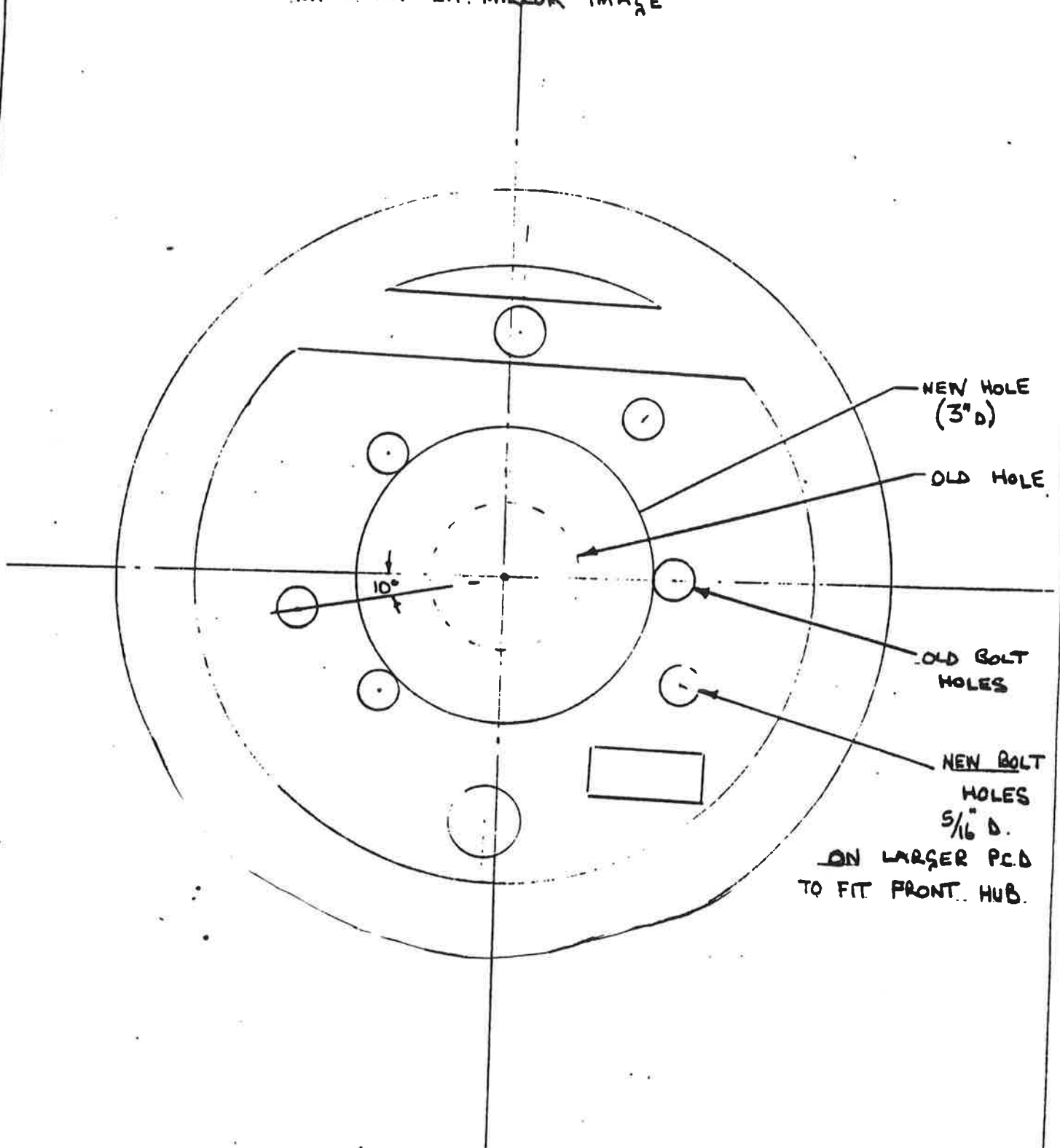
IT IS VERY IMPORTANT THAT THE
STANDARD BUMP RUBBERS ARE USED
AS SHOWN



REAR VIEW BACK RIGHT HAND CORNER

VIEW "A"

MODS TO REAR BRAKE PLATES
RH SHWN LH. MIRROR IMAGE



14.6.85.
 G.T.M

S 106

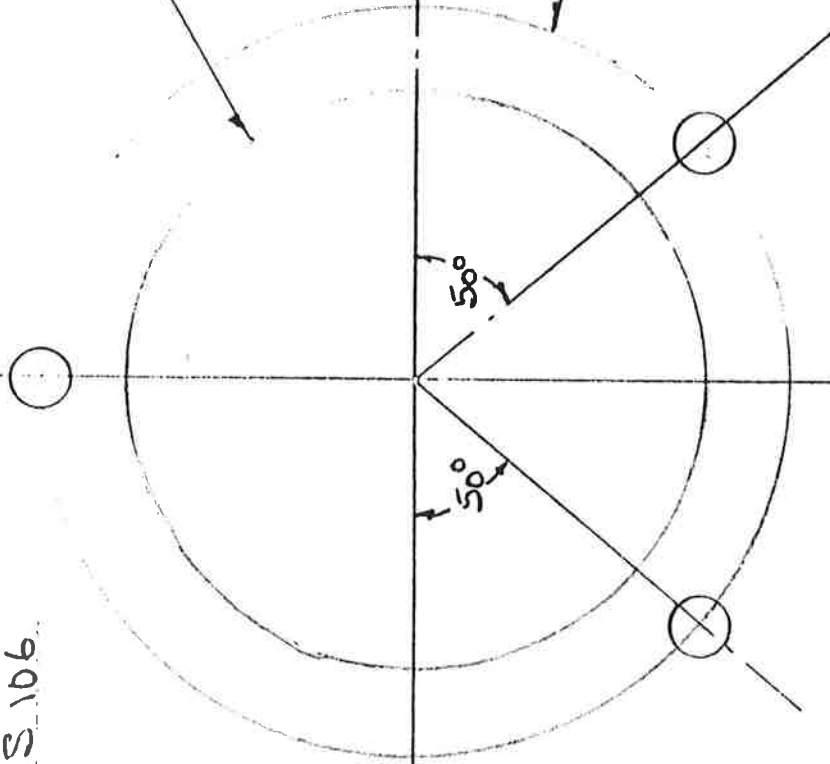
TEMP. FOR MODS TO REAR
BACK PLATES TO FIT FRONT
HUB ASS.

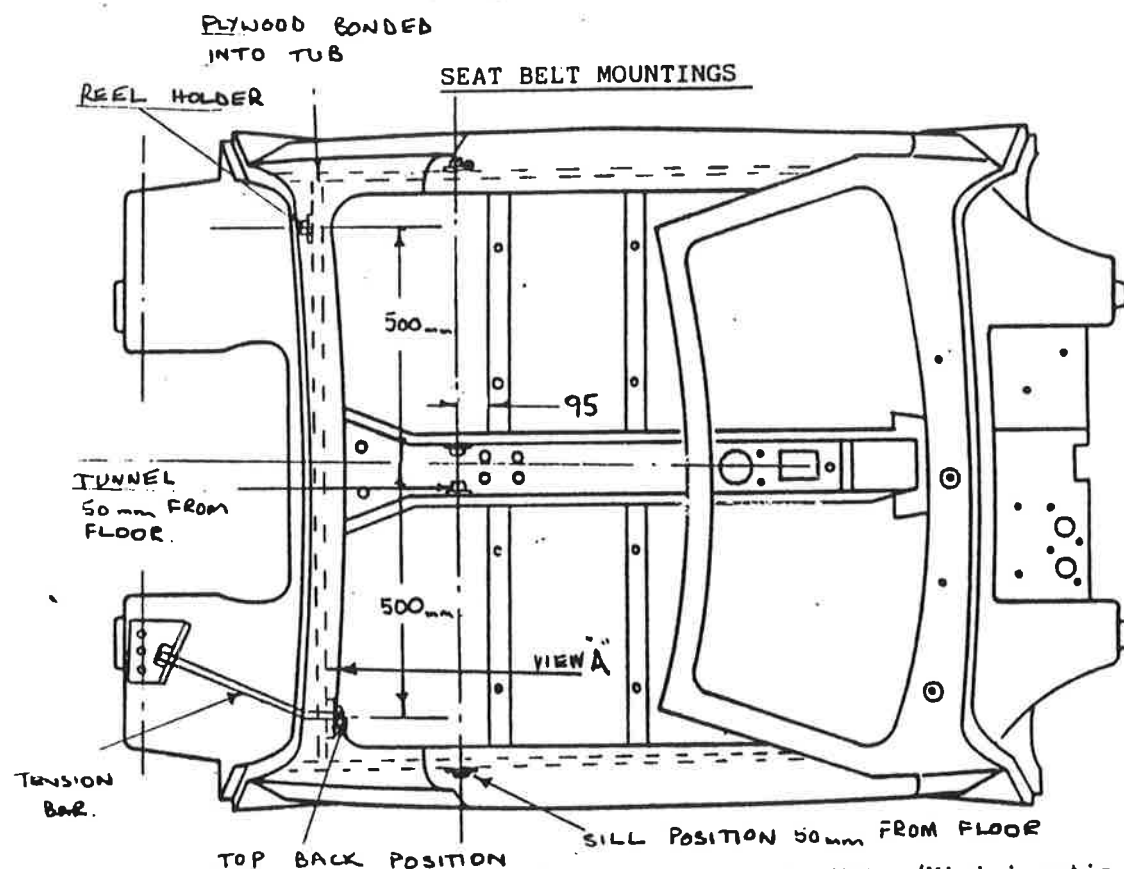
USE WITH DEC. S106.

3" D. CLR. HOLE

3 HOLES 5/16" D. CLR

ON 3 7/8" A.C.D.

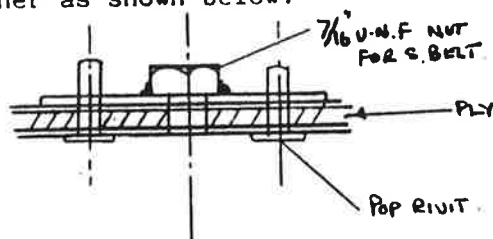




The seat belt mounting points are designed to enable Metro/Mini inertia reel seat belts to be fitted to the Rossa. There are four seat belt mounting points. Tunnel, Sill, Top Back and Reel holder positions per side. The position of the anchorage points are shown above.

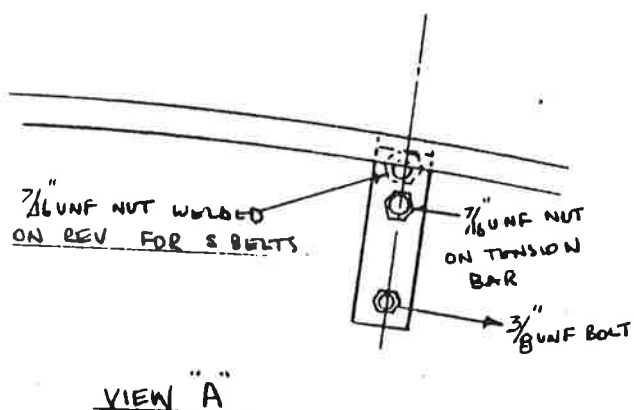
FITTING

The Tunnel, Sill and Reel holder anchorage points are fitted in a similar manner as shown below:-



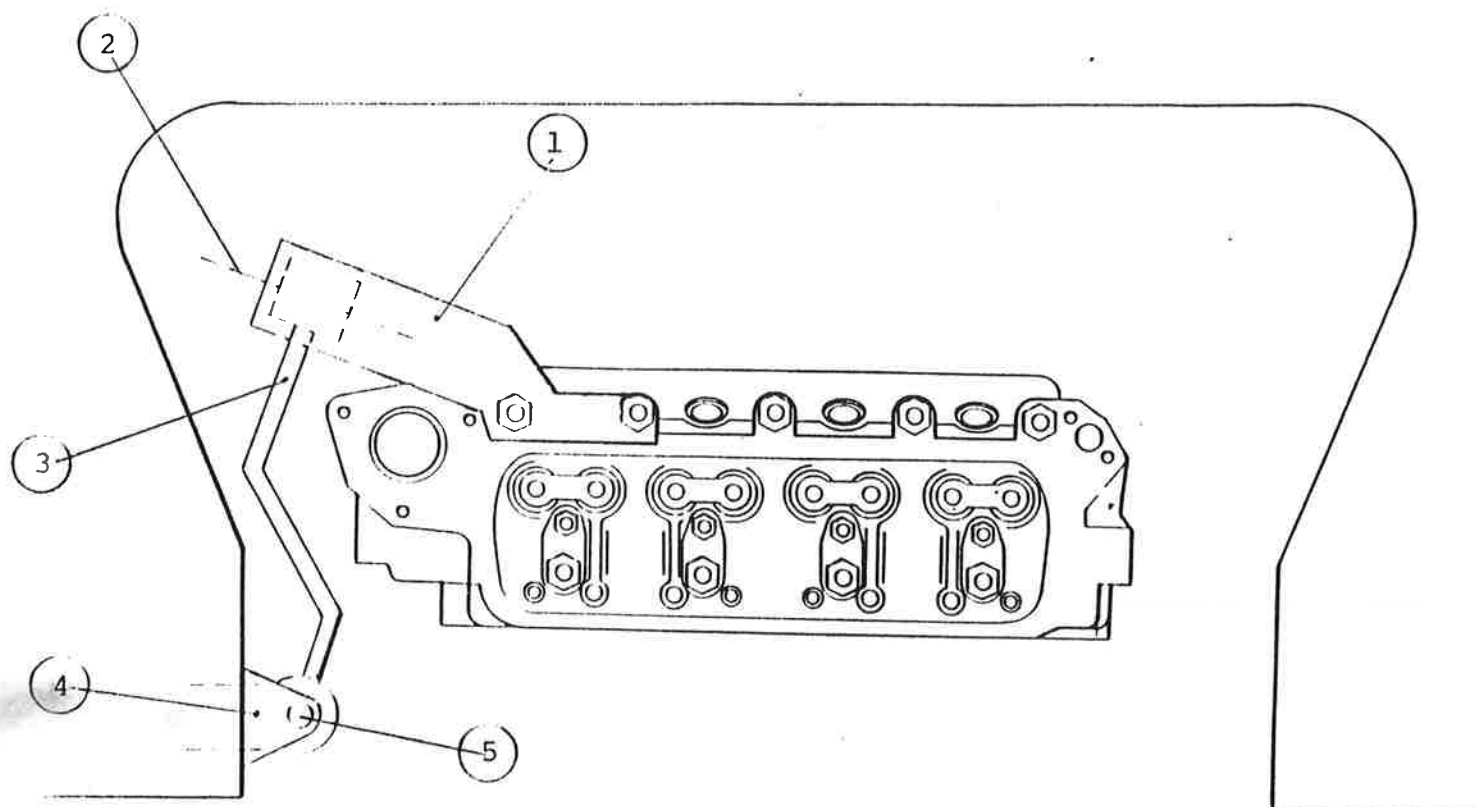
NOTE USE SPECIAL 2\" LONG $\times \frac{7}{16}$ \" BOLT WITH ABOVE MOUNTING

Use the metal plate as a template to drill the 2 x 3/16\" holes and the 7/16\" clearance hole required working from the glass fibre side. Move the plate to the inside and fix with 7/16\" bolt prior to fitting the 2 x 3/16\", 1\" long pop rivets.



The Top Back position is fixed as shown on the belt. Use the mounting as a template and drill the 7/16\" clearance hole and the 3/8\" clearance hole as required. Fit one 7/16\" UNF nut to the straight end of the tension bar and peen over. Thread the tension bar through the sub frame mounting and the 7/16\" clearance hole. Fit 3/8\" UNF nut and bolt to the 3/8\" clearance hole and 7/16\" nut to the tension bar. NOTE If the plate will not fit flush with the bulkhead pack out with a suitable material.

ENGINE STEADY MOUNTING FROM ALLEGRO MK I AND MK II, 1100 AND 1300cc



1. 31 G 5518 TIE ROD BRACKET
2. BH 110121 BOLT
3. 31 G 5839 ENGINE TIE BAR
4. FAM 6749 BRACKET
5. BH 110161 TIE ROD BOLT

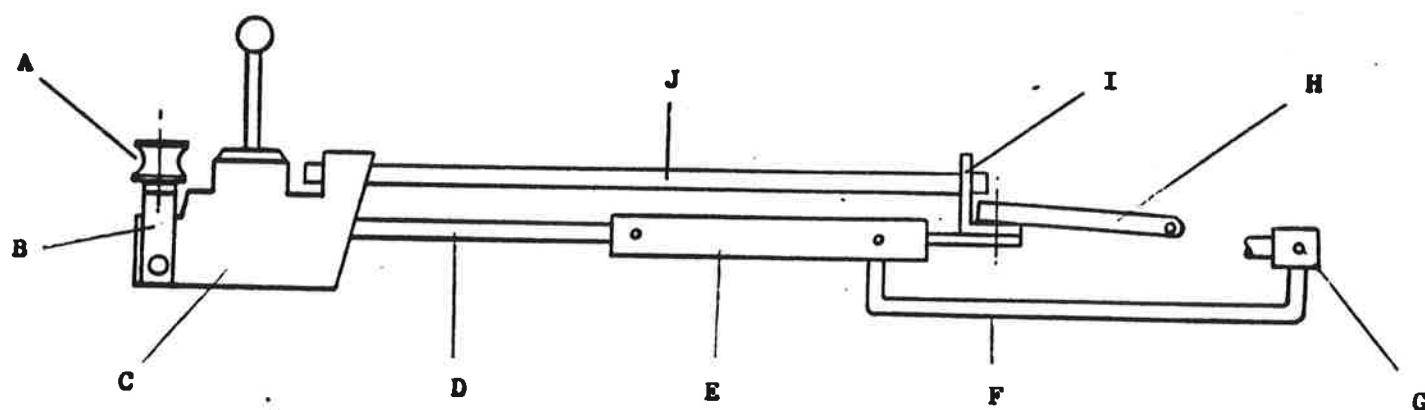
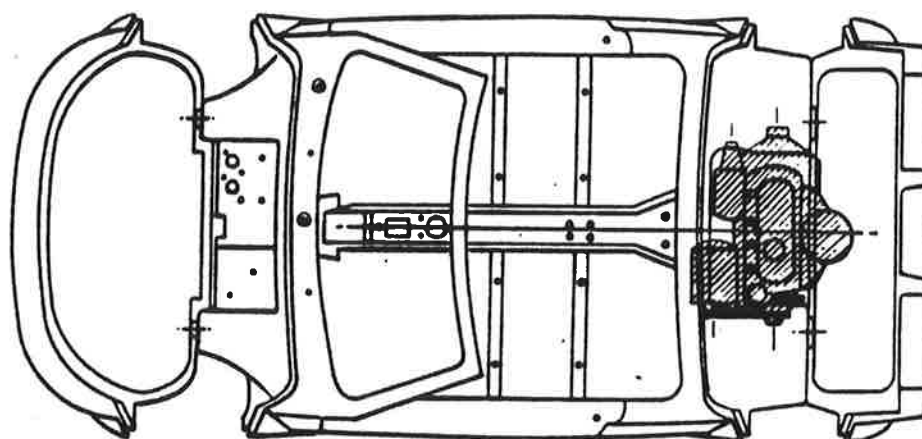
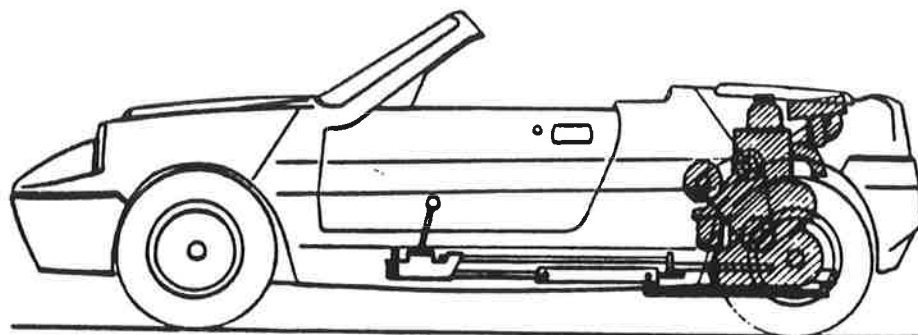
The part numbers above refer to the standard British Leyland numbers for the Allegro engine steady.

The engine steady is fitted in the same manner as the Allegro item with the tie rod bracket bolting to the two end studs on the cylinder head and the bolt fixing on the alternator.

The tie rod has to be bent into the shape shown above to reduce the overall length and create the right angle for the brackets.

Item 4. is bolted into the glassfibre bulkhead on the left hand side of the engine bay, as shown in the above diagram. (It is best to captivate these two bolts on the inside of the tub section to allow removal without having to remove the rear seat panel).

ROSSA GEAR CHANGE LINKAGE



- A Exhaust Bobbins
- B Housing Support Brackets
- C Gear Lever Housing (standard Mini)
- D Main shaft (standard Mini)
- E Main shaft extension
- F Drop Bar
- G Main shaft Collet
- H Engine Steady
- I Pivot Assembly
- J Tension Bar

ROSSA GEAR CHANGE LINKAGE

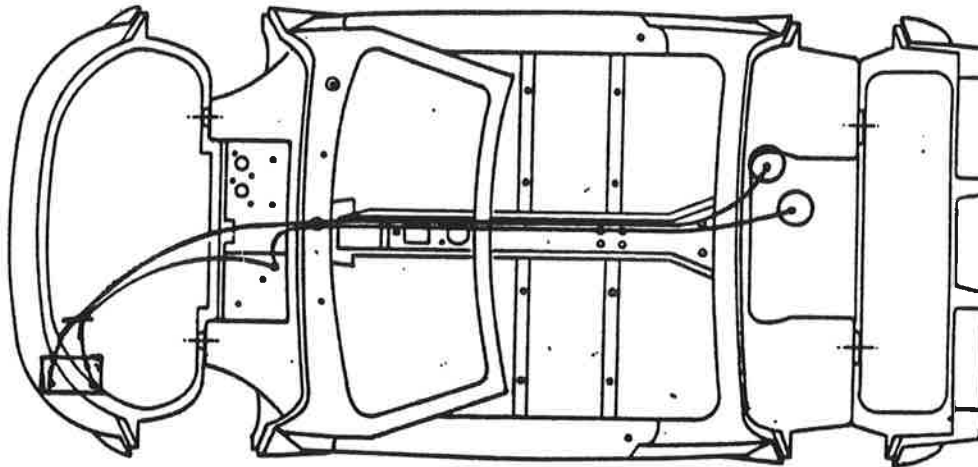
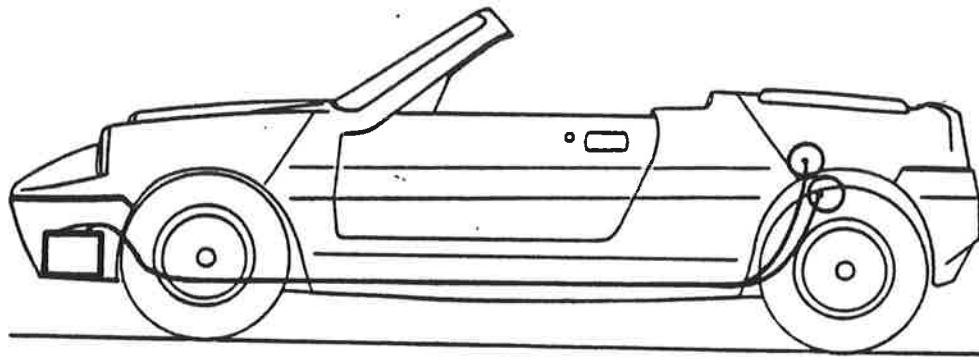
The **ROSSA** kit includes all the parts necessary to convert a Twin Shaft Mini Gear Change, to enable the engine to be positioned behind the driver. Older type gear boxes cannot be used in the ROSSA

To convert your gear change proceed as follows.

- a) Disconnect the twin shafts from the engine.
- b) Remove the top shaft from the gear change housing and discard.
- c) Remove joining collets from main shaft and discard.
- d) Remove existing housing support bracket and discard.
- e) The gear change housing on the **ROSSA** is turned through 180° and it is therefore necessary to turn the bottom plate through 180° to make the reverse stop work correctly.
- f) The pins which prevent the gear change lever from rotating require reversing. They are a push fit in the housing casting.
- g) The reversing light switch has to be repositioned on the opposite face, 180° from the original position. This requires the casting to be drilled and taped appropriately.
- h) Open up the hole in the end of the main shaft to ¼" dia.
- i) Fit new tension shaft to housing with the nuts provided and adjust until the nut is flush with the end of the shaft, as diagram page
- j) Fit main shaft extension to main shaft with ¼" bolt provided.
- k) Fit pivot assembly to main shaft extension and tension bar. Tighten nuts.
- l) At this point it is advisable to mount the housing in a vice and make sure that the gear change lever can be moved freely in all directions.
- m) Working from the rear of the car and before the engine is fitted, push the housing up the tunnel.
- n) Working through the hole cut in the side of the tunnel, fit the housing support brackets complete with exhaust bobbins, on to the gear change, using the nut and bolt provided. Tighten finger tight.
- o) After the engine has been fitted to the car, fit the engine steady to the engine using the existing nuts and bolts. It should not be possible to mount the bracket in an incorrect position.
- p) Bolt the pivot assembly to this bracket with the 5/16" nuts and bolts provided.
- q) Bolt the two exhaust bobbins to the roof of the tunnel through the existing holes, to suspend the gear change mechanism within the tunnel.

- r) Fit gear lever, and working with an assistant, ensure that the main shaft extension moves freely on the pivot assembly, and does not bind on the reduced part of the shaft. It may be necessary to bend this part to make it line up with the main shaft extension.
- s) Fit the new main shaft collet to the engine with the standard slotted pin.
- t) Fit drop bar, ensuring that it places no loading on either the main shaft extension, or the input shaft to the gear box. This is achieved by adjusting the 90° bend at either end of the drop bar.
- u) With the gear box in neutral (the drop bar will move freely from side to side) adjust the two lock bolts on the tension bar/pivot assembly to achieve a vertical position of the gear lever. Tighten securely. The gear change should now work correctly.

BATTERY AND CABLES



The battery is mounted in the front passenger side of the bumper mould. There are indentations in the base of the mould to form a location for the battery. The mounting brackets supplied in the kit secure the battery in position by holding the top outside edge down towards the moulding next to the bottom inside edge. Two holes are drilled in the moulding and the hooked ends of the bracket are passed through the holes. The top threaded section is then passed through the hole on the securing bar and tightened with the wing nuts provided.

CABLES

Provided within the Rossa kit are battery cables to feed the power from the battery to the engine. The negative (black) lead runs from the battery negative terminal to the upper bottom passenger side front sub-frame mounting bolt. A new lead then runs from this bolt through the tunnel and is attached to one of the clutch cover housing bolts.

The positive (red) lead runs from the battery positive terminal through the tunnel to the starter motor solenoid. The standard mini lead then runs from other terminal on the solenoid to the starter motor.

* NOTE where the red lead joins on to the starter solenoid is always live and therefore great care must be taken to avoid shorts to earth.

WIPER-WASHER ASSEMBLY (See diagram)

The wiper motor is a standard mini, preferably two speed, selfpark. The drive gear in the wiper motor is changed for a wider sweep gear supplied in the kit, this ensures a full wipe of the screen area. Remove the drive arm and spigots from the motor and mount the motor on the two jacknut fasteners in the air collector box. Pass the drive arm and spigots through from the inside of the car and reconnect into the motor. A grommet is supplied in the kit to seal the hole. Connect the spigots through the body work at the base of the screen with the angled rubbers and washers and nuts of the standard mini.

Attached the wiper arms (universal) and blades (18" Granada).

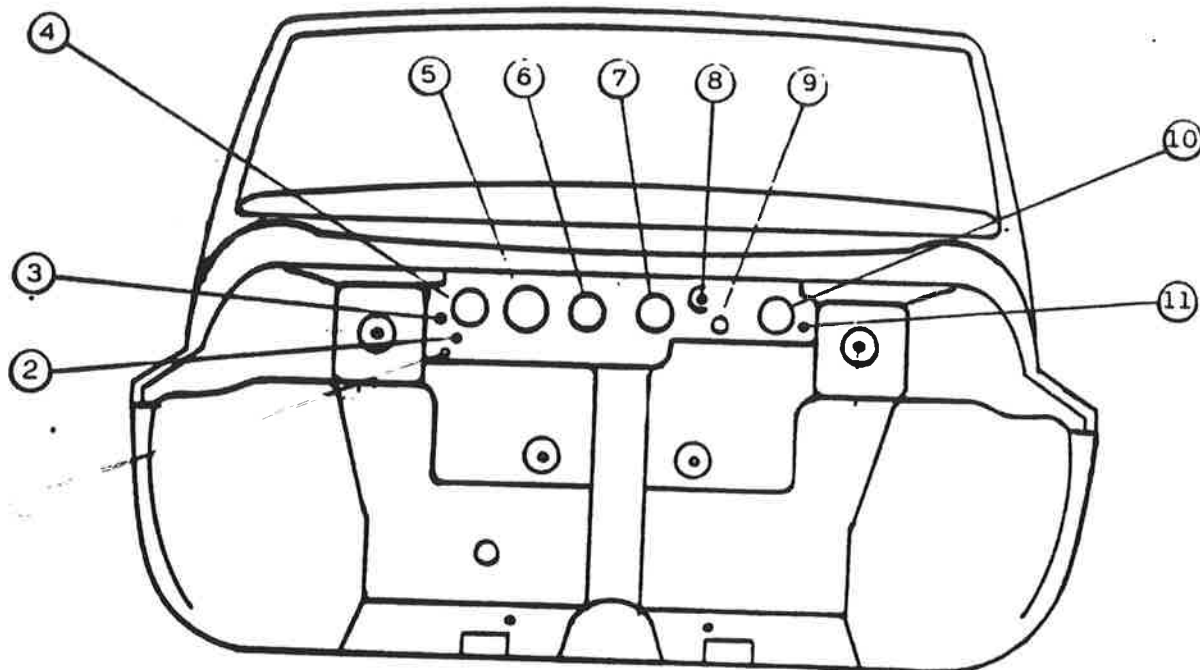
The washer bottle and jets are mini or mini metro. The washer bottle is secured to the passenger side of the spare wheel bay in the front bumper, the water pipe then runs around the back of the spare wheel and through into the air collector box next to the master cylinders. The pipe then passes through the main tub bulkhead as indicated on diagram and up to the washer jets at the base of the screen.

SCREEN VENTS

The screen vents (demisters) have been assembled separate from the dashboard to make assembly easier. A separator framework supplied in the kit holds three standard demisting funnels from a mini, these are attached to the frame with pop rivets and washers. The framework is attached to the main body tub with two bolts marked on (diagram).

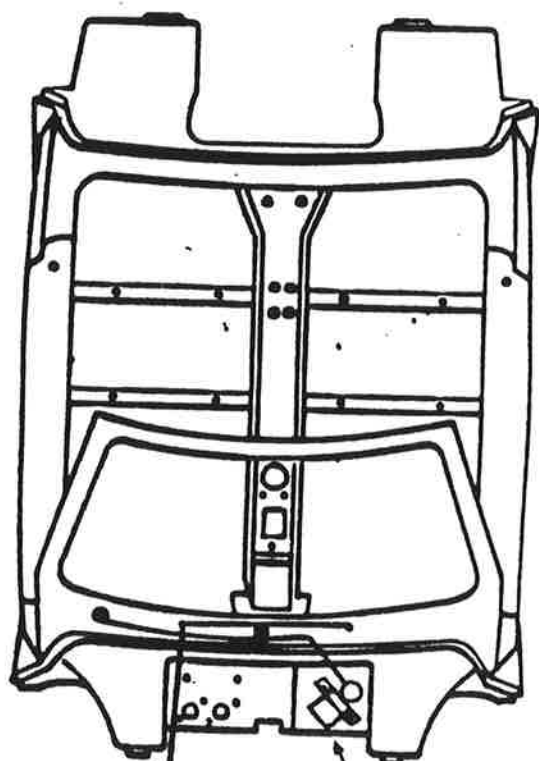
This framework also provides support for the front edge of the dashboard the three bolts secured with captivated nuts to the frame should be tightened under the dashboard pushing the front face up until it is tight under the screen base. The air funnels will then line up with the demisting fascias on the top edge of the dashboard.

Standard mini pipes connect the heater to the demisting funnels, a 1" dia. 'Y' section is required to give the third outlet.



2. Windscreen Washer Tube
3. Demisting Framework Location Hole
4. Drivers Fresh Air Vent
5. Main Intake for Heater
6. Centre Fresh Air Vent
7. Centre Fresh Air Vent
8. Wiper Motor Drive Shaft
9. Wiring Harness
10. Passenger Fresh Air Vent
11. Demisting Framework Location Hole

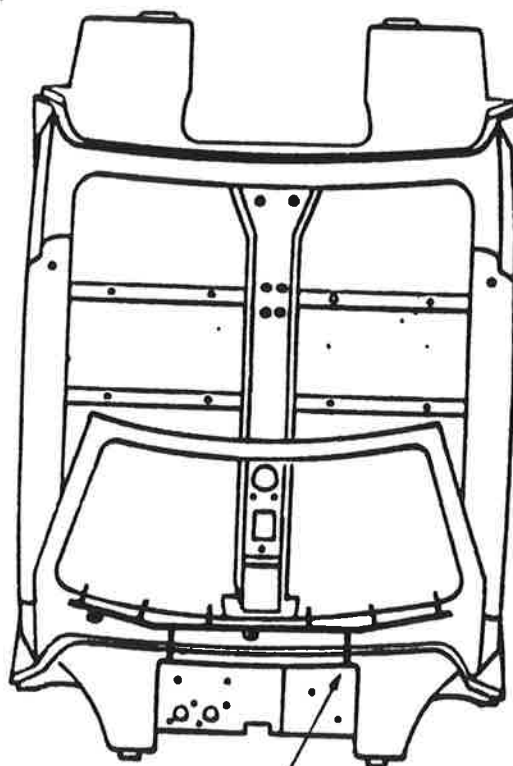
WIPER/WASHER ASSEMBLY



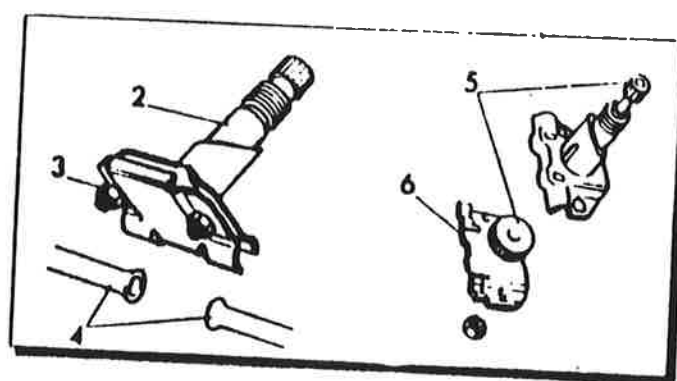
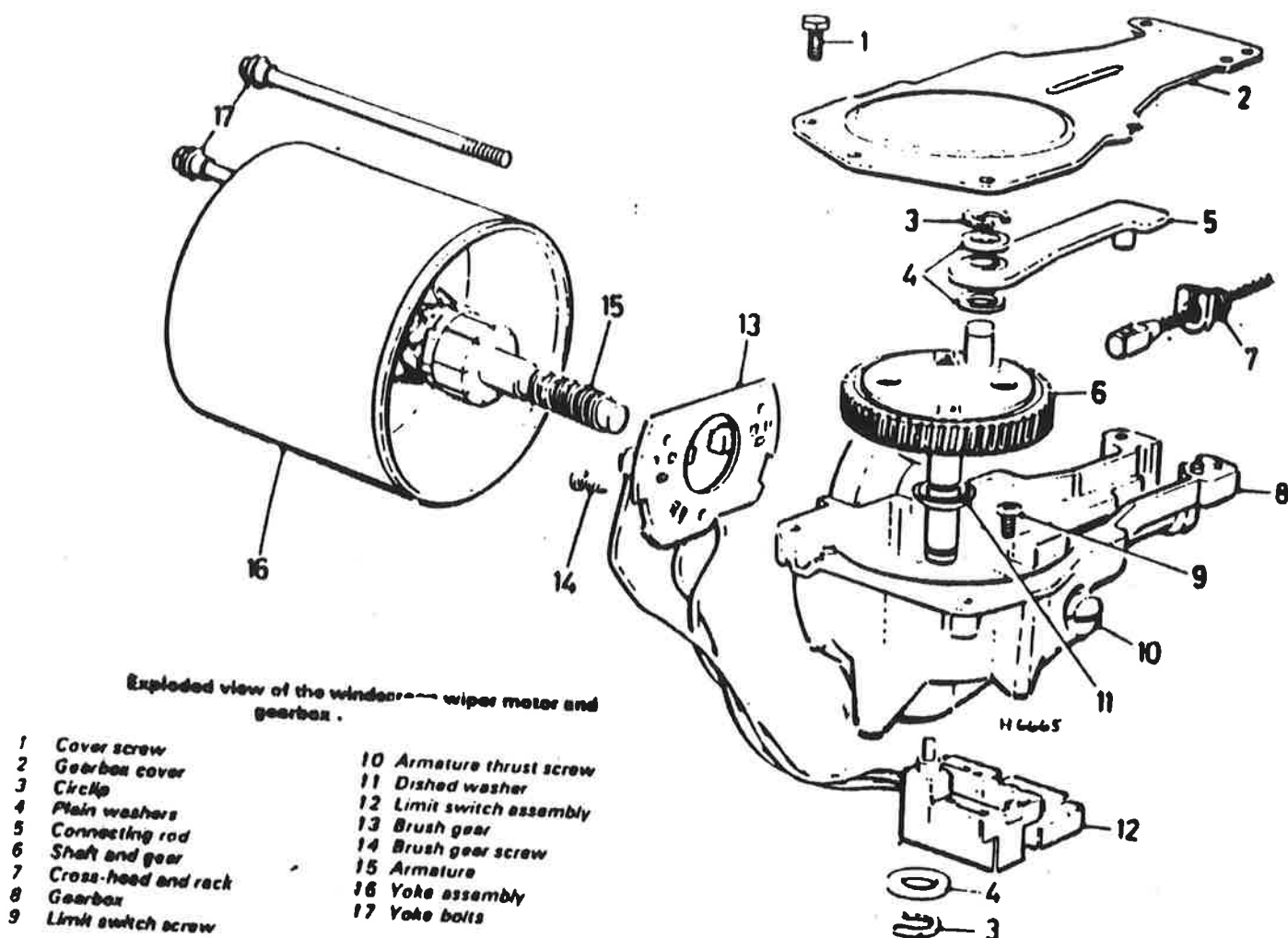
Screen Washers To
Water Bottle and
Motor

Windscreen Wiper
Motor & Arm Spigots

DEMISTING VENT LOCATION

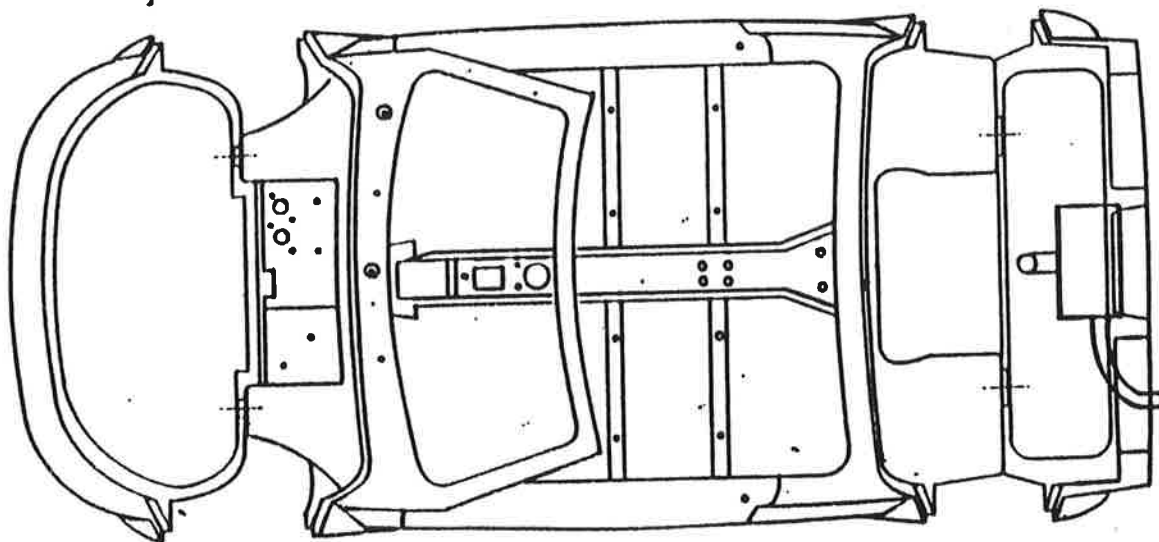
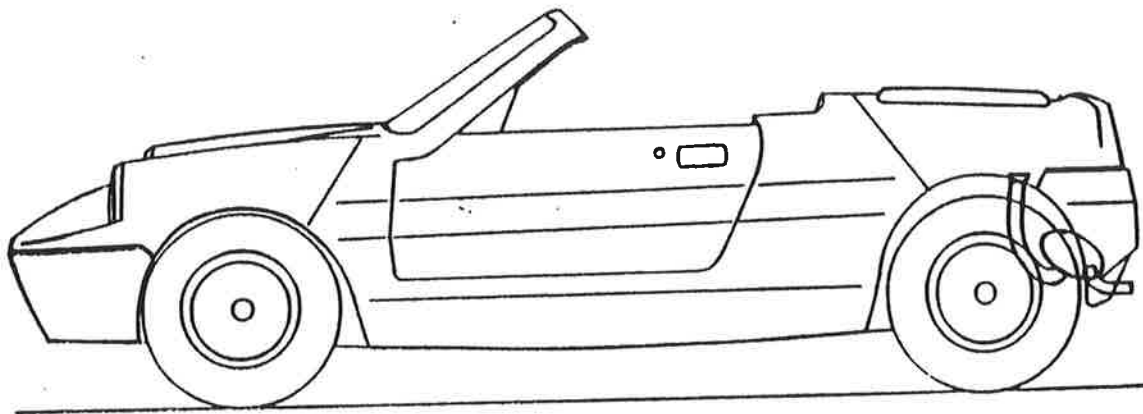


Framework For Supporting The Screen
Demisting Vents



Item 6 is the internal gear. This can be changed to give different sweep on the wipers. We recommend a single centre wiper with a 130° sweep (part no WGB 229). This gear is used on an Allegro Mk II or Mk III 1973 onwards. The wiper arm is an adjustable TRICO TWA1 with a 20" blade.

ROSSA EXHAUST SYSTEM



The Rossa exhaust system consists of:-

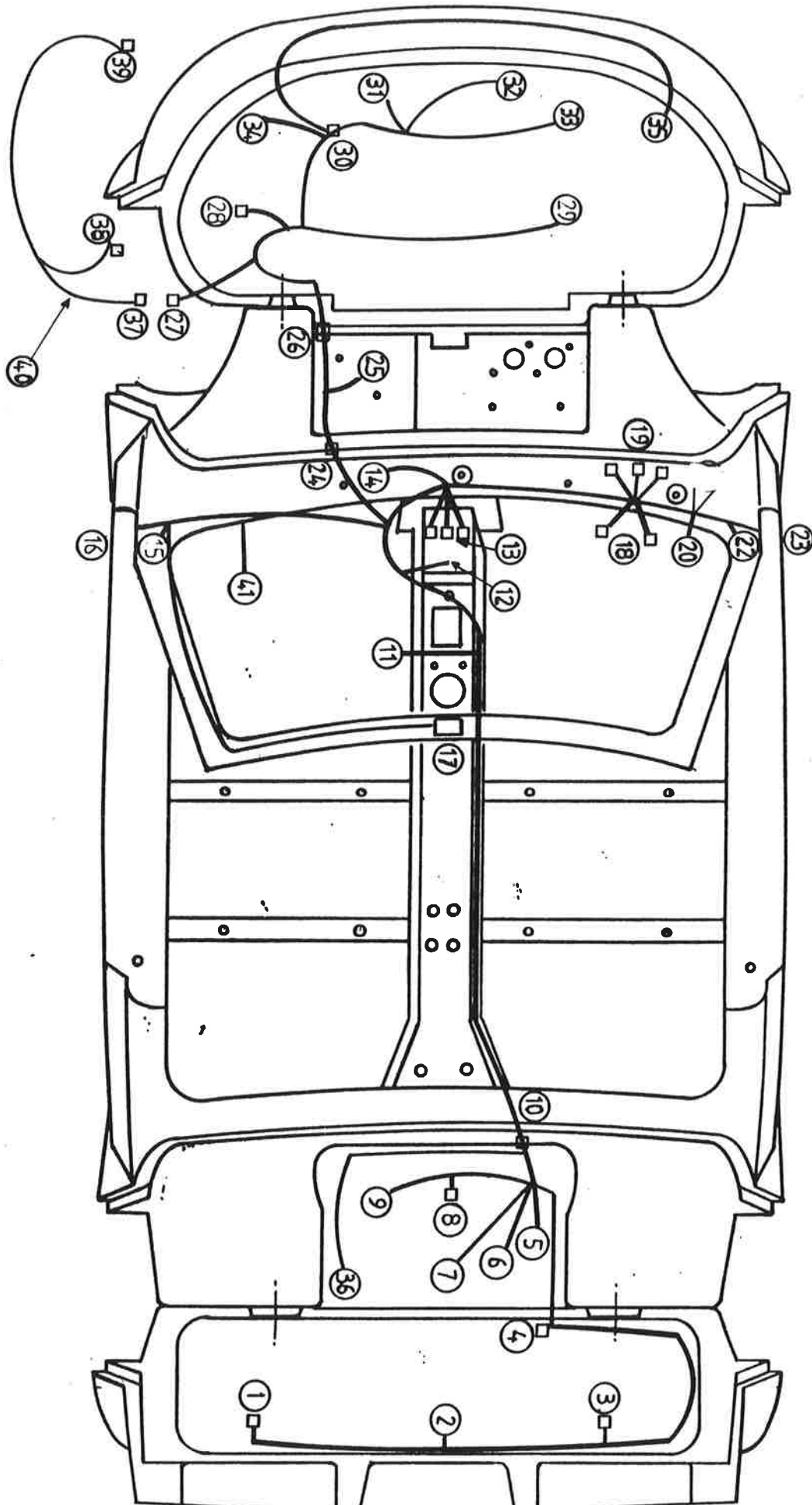
- a) Silencer Box
- b) Manifold Pipe
- c) Tailpipe
- d) Mounting Bracket and rubber exhaust bobbin
- e) Two exhaust clamps

The exhaust silencer box is attached to the manifold pipe with the clamp supplied, this is then mounted onto the 1275 GT Exhaust Manifold (Unipart No. 12G 3279) on the engine. The bottom mounting bracket supplied in the kit is mounted to the rear passenger leg of the subframe with the exhaust bobbin,

the top of this bracket is then mounted to the mounting point on the exhaust box.

Finally the tailpipe is mounted to the exhaust outlet with the clamp supplied and positioned centrally in the hole in the G.R.P. exhaust cover before tightening the clamp.

WIRING DIAGRAM



1. Passenger rear light connections	X	
2. Rear number plate light and rear fog connections		B/RG/UY
3. Drivers rear light	X	
4. Plug and socket engine bay/boot		
5. Coil leads		W + /2WB
6. Distributor lead		WB
7. Oil light switch		WN
8. Alternator plug		
9. Water temp gauge		GU
10. 1½" dia. grommet		
11. Reversing light switch		G/GN
12. Heater switch		2G/GY
13. Switch panel edge connectors		
14. Switch panel light		B/R
Heater motor connections		GY/B
Radio connections		GW/B/2B/BW TWIN
15. Passenger speaker and L/H repeater lamp		B/BW TWIN GR/B
16. Passenger courtesy light switch		PW/B
17. Courtesy/interior light		2 PW/B/P
18. Edge connectors instrument pack		
19. Sockets for steering column switches		
20. Light switch socket		
21. In line fuse holder rear fog lights		
22. Drivers speaker and R/H repeater lamp		B/BW TWIN GW/B
23. Drivers courtesy light switch		PW/B
24. 1½" grommet		
25. Wiper motor plug		
26. Plug and socket tub/front boot		
27. Socket to bonnet light loom		
28. Washer bottle motor		
29. Petrol tank sender		
30. 1½" dia. grommet		B/GB
31. Thermostatic switch		W/GS
32. Horn		B/PB
33. Fan motor		GS/B
34. Passenger indicator and L/H fog lamp		B/GR/R
35. Drivers indicator and R/H fog lamp		B/GW/R
36. Brake light switch		G/GP
37. Plug on bonnet loom		
38. Passenger headlight		
39. Drivers headlight/sidelight loom		
40. Bonnet loom pinned to underside of bonnet		
41. Front fog lamp relay		
Fuseholder for rear fog lamps		U. UK

Cable colour code

B	Black	LG	Light Green	P	Purple	W	White
G	Green	N	Brown	R	Red	Y	Yellow
K	Pink	O	Orange	U	Blue	S	Slate

Colours for Fog Lamp Relay are N, RY, RY, B.

ROSSA WIRING HARNESS

The Rossa wiring harness is purpose made to fit the Rossa and uses the same colour coding as used on the Metro. It is fitted with edge connectors for direct fitting into a Metro (prior to 1985) instrument pack and switch pack (using the single flasher unit for both hazard warning and indicators). All plugs and connectors are ready fitted to enable the harness to be plugged directly into electrical equipment.

The harness comes completely wired for stereo radio/cassette and door operated courtesy light.

Multi-way plugs and sockets are used in three positions on the harness to enable the two crash protection panels front and rear and the bonnet to be removed, purely by unplugging the connectors.

The wiring loom comes complete with all grommets and clips required for fitting.

FITTING THE LOOM

The loom is fitted in four parts the centre section, the front loom, the rear loom, the bonnet loom. All these sections are fitted separately and plugged together.

THE CENTRE SECTION

- (a) The loom is secured to the top corner of the tub tunnel using "P" clips. It passes through the rear bulkhead at "10". It passes up the left hand leg of the dashboard mounting frame and through a grommet at "24".
- (b) The section of the loom which goes up the screen pillar to the interior light must be fitted prior to the trim panels. This part of the loom can be secured using tape or a hot glue gun.
- (c) Once the dashboard has been fitted the wiring loom can be plugged into the instrument pack prior to fitting the pack. With the switch pack in the dashboard push it back and down to enable the edge connectors to be fitted. At this stage the radio-cassette can be fitted. All the other connectors can be fitted associated with the dashboard at this stage. Secure the loom to the dash frame using insulation tape or tie raps.

FRONT SECTION

- (d) The front section starts from a socket secured to the bumper moulding near the wiper motor to enable the plug on the centre section Loom to be plugged into it.
- (e) The loom passes through a $1\frac{1}{4}$ " grommet at 24" into the radiator box. The loom, prior to the grommet separates off to run over the radiator box to the right hand indicator. The loom is secured to the moulding with the "P" clips and pop rivets provided.

REAR SECTION

- (f) The rear section starts from a socket attached to the rear bumper into which the plug from the centre section of the wiring loom fits.
- (g) The loom runs round the bumper as shown and plugs into the rear lights and number plate lights. It is secured to the moulding using "P" clips and pop rivets.

BONNET SECTION

- (h) The bonnet section of the wiring loom plugs into the front section of the wiring loom at "37".
- (i) The loom is attached to the underside of the bonnet using "P" clips and pop rivets. Make sure that the pop rivets only go through the inner moulding and not through the bonnet moulding itself.

NOTE:- Just before the central section of the loom goes through the gromett at "24" there is a $\frac{3}{8}$ " ring connector with several earth connectors which has to be attached to the dashboard mounting frame.

BUILD DOORS COMPLETE

All the instructions and drawings in this manual refer to the driver's door. The passenger door is completed in the same sequence.

1. PREPARE MOULDINGS

DOOR SHELLS

- (a) Remove any flash from mouldings and clean any rough edges.
- (b) Drill holes as indicated on drawings
- (c) Cut and file shapes C, D & G
- (d) Fit 4mm jack nuts positions A

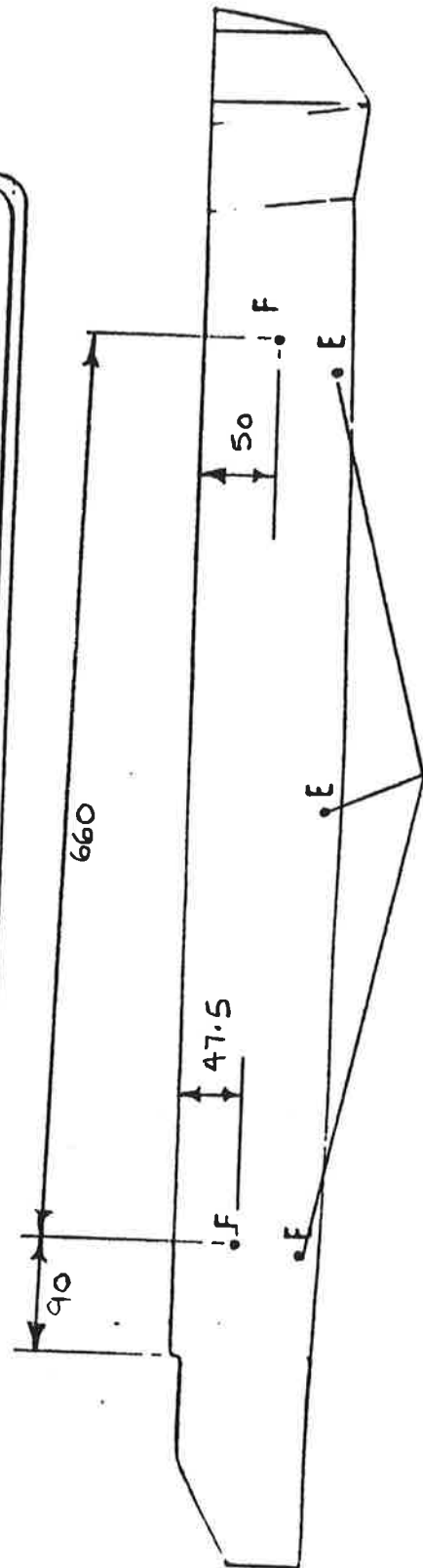
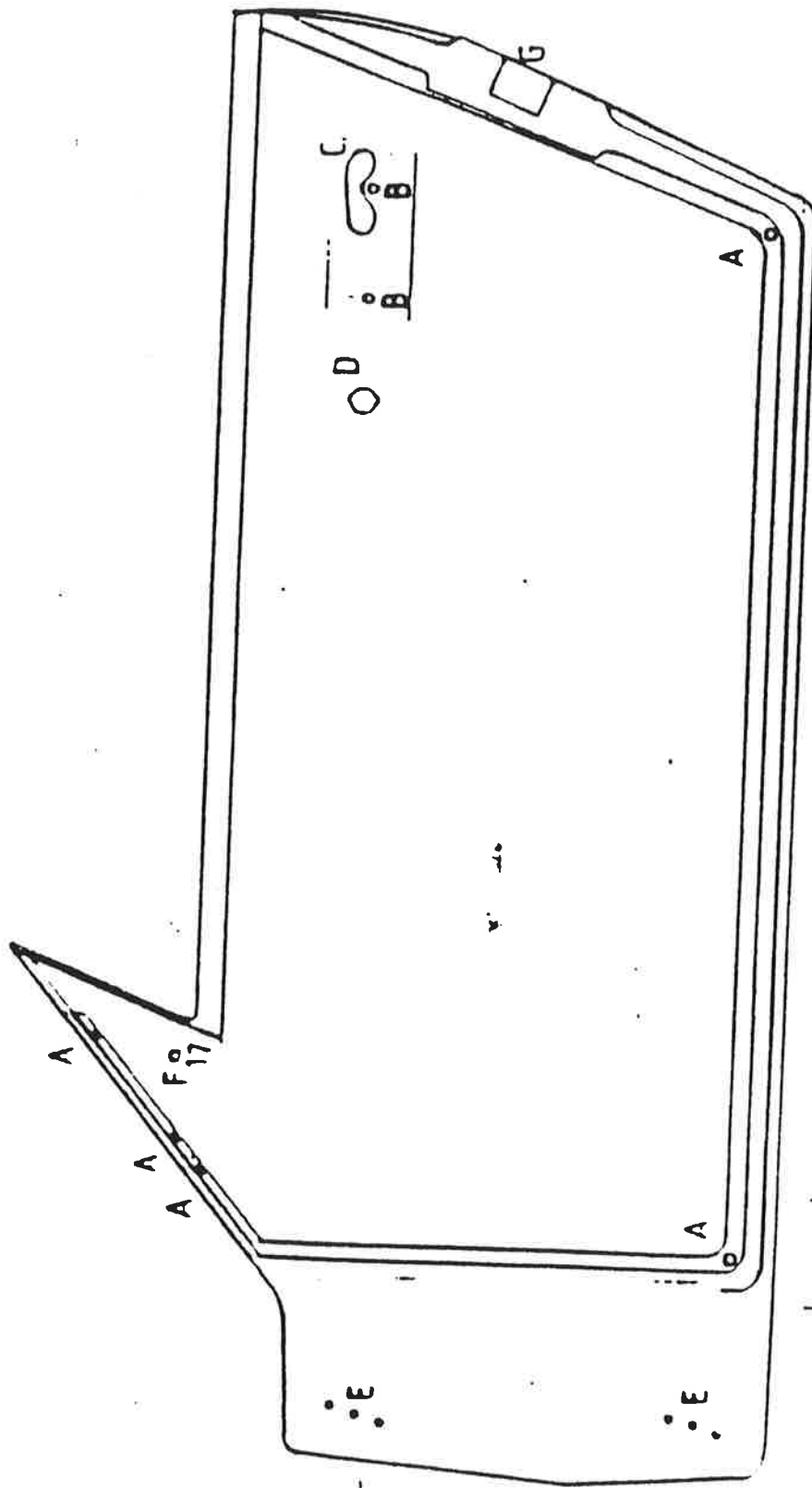
INNER DOORS AND QUARTER LIGHTS

- (a) Remove any flash from mouldings and clean any rough edges.
 - (b) Drill holes as indicated on drawing
2. Fit carpet to the inner face of the inner **moulding** "2" on drawing.
 3. Fit pull handles to the inner moulding using 5mm $\frac{3}{4}$ " long button headed cap screws. Cut any excess threads off inner face to prevent them catching.
 4. Fit plastic grommet to top of inner door "3" using suitable adhesive (hot melt).
 5. Shorten mini window channel as shown on the drawing using hacksaw at "8" and "9".
 6. Fit channels to glass using mini rubbers and contact adhesive. Note position as indicated on drawing. Be carefull not to distort channel.
 7. Fit window stops in position "6" and "7" on inner frame as shown on the drawing using $\frac{1}{4}$ " UNF bolts 1" long.
 8. Fit $\frac{1}{4}$ " UNF bolt 1" long in position "12" with threads facing towards outer door moulding to form the bottom stop.
 9. Fit two $\frac{1}{4}$ " UNF bolts 1" long through holes "10" and "11" with threads facing the inner door mouldings and secure with $\frac{1}{4}$ " UNF nuts finger tight.
Do not fit regulator at this stage.
 10. Glue window rubber from mini into inner frames as indicated on drawing. It is extremely important to fit the rubber in with the channel for the glass nearest the outside of the frame.
 11. Fit the window glass into the inner frame in approximately the position shown on the drawing.
 12. Fit the regulator sliding into the channels from one end. Unscrew the temporary nuts fxrom bolts at "e" and "f" and fit regulator securely.
 13. Fit winding handle to regulator and check that the window winds up and down correctly.

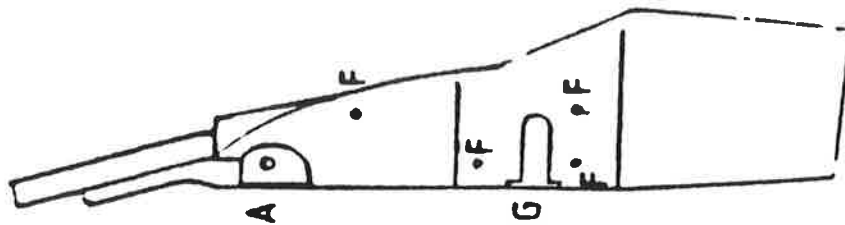
14. Fit door hinges to door using 5/16" UNF bolts and nylocks.
15. Fit door outer lock to door outer using special clip as shown "A" on drawing. It may be necessary to increase the length of the slot in the lock housing which takes this clip to obtain the correct fit due to the thickness of the glass fibre.
16. Fit the outer handle to the door securing with two 6mm nuts as shown on the drawing at "15"
17. Fit latch to door. Note the top 6mm C/S $\frac{3}{4}$ " long screw may have to be reduced in length to prevent it fouling the latch mechanism when fully tightened.
18. Bend and cut the two rods "A" and "B" as indicated on the full size drawing.
19. Fit rods "A" and "B" to the doors.
20. Fit $1\frac{1}{4}$ " long $\frac{1}{4}$ " UNF C/S screw to hold "17" on drawing and fit washer and $\frac{1}{4}$ " nylock nut, tighten securely. Run $\frac{1}{4}$ " nut down thread on top of nylock finger tight.
21. Fit inner frame to doors using 3 x $\frac{1}{4}$ " UNF C/S screws and nylocks at "5".
22. At position "17" place **another** $\frac{1}{4}$ " UNF nut over the frame to secure only finger tight.
23. Fit doors to tub when the hard top is in place and the weather seal is fitted. The doors are fitted using 5/16" UNF nylock nuts onto the bolts welded onto the door hinges fitted to the doors. Note that spreader plates are fitted between hinges and tub.
24. Adjust door so as to obtain approximately a 5mm gap at front bottom and back of door. Adjustment being made by filling the 5/16" diameter holes in the tub. Care must be taken at this point to ensure that the door shuts and opens fully at this stage without catching.
25. Fit striker to tub using 12mm fine threaded nuts. Adjust striker so it fits locks cleanly and when shut that the door is flush with the tub moulding.
26. Adjust $\frac{1}{4}$ " UNF nuts either side inner frame at position "17" until the window glass fits the weatherseal correctly. Tighten nuts securely.
27. Rods are provided to fit into the rubber window channel at the top to stiffen the glass should they be required. These rods are fitted as shown in the drawing and inserted from the top and pushed in until flush with rubber.
28. Should the glass be hard to wind up and down vaseline on the edge of the glass will help considerably.
29. Fit inner door release to latch and inner frame as shown on drawing at "13" using 4mm $\frac{1}{2}$ " long button headed cap screws.

30. Fit sill lock rod to latch as shown.
31. Remove window winding handle.
32. Fit inner doors and quarter panels to doors using 4mm x $\frac{1}{2}$ " long C/S screws in "J" positions and 4mm x $\frac{3}{4}$ " long button headed cap screws in "K" positions with washers.
33. Refit door window winding handle with bezel.
34. Fit knobs to sill lock rod.
35. Fit bezel to inner lock pull using 4mm C/S screw.

DRILLING HOLES IN DOORS

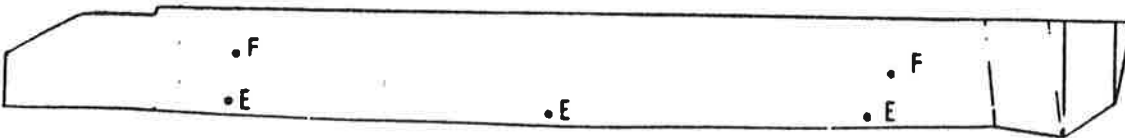
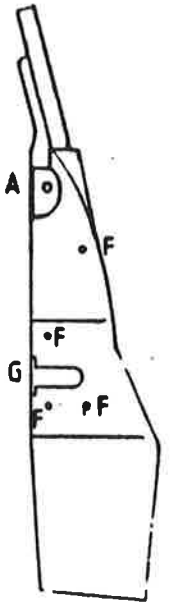
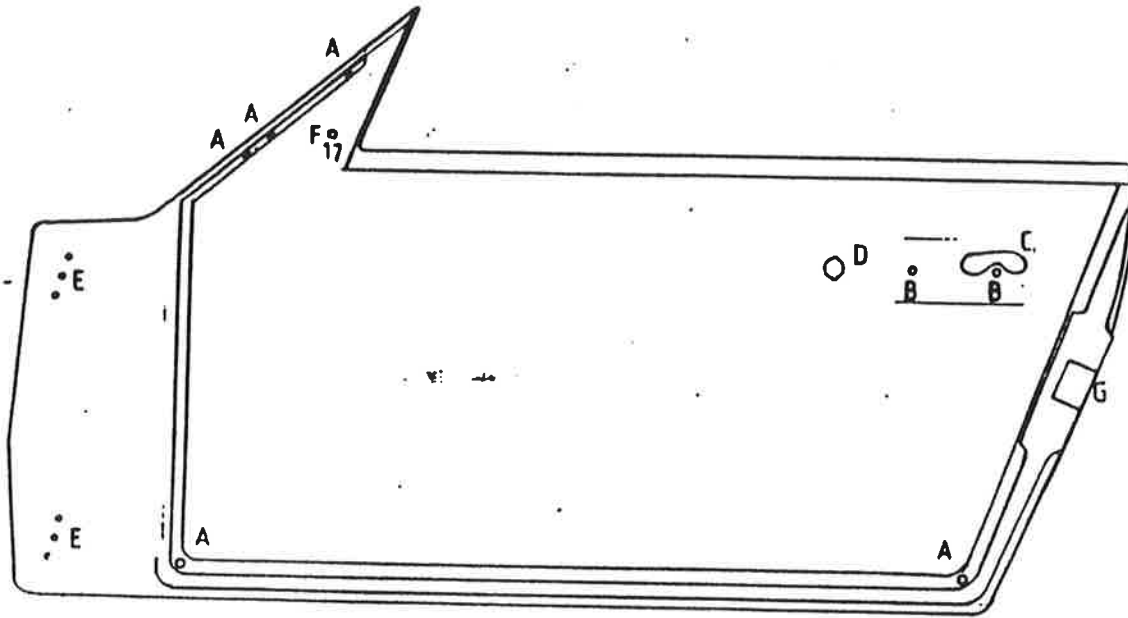


DRAIN HOLES AS REQ.

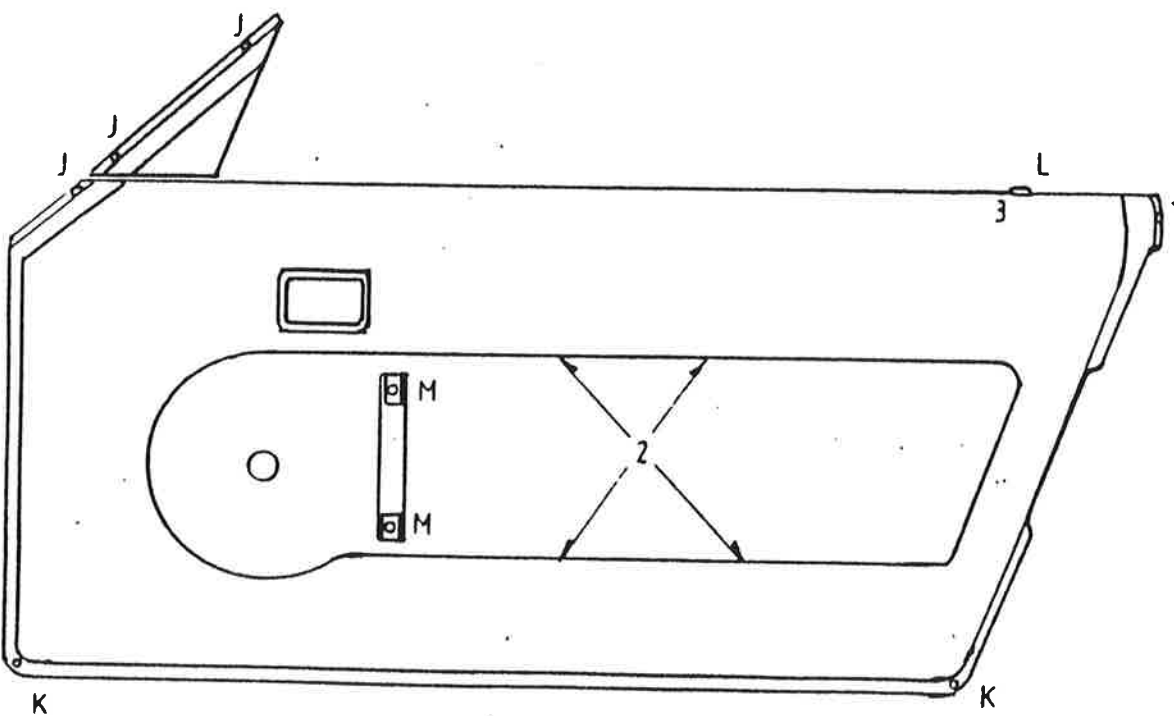


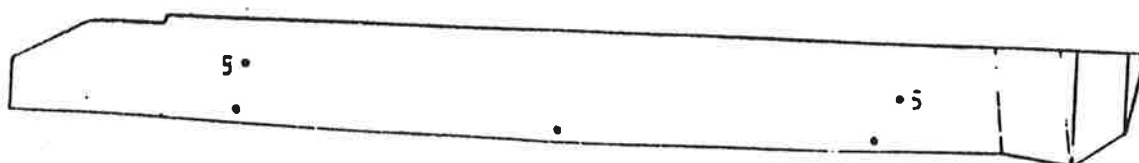
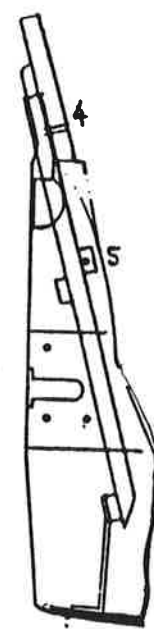
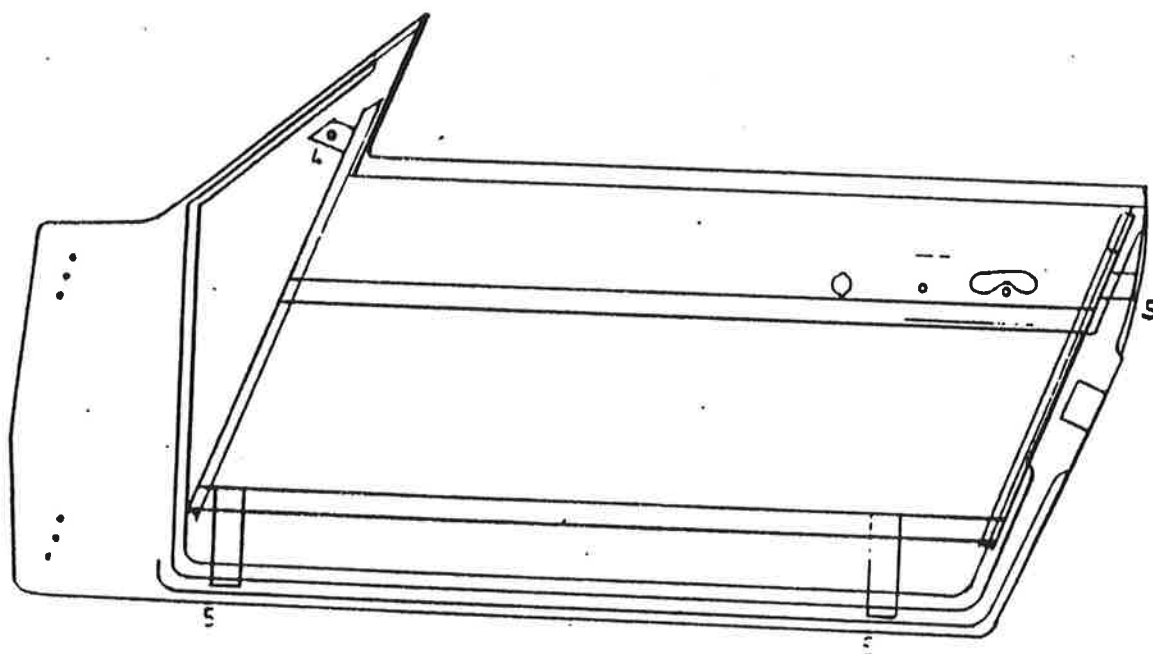
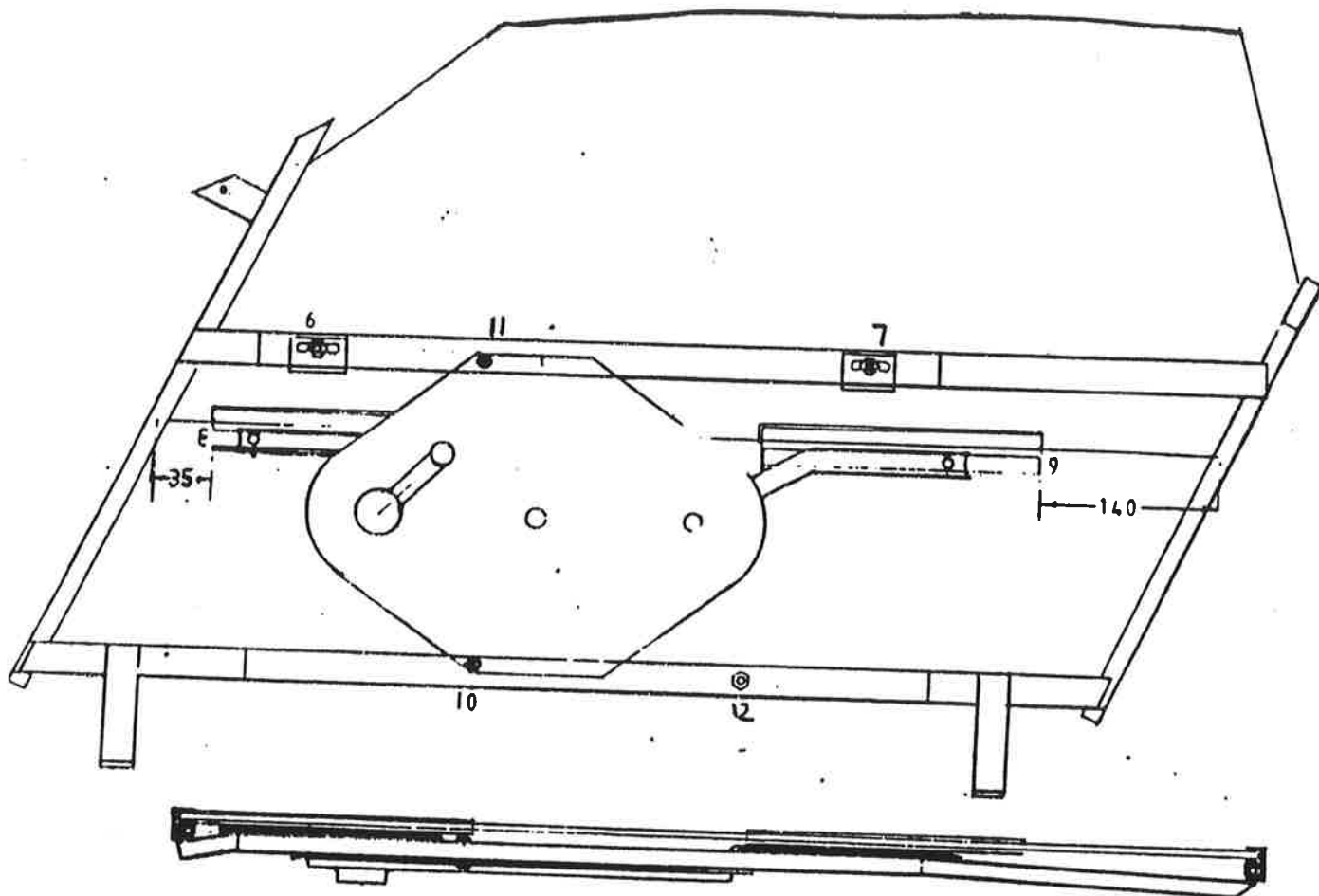
CODE	DRILL SIZE
A	8mm
B	6mm
F	5/16"
F	3/8" C/S
I	8mm C/S
K	4mm
L	7/16"
M	5mm

BUILD DOORS

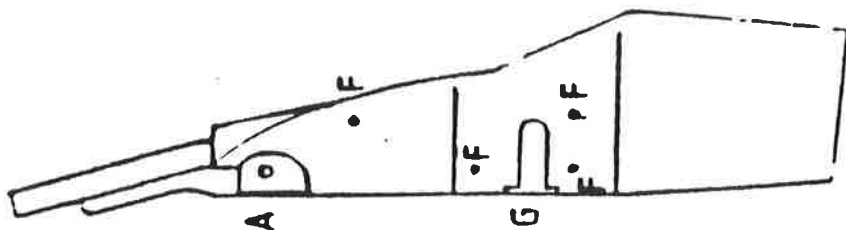
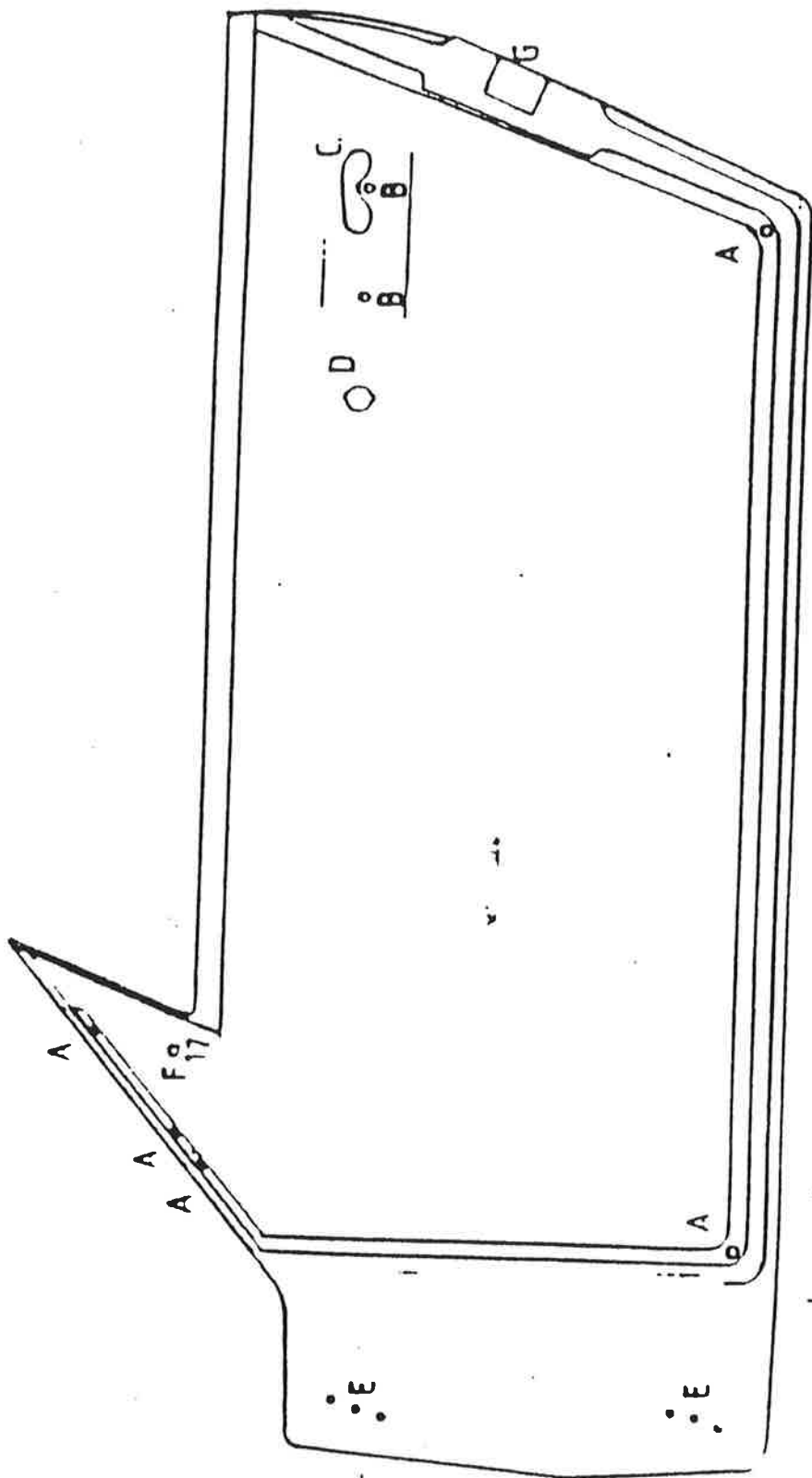


CODE	DRILL SIZE
A	8mm
B	6mm
F	5/16"
F	1/2" C/S
J	4mm C/S
K	4mm
L	7/16"
K	5mm

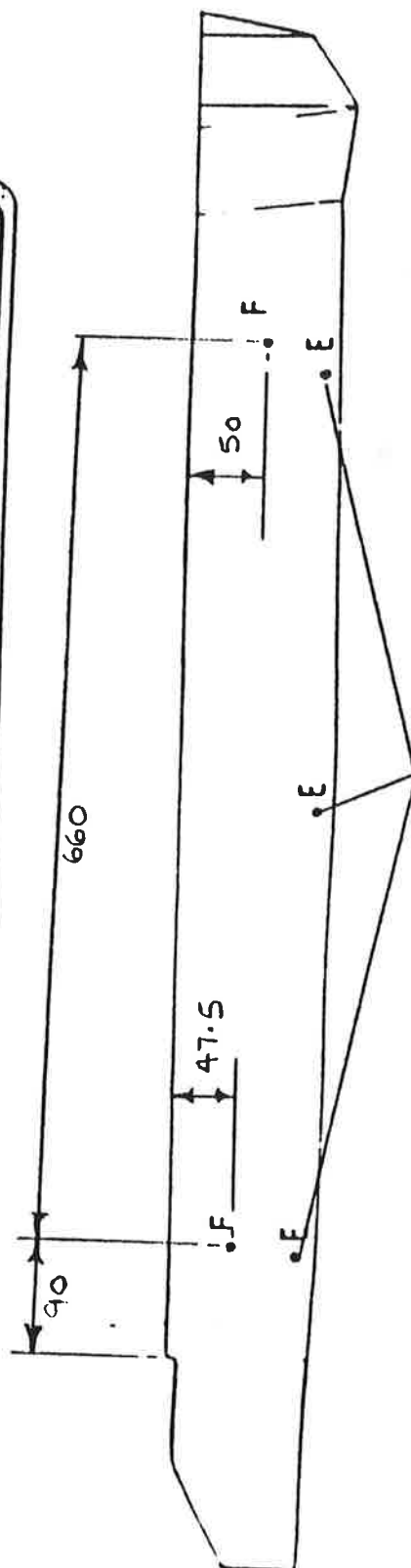




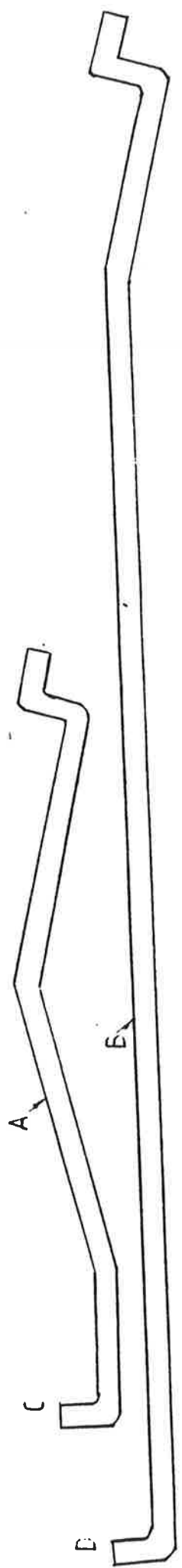
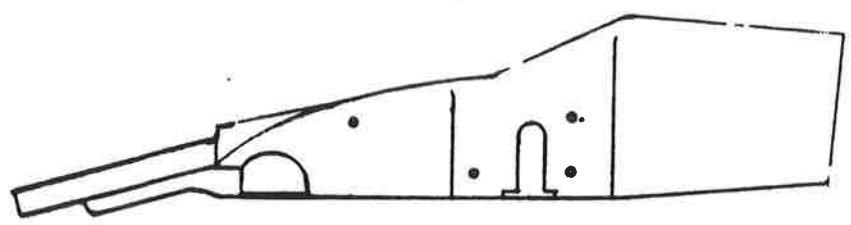
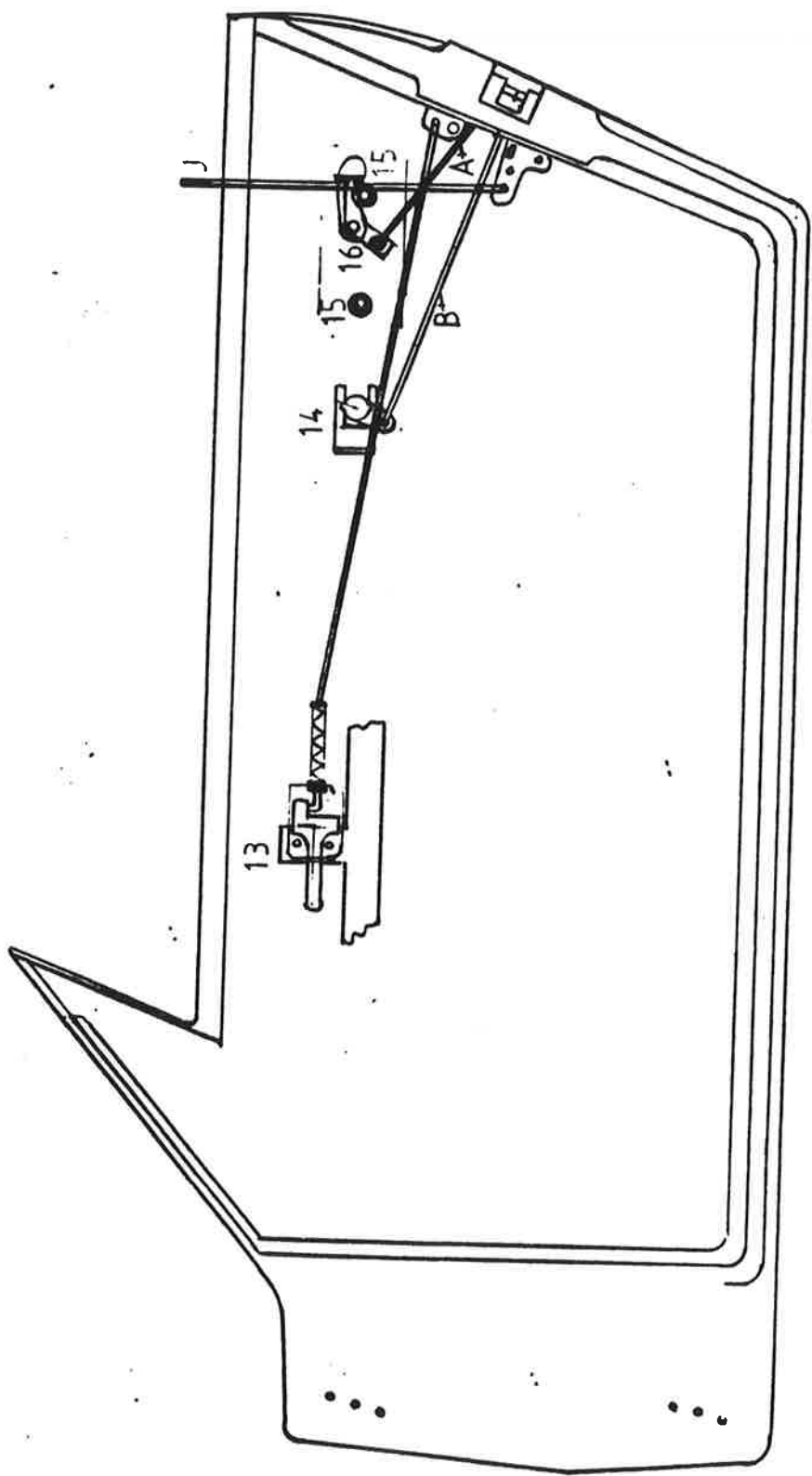
DRILLING HOLES IN DOORS



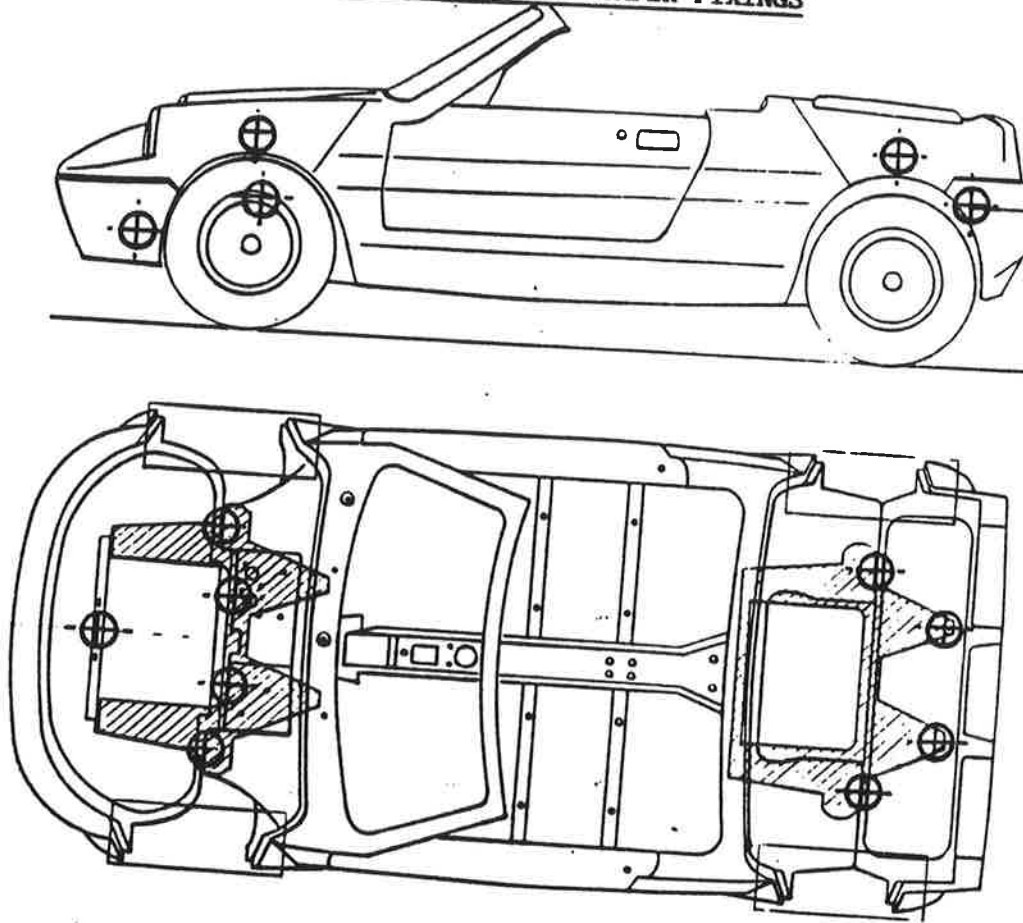
CODE	DRILL SIZE
A	8mm
B	6mm
F	5/16"
F	3/8" C/S
I	8mm C/S
K	1/4"
L	7/16"
P	5mm



DRAIN HOLES AS REQ.



FRONT AND REAR BUMPER FIXINGS



The boot and bonnet moulds have been designed to be progressively deformable and in the event of a front or rear end crash should collapse and absorb the impact without damaging the main tub section.

These sections have been made easily removable to ease the replacement of broken panels.

FRONT BUMPER

The main tub section has projections from the front bulkhead which have been reproduced as cavities in the bumper section. These four male/female fixings eliminate any lining up of panels and ensure an exact fit every time. Four nuts, bolts & spreader washers are used to fasten the bumper moulding to the tub, these should be positioned in the centre of the circular mating points and tightened until the panels close together.

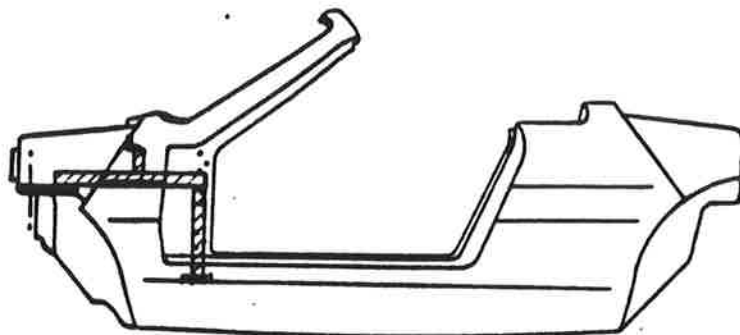
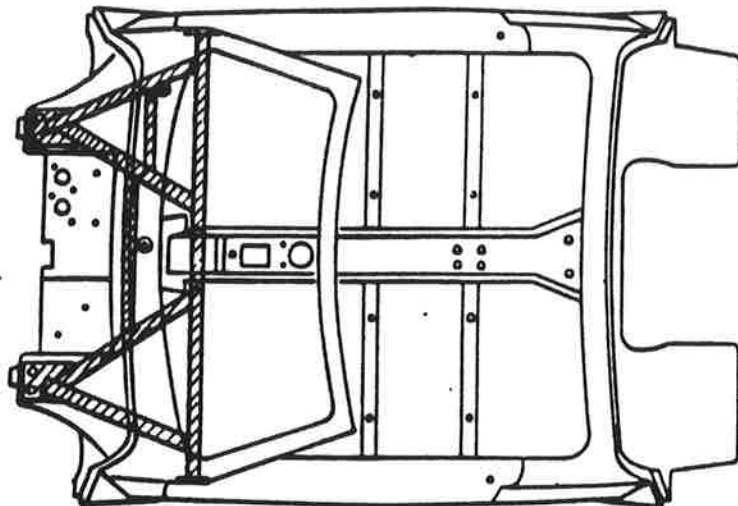
The front of the bumper mould is supported on the special bracket supplied in the kit which replaces the forward section of the front subframe. A bolt in the centre of this bracket allows fine adjustment of the angle of the bumper section.

REAR BUMPER

The rear bumper has been designed on the same principles as the front and fixes in the same manner.

The rear of the bumper mould is supported on a special bracket supplied in the kit, which is bolted to the rear mounting holes on the subframe. The top of this bracket then supports the base of the bumper moulding and can be finely adjusted by the two bolts and spreader washer used to bolt the bumpers base to the brackets.

DASHBOARD ASSEMBLY



The dashboard frame is assembled as the diagram above and supplies location for the following:

1. Front subframe top mounts, door pillars and tunnel.
2. Heater.
3. Pedal Assembly
4. Steering Column.
5. Bonnet Release Pull.
6. Dashboard Moulding.
7. Centre Console Moulding.

In turn the dashboard moulding supplies location for:

- a) Air Vents and Pipes.
- b) Metro Instrument Pack.
- c) Metro Switch Pod, Switches and fuses.
- d) Light Switch.
- e) Glove Box.
- f) Screen Vent Covers
- g) Radio Cassette (Optional)

The Centre Console moulding supplies location for:

- h) Heater Fan Switch.
- i) Heater Direction and On/Off Control.
- j) Ash Tray.

DASHBOARD ASSEMBLY

1. Position the dashboard framework as indicated on the assembly diagram with the two flat plates of the frame sitting on top of the upper subframes mountings, sandwiching the glass fibre tub between the two. The four studs provided for mounting the front subframe should project through the plates into the car.

The sides of the framework are located onto the door pillars and the holes are marked and should be drilled ready for bolting, spreader plates are provided in the kit to ensure the door pillars are not pulled inwards when the frame is tightened (pack the framework until it is a tight fit between the door apertures).

The centre section is mounted on the top face of the tunnel and one further location is required in the centre of the bulkhead into the air collector box. Tighten all nuts and bolts to secure.

2. Position the standard mini fresh air heater, preferably the steel casing variety (some are plastic) centrally on the three fixings on the framework. Two bolts locate the front top edge of the heater ($\frac{1}{2}$ " x $\frac{1}{4}$ " nuts and bolts) and the third location is mounted to the stud at the rear right hand side of the heater box.
3. The rear mount of the pedal assembly is located and bolted to the flange provided on the framework ($\frac{5}{16}$ " x 1" nut and bolt).
4. The allegro steering column is mounted by its two standard fittings onto the framework. The top mounting fixes the column just behind the switch pod. The bottom mount secures the base of the column on its standard mounting point. The universal joint on the Allegro column has to be shortened to give the main shaft an overall length of $8\frac{1}{2}$ ". This can then be connected between the base of the column and the standard mini steering rack.
5. The bonnet release pull supplied in the kit is attached to the framework to the right of the steering column. The cable can then be attached at a later date when the bonnet release lock is fitted.

Before fitting the dashboard a number of items have to be secured to the moulding i.e.,

- a) The air vents (Ford Escort 1985) are secured into the four apertures by means of a hot glue gun. The connecting hoses (Ford Escort 1985) are then located to the rear of the vents by a push fit and attached to the holes provided in the bulkhead when the dashboard is fitted.
- b) The instrument pack is secured to the dashboard after the dash has been fitted to the framework. The pack is held in position by four self tapping screws through the instrument pod and into the dashboard itself.
- c) The switch pod, switches, printed circuit board and fuses are assembled as a complete unit and are passed through the instrument pod aperture and then positioned so the switch and pod are flush with the dashboard. Two self tapping screws secure the pod into the dashboard moulding.

Cont'd/

- d) The main light switch should be positioned above the ignition key on the dashboard facia. A hole should be cut in the dashboard to secure the switch.
- e) The glove box door should be mounted onto the dashboard with the hinge provided. The hinge is secured to both moulds by pop rivets. The lock should be attached to the top centre of the door and the striker should be secured to the inner face of the glove box to inter act with the lock mechanism.
- f) There are three apertures on the top edge of the dashboard. The mini vent facias should be hot glued into position to cover the raw edge of the mould (facia vent No. CZH 623 unipart).
- g) The radio cassette if required should be positioned centrally on the dashboard under the two central fresh air vents. A hole should be cut into the dashboard to suit the size of the unit to be fitted.
- h) The heater fan switch aperture is ready trimmed and the switch itself should be left on the heater casing which the centre console should then surround.
- i) The directional control is also on the heater casing and the console should surround it. The knob on the direction lever should be replaced once the console is in place.
- j) The ashtray should be secured in the hole provided in the centre of the console.

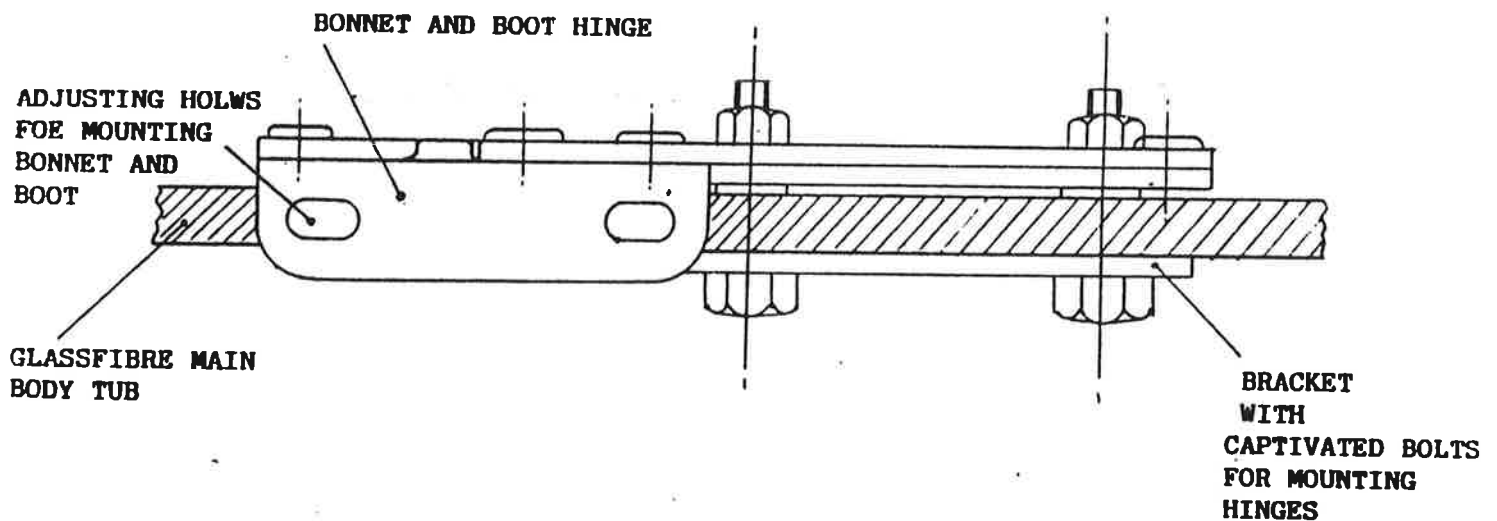
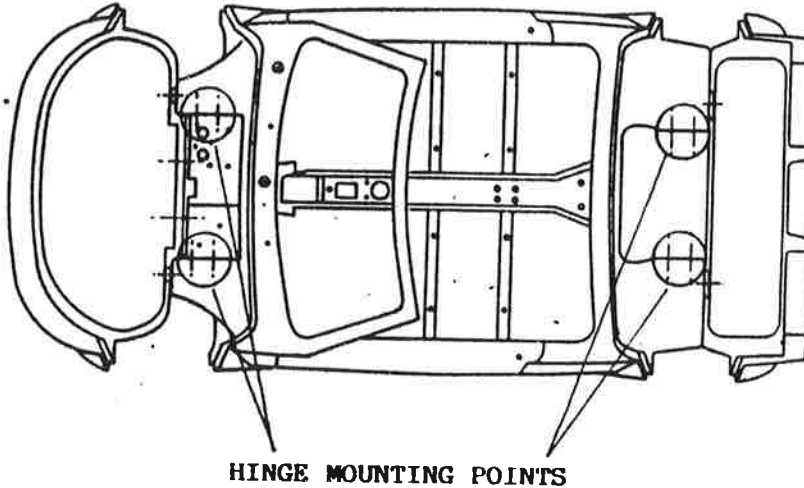
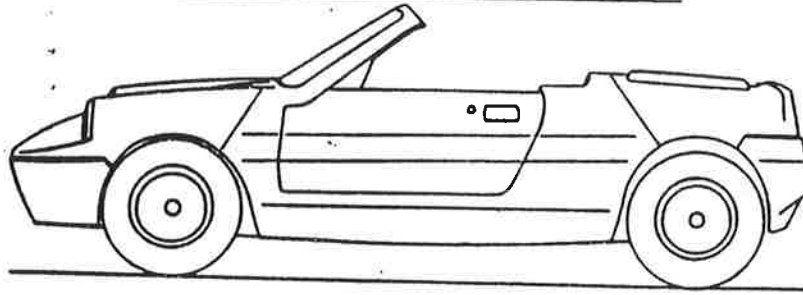
The dashboard moulding can now be fitted to the dashboard framework. This is done by two bolts through the dash moulding one to the right of the steering column aperture and one on the bottom edge of the glove box moulding just above the hinge. A packer approx $\frac{1}{2}$ " thick will be required between the moulding and the front face of the framework. The bottom edge of the dashboard should be in line with the bottom edge of the framework bar.

The top edge of the dashboard where it meets the screen is finally positioned by three $\frac{1}{4}$ " bolts in the air vent frame. These should be tightened to push the dashboard moulding up and clamp it to the base of the windscreen.

It may be necessary to remove the steering column pod or loosen the column to fit the dashboard. It is also advisable to fit all cables, water pipes to heaters and wiring loom in position to the framework prior to fitting the dashboard for the final time. The metro instrument pack can now be fitted with the self tappers as described and the steering wheel can also be secured.

The centre console should be fitted after the sound proofing and carpets are placed. The gear lever and gater are also secured before the console is finally secured.

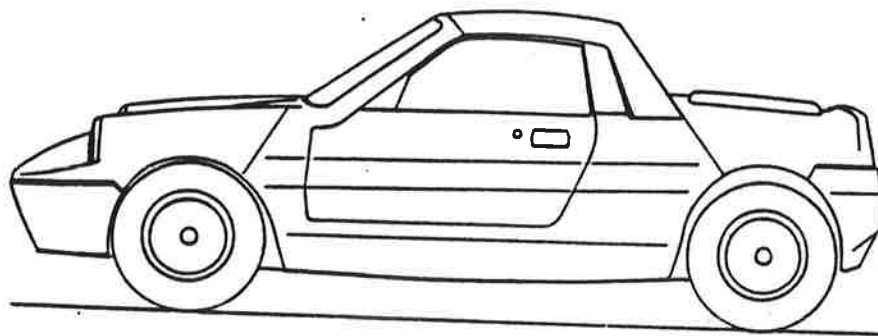
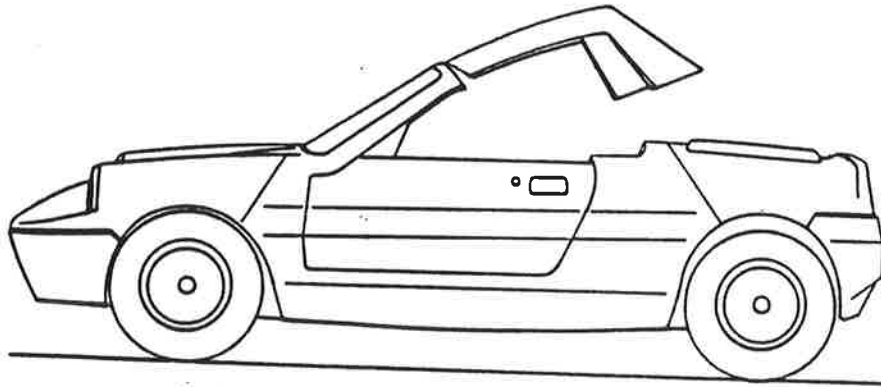
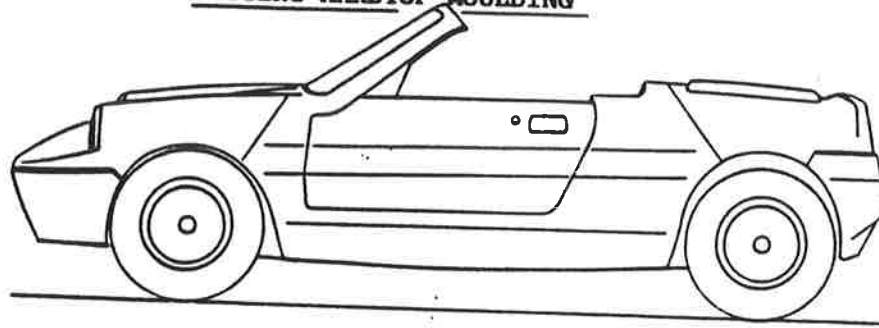
BOOT AND BONNET HINGE MOUNTINGS



THE BONNET AND BOOT HINGES ARE HANDED AND SHOULD BE ASSEMBLED TO THE MAIN TUB AS THE ABOVE DIAGRAM. FOUR PLATES ARE SUPPLIED IN THE KIT WITH CAPTIVATED BOLTS, THESE BRACKETS ARE POSITIONED ON THE INSIDE OF THE MAIN BODY TUB AND THE BOLTS ARE PUSHED THROUGH THE HOLES INTO THE AIR COLLECTOR BOX AT THE FRONT AND INTO THE ENGINE BAY AT THE REAR. THE HINGES CAN NOW BE SECURED TO THE PROTRUDING BOLTS AND TIGHTENED.

THE FINAL ADJUSTMENT OF HEIGHT AND WIDTH SHOULD BE COMPLETED WHEN THE BOOT AND BONNET ARE BOLTED IN POSITION.

FITTING HARDTOP MOULDING



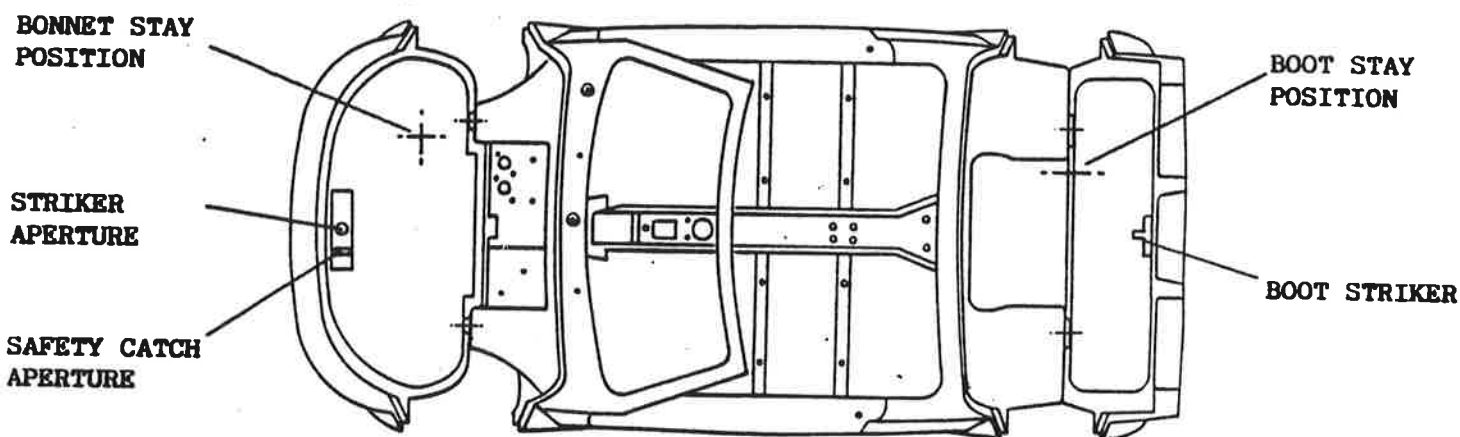
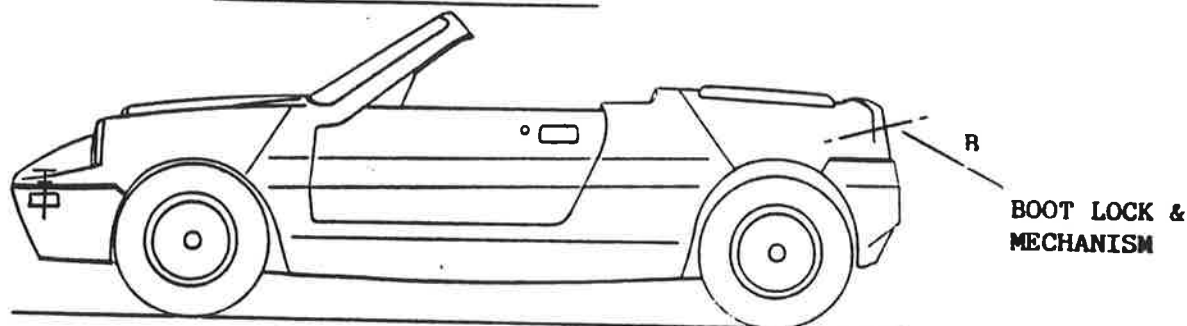
The hardtop moulding is supplied complete with headline mould attached. The mould edges should be cleaned and smoothed to ensure an accurate fit. The hole positions on the front and rear flanges are marked and should be drilled 5/16"dia., four on the front flange and five on the rear flange.

The neoprane rubber strip supplied in the kit should be attached to the hardtop to form a seal along the roof line where the two moulds meet.

The hardtop is lifted into position and the front flange on the moulding should be located under the lip on the top edge of the windscreen, the rear section is then pushed down onto the car locating the rear flange over the main body section. Secure the hardtop with the button head screws and washers supplied.

*The rear screen should only be fitted with the hardtop assembled in place.

BONNET AND BOOT FITMENT



NB. SEE SUPPLEMENT FOR MK II ROSSA

FITTING BONNET

The inner moulding of the bonnet has been designed to support the bonnet hinges bonnet striker, bonnet stay, safety release catch, and wiring harness for the headlights. The bonnet is lifted into position allowing the captivated bolts to engage into the hinges which have already been mounted to the main tub. Four nuts secure the bonnet in place, adjustment of the bonnet is made by semi securing the fixing bolts on the hinge and then tapping the moulding into position. The height of the two moulds where they meet should be the same and the shut face (gap between the moulds) should be approx. $\frac{1}{4}$ ". Once the mould is positioned correctly tighten all nuts to secure the fit.

The lock mechanism is mounted in the top of the radiator cowling, this operation is done when the bonnet release cable is connected, the bonnet striker can then be screwed into the captivated plate in the inner bonnet mould and adjusted for tension, the bonnet should now open and close on the bonnet release lever situated under the dashboard. A bonnet release safety catch is also provided in the kit, this also attaches to the inner moulding next to the striker, cut a hole in the top of the radiator cowling so the lock engages when the bonnet is closed.

The bonnet stay is mounted to the drivers inner wheel arch (shown above) and to the inner mould directly above it, the front bonnet stay is the type that releases automatically once the bonnet is lifted an extra inch.

Finally the front section of the wiring loom (headlights/sidelights) is attached to the inner bonnet mould with 'P' clips and pop rivets.

FITTING BOOT

The boot is mounted to the hinges and adjusted to the main tub mould in the same manner as the bonnet. The lock and striker for the boot are separate units and are operated with a key instead of a release cable. The lock mechanism is mounted to the inner moulding which is marked ready for drilling, the lock itself is mounted to the outer mould (as marked) and when the two are assembled should inter-act allowing the key to activate the lock mechanism. The striker for the boot lock is mounted on the rear bumper and positioned in order to tension the boot lock correctly.

The boot stay is attached to the rear bumper mould (as shown) and to the inner boot mould directly above it. The boot stay is the type which requires releasing by hand

SOUNDPROOFING

The soundproofing material supplied in the kit is ½" thick rubber backed felt and there is sufficient to cover all interior surfaces of the main body tub. The felt should be cut to size using a stanley knife and then the separate sections should be glued directly to the interior faces of the mould. Obviously the majority of noise transmission passes through the bulkhead between the engine and passenger compartment, it is therefore advisable to add a second layer of soundproofing to this section ensuring there is still room to fit the inner seat panel.

The access holes throughout the tub i.e. through the rear bulkhead and down the tunnel should be covered with hardboard plates and glued or screwed into position prior to fitting the soundproofing.

CARPETS

A complete set of carpets are supplied in the kit. The separate sections should be self explanatory by there shape. The non-edged sections should be fitted first followed by the edged sections. The loose edged pieces supplied for covering the inner sills should be wrapped around the door aperture glued and trimmed this edge will then be covered with the weatherseal.

All carpet sections are glued into position directly onto the soundproofing material.

INTERIOR PANELS

The remaining interior panels can now be fitted i.e. centre console, rear seat section.

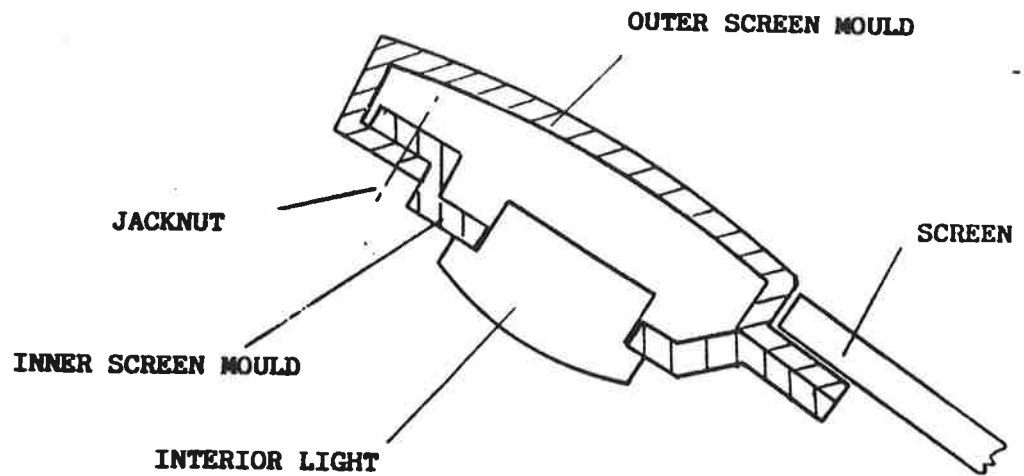
The centre console fits over the gear lever and should fit snugly up to the dashboard allowing the heater control and switch to protrude through it, this mould can if necessary be secured in position with self tappers into the tunnel section.

The rear seat mould is lifted into position and the top secured with button head screws and washers, through into the "Jacknuts" in the main tub. The bottom corners can be secured to the inner sills with self tappers.

INTERIOR LIGHT AND SCREEN SURROUND

The inner screen surround is finished with three fascia panels the top section which runs across the top edge of the screen contains the interior light. The wiring for this light should already have been secured ready for connecting. A hole should be cut in the centre of this mould to accommodate the light unit supplied in the kit, this is located by a push fit into the aperture.

This section of the moulding is secured in position with the "Jacknuts" used for locating the front edge of the hardtop.



The other edge where it meets the screen is secured with glue from a hot glue gun.

The side screen fascia panels are secured in position with glue from a hot glue gun or two self tappers screwed into the plywood laminate which is laminated to the inner edge of the screen surround.

SETTING UP THE ROSSA

NOTE Before starting the engine it is very important that the engine is turned over until oil pressure is obtained.

WHEELS AND TYRES

The Rossa has been designed to take 185 x 13" x 60 series tyres. Appropriate tyres are available from the factory. The tyre pressures recommended are front 22 rear 24.

The wheels must be 5½J x 13". The **STUD** pattern must be as the mini. 4 studs on a 4" P.C.D. the inset is extremely important and should be 12 - 18mm inset. This amount of inset assumes that disc brakes are used on the front and super minifins at the back. Appropriate wheels are available from the factory.

BRAKES

Both disc and drum brakes can be used on the front of the Rossa. The best being the larger discs fitted to the 12" wheel 1275 GTS and some of the current mini's. It is relatively a simple matter to change the brakes used and it is possible to start with drum brakes and change at a later date to disc assemblies.

At the back it is not possible to use disc brakes as a separate mechanical handbrake is required by the construction and use regulations.

With the cars near 50 - 50 WT distribution no brake adjuster valve is required front to back neither is one recommended.

RIDE HEIGHT

It is extremely important that the ride height is set correctly. The car will not handle or ride correctly until this is accomplished. The ride height will settle once the car has been used on the road and therefore no adjustment should be made to the ride height until the car has been used for several days.

The ride height is adjusted by lengthening or shortening the length of the aluminium trumpet between the spring rubber and the top arm of the suspension. Changing the length of this trumpet changes the ride height of the car by 5 times the amount.

The simplest method of effecting this adjustment is by fitting HI-LO adjustable length trumpets. These trumpets can be adjusted simply without being removed from the car.

If HI-LO's are not fitted it will be necessary to remove the trumpet from the sub-frame and the appropriate amount added (with washer between trumpet and ball) or removed (off the bottom face of the trumpet with a file) from the trumpet.

The ride height should be measured as the distance between the ground and the bottom of the car in the four corners of the tub immediately prior to the wheels where the wheel arch meets the base of the tub. The ride height should be at the front 5½" at the rear 5¼".

FILLING THE COOLING SYSTEM

It is extremely important that before the engine is started that the water system is completely filled. With the relatively long pipe runs to the radiator and the heater air pockets can easily form and prevent the system working correctly. The following procedure has proved to be extremely reliable.

1. Remove the thermostat and replace cover.
2. Remove pipe from heater tap on head of engine and switch off tap.
3. Using garden hose connect into heater pipe using a small piece of tube as joiner.
4. Switch on tap and fill system with the top removed from the header tank.
5. Once water fills the tank and no air bubbles are present switch off tap and replace filler cap.
6. Open air bleed on top of radiator and switch on tap. Switch off tap when all air is removed and tighten bleed.
7. Remove filler cap from header tank and top up as necessary.
8. Start engine and set at say 1,500 r.p.m.
9. Continually fill header tank until no more air is present.
10. Replace cap.
11. Let engine warm up and check that the heater works correctly and that the radiator is warm over the complete matrix area.
12. If everything is working satisfactorily replace thermostat and the system is ready.
13. If not the filling procedure must be repeated until satisfactory.

SETTING FRONT AND REAR TOE IN

The ride height must be correctly set before you set toe-in. Experience has shown that the equipment generally available in garages is not capable of setting up the Rossa correctly.

To set up your car proceed as follows:-

1. Tie a piece of string around your car as shown on the top two views opposite. Make the tension in the string sufficient to maintain straight lines between the wheels.
2. Set the steering rack to its middle position.
3. Adjust the track rods so that the string just touches the tyres at positions "X1" and "X2".
4. It is correctly adjusted when the slightest movement of the steering wheel moves the tyre off the string. Move the wheel to the right and the right hand tyre should come away from the string "X1" move the wheel to the left and the left hand tyre should move away from the string "X2".
5. Leaving the front wheels in the correct position adjust the rear tie rods so that the string is just touching the tyres as at the front "X3" and "X4".
6. Repeat 3 and 4 above.
7. Repeat 5 above.

If your car has the same track front and rear your wheels are now set in line with the car and have no toe in. If it has not then:-

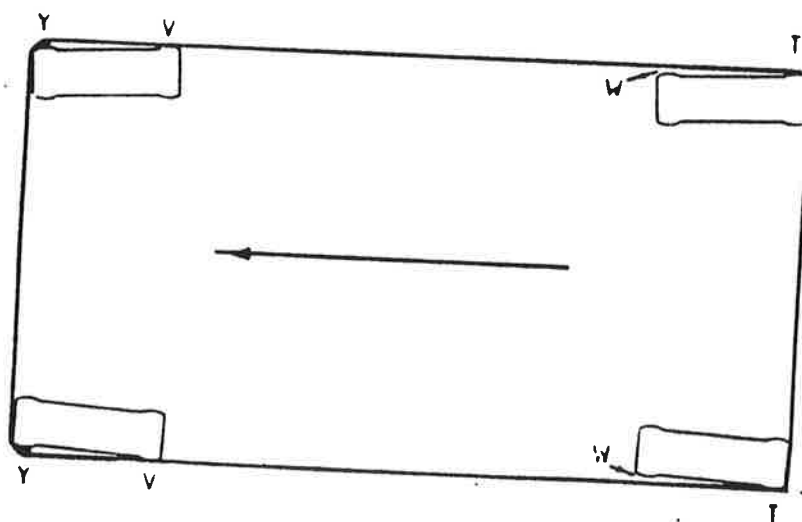
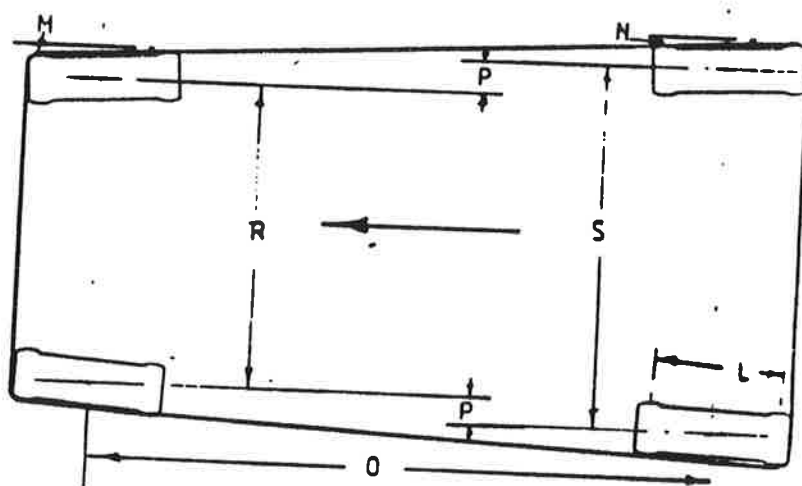
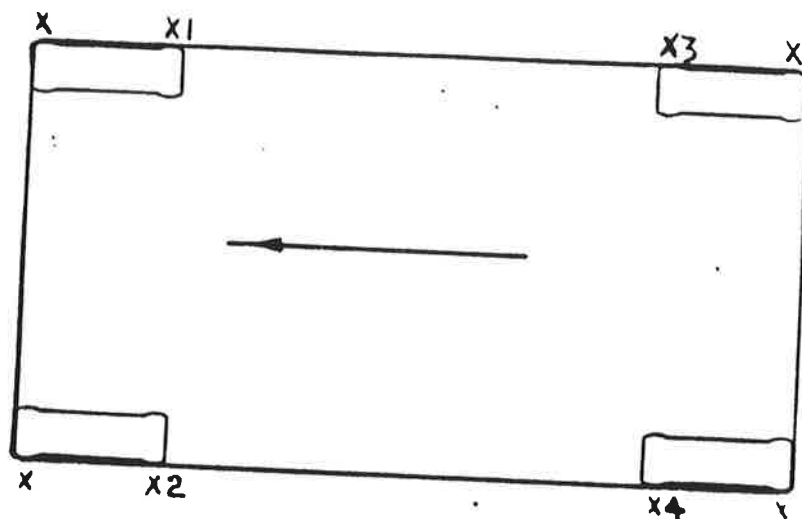
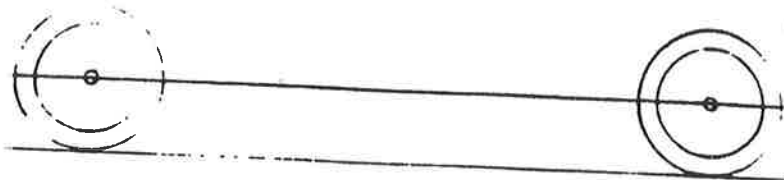
8. Measure the front "R" and rear track of your car "S".
9. Determine P for your car $\frac{S - R}{2} = P$ (half the track difference)
- (O is 90.5" and L is 18" giving a ratio of 5:1)
10. Divide P by 5 and this will give you the toe-in your wheels are set at. If your front track is greater than the rear then it will give the toe-in you have set.

Putting in typical values for a Rossa will give a toe-in of say $\frac{1}{20}$ "

Moving down to the bottom drawing the toe-in at the front "Y" should be 1/16" per side and the back "W" should be 1/16" per side.

11. Subtract the figure for toe-in already calculated due to the difference in track from the 1/16" required and MAKE UP THIS distance in shims.
12. Place these shims under the string at the "Y" points.
13. Repeat 2, 3 and 4. The front toe-in is now correctly adjusted.
14. Adjust the rear tie rods until you can measure the same amount at position "W".

Your car is now correctly adjusted for toe-in.



FASTENER LIST "ROSSA" ISSUE 4

APPLICATION	DESCRIPTION	QTY
HARDTOP TO TUB	6mm WASHERS	9
	LINFAST 6mm JACKNUTS	9
	1" BUTTON HEADED 6mm CAP SCREWS	9
REAR PANEL TO TUB	LINFAST 5mm JACKNUTS	9
	3/4" BUTTON HEADED 5mm CAP SCREWS	9
	5mm WASHERS	9
INNER DOOR TO DOOR	LINFAST 4mm JACKNUTS	12
	3/4" BUTTON HEADED 4mm CAP SCREWS	4
	3/4" C/S 4mm SET SCREWS	8
	4mm WASHERS	12
WIPER MOTOR TO TUB	LINFAST 6mm JACKNUTS	2
	1" BUTTON HEADED 6mm CAP SCREWS	2
	6mm WASHERS	2
HANDBRAKE TO TUB	LINFAST 6mm JACKNUTS	4
	1" BUTTON HEADED 6mm CAP SCREWS	4
	6mm WASHERS	4
BONNET & BOOT STAYS TO INNER MOULDS	LINFAST 6mm JACKNUTS	4
	3/4" BUTTON HEADED 6mm CAP SCREWS	4
	6mm WASHERS	4
BONNET SAFETY CATCH TO INNER MOULDING	LINFAST 6mm JACKNUTS	2
	1" BUTTON HEADED 6mm CAP SCREWS	2
	6mm WASHER	2
	6mm SPRING WASHER	2
BONNET & BOOT STAYS TO LOWER PANELS	3/4" x 3/4" UNF SET BOLTS	4
	3/4" WASHER	8
	3/4" NYLOCK NUT UNF	4
FRONT BUMPER TO TUB	1 1/4" x 3/8" UNF SETS	4
	3/8" MUDGUARD WASHERS	4
	3/8" STANDARD WASHERS	4
	3/8" NYLOCK UNF	4
RADIATOR MOUNTING BRKTS TO BUMPER MOULDING	3/4" UNF C/S SETS 3/4" LONG	4
	3/4" PLAIN WASHER	4
	3/4" UNF NYLOCK	4
BATTERY MOUNTING BRKT	3/4" UNF THUMBSCREWS	2
	3/4" PLAIN WASHERS	2
	3/4" SPRING WASHERS	2
PETROL TANK STRAP TO INNER RADIATOR MOULD	3/4" UNF x 3/4" LONG SET BOLT	1
	3/4" UNF x 2" SET BOLT	1
	3/4" PLAIN WASHER	4
	3/4" UNF NYLOCK	2
WASHER BOTTLE TO BUMPER	3/4" UNF x 3/4" SET	2
	3/4" WASHERS	4
	3/4" UNF NYLOCK	2

APPLICATION	DESCRIPTION	QTY
DOOR HINGE TO DOOR	5/16" UNF x 1" LONG SETS	12
	5/16" WASHERS	24
	5/16" NYLOCK UNF	12
DOOR HINGE TO TUB	5/16" UNF x 1 1/4" LONG BOLTS	12
	5/16" WASHER	24
	5/16" NYLOCKS	12
DASH FRAME TO DOOR POSTS	5/16" UNF x 1 1/4" BOLTS	4
	3/8" WASHERS	8
	3/8" UNF NYLOCKS	4
DASH FRAME TO TUNNEL	3/8" UNF x 1 1/4" SET (BOLTS)	1
	3/8" PLAIN WASHER	1
	3/8" MUDGUARD WASHER	1
	3/8" NYLOCK UNF	1
DASH FRAME TO HEATER BOX	3/8" UNF x 1 1/4" LONG SET	1
	3/8" WASHER	1
	3/8" MUDGUARD WASHER	1
	3/8" UNF NYLOCK	1
VENT FRAME TO TUB	3/8" UNF x 1 1/4" LONG SET	2
	3/8" PLAIN WASHERS	2
	3/8" MUDGUARD WASHERS	2
	3/8" NYLOCK UNF	2
BRAKE & CLUTCH MASTER CYLINDERS TO PEDDLE BOX THROUGH TUB	5/16" UNF NUTS	4
	5/16" WASHERS	4
	5/16" SPRING WASHERS	4
BONNET & BOOT HINGES TO TUB & INNER MOULDING	5/16" NUTS UNF	16
	5/16" WASHERS	16
	5/16" SPRING WASHERS	16
SEATS TO TUB	LINFAST 6mm JACKNUTS	8
	1" 6mm BUTTON HEADED CAP SCREWS	8
	6mm WASHERS	8
	6mm SPRING WASHERS	8
THROTTLE PEDDLE TO TUB	1/2" UNF x 1/2" LONG SETS	3
	1/2" PLAIN WASHERS	3
	1/2" SPRING WASHERS	3
HEATER TO FRAME	1/2" UNF x 1/2" LONG SETS	2
	1/2" WASHER	6
	1/2" UNF NYLOCKS	3
SEATBELT ANCHOR TO SILL TUNNEL PLUS REEL HOLDER TO BACK PANEL	3/8" UNF x 1 1/4" BOLT	12 4
	3/8" WASHER PLAIN	8
	3/8" UNF NYLOCK	4
SEAT BOLT FIXING TO SILL TUNNEL & REEL HOLDER	7/16" UNF x 2" LONG	2

APPLICATION	DESCRIPTION	QTY
SEAT BELT ANCHORAGE TO TUNNEL	3/8" UNF x 1 1/2" LONG BOLTS	6
	3/8" PLAIN WASHERS	6
	3/8" SPRING WASHERS	6
SEAT BELT ANCHORAGE TO TOP OF TUB ON REAR PANEL	3/8" UNF x 1 1/2" LONG BOLTS	2 6
	3/8" PLAIN WASHERS	4 12
	3/8" NYLOCK UNF	2 6
SUBFRAME TO TUB	2 1/2" LONG x 3/8" UNF STUDS	8
	3/8" PLAIN WASHERS	8
	3/8" NYLOCK	8
BRAKE PEDAL BOX TO DASH INNER FRAME	5/16" UNF 1" SET	1
	5/16" PLAIN WASHER	2
	5/16" UNF NYLOCK	1
STEERING COLUMN TO DASH INNER FRAME	5/16" x 1" LONG SETS	2
	5/16" PLAIN WASHER	4
	5/16" UNF NYLOCK	2
	5/16" UNF x 2 1/2" LONG BOLT	1
	5/16" PLAIN WASHERS	2
	5/16" NYLOCK	1
BONNET PULL TO DASH INNER FRAME	7/16" UNF x 2" LONG SET	1
	7/16" NUTS	2
	7/16" PLAIN WASHERS	2
DASHBOARD TO INNER FRAME	1/4" UNF x 2" LONG BOLT	2
	1/4" PLAIN WASHERS	4
	1/4" UNF NYLOCK	2
DASHBOARD FRONT CLAMPS IN VENT FRAME	1/4" UNF x 2" SETS	3
	1/4" UNF NYLOCK	3
HEADER TANK TO TUB	1/4" UNF x 1/2" LONG SETS	4
	1/4" WASHER PLAIN	8
	1/4" UNF NYLOCK	4
BOOT CATCH TO REAR BUMPER	1/4" UNF x 1/2" LONG SETS	2
	1/4" PLAIN WASHER	2
	1/4" MUDGUARD WASHERS	2
	1/4" UNF NYLOCKS	2
SHOCKABSORBER TO SUB FRAME	3/8" UNF x 1" LONG SET	4
	3/8" PLAIN WASHER	8
	3/8" NYLOCK	4
SHOCKABSORBER PINS TO MOUNTS AND SHOCKABSORBERS	3/8" NYLOCK	12
	3/8" PLAIN WASHER	4
	3/8" MUDGUARD WASHERS	16
BOOT LATCH TO INNER MOULDING	1/4" UNF x 1/2" LONG SETS	3
	1/4" PLAIN WASHERS	6
	1/4" UNF NYLOCK	2
BONNET RELEASE CATCH TO RADIATOR MOULDING	8 mm x 1" LONG SETS	2
	8 mm PLAIN WASHER	2
	8 mm SPRING WASHER	2

APPLICATION	DESCRIPTION	QTY
LIGHT BOWLS TO BONNET	1/4" UNF x 1/2" SETS	6
	1/4" PLAIN WASHERS	12
	1/4" UNF NYLOCK	6
INDICATORS TO FRONT BUMPER	1/2" LONG SELF TAPPING SCREWS	6
	PLAIN WASHERS FOR ABOVE 5mm	6
INSTRUMENTS TO DASH	1/2" SELF TAPPING SCREWS PAN HEAD	4
INNER FRAMES TO DOORS	1/2" UNF C/S x 1/2" LONG SCREWS	6
	1/4" UNF CES x 1 1/4" LONG SCREWS	2
	1/4" UNF NUTS	4
	1/4" PLAIN WASHERS	12
	1/4" SPRING WASHERS	12
	1/4" UNF NYLOCK	8
WINDOW REGULATORS TO INNER FRAMES	1/4" UNF x 1" SETS	4
	1/4" WASHERS	8
	1/4" NYLOCK UNF	4
WINDOW STOPS TO INNER DOOR FRAMES	1/4" UNF x 1" SETS	6
	1/4" WASHERS PLAIN	12
	1/4" NYLOCKS UNF	6
INNER DOOR PULL TO INNER FRAME	4mm x 1/2" LONG BUTTON HEAD CAP SCREW	4
	4mm PLAIN WASHER	4
	4mm SPRING WASHER	4
LATCH TO DOOR	6mm C/S x 1/2" LONG SCREWS	6
OUTER HANDLE TO DOOR	5mm NUTS	4
	5mm PLAIN WASHERS	4
	5mm SPRING WASHERS	4
SWITCH ASSEMBLY TO DASH	1/2" LONG PAN HEAD S.T SCREWS	2
AIR VENTS TO FRAME	3/8" POP RIVETS 1/2" LONG ALLY	6
	3/8" POP RIVETS WASHER	12
WIRING HARNESS FIXING	3/8" POP RIVETS 1/2" LONG ALLY	20
	3/8" POP RIVETS WASHERS	20
THROTTLE PEDAL TO TUNNEL	3/8" POP RIVET 1/2" LONG ALLY	5
	3/8" POP RIVET WASHERS	5
	5/16" "P" CLIPS	5
GEAR CHANGE	1/4" UNF x 1 1/2" LONG BOLTS	3
	1/4" UNF NUTS	3
	1/4" WASHERS	3
	1/4" SPRING WASHERS	3
	1/2" UNF LOCK NUTS	4
	1/2" WASHERS	4
	5/16" UNF NUTS	6
	5/16" WASHERS	6
	5/16" SPRING WASHERS	6
	5/16" UNF x 1" LONG SET	2

APPLICATION	DESCRIPTION	QTY
REAR BUMPER SUPPORT BAR TO SUBFRAME	$\frac{1}{2}$ " UNF x 1" LONG SETS $\frac{1}{2}$ " PLAIN WASHERS $\frac{1}{2}$ " UNF NYLOCK	2 4 2
REAR BUMPER TO SUPPORT BAR	$\frac{1}{2}$ " UNF x 2" SETS $\frac{1}{2}$ " LOCKNUTS $\frac{1}{2}$ " PLAIN WASHERS $\frac{1}{2}$ " SPRING WASHERS $\frac{1}{2}$ " MUDGUARD WASHERS	2 6 2 4 4
BOTTOM FRONT SUB- FRAME TO TUB	$\frac{1}{2}$ " UNF x $1\frac{1}{2}$ " LONG $\frac{1}{2}$ " UNF x 2" SET $\frac{1}{2}$ " UNF NYLOCK $\frac{1}{2}$ " UNF NUTS $\frac{1}{2}$ " UNF WASHERS + 4 MUDGUARD	3 1 3 2 10
SUPPORT BAR TO FRONT SUBFRAME	$\frac{1}{2}$ " UNF 1" SETS $\frac{1}{2}$ " UNF NYLOCK $\frac{1}{2}$ " PLAIN WASHERS	4 4 8
FRONT BACK SUBFRAME TO TUB	$\frac{1}{2}$ " UNF x $1\frac{1}{2}$ " BOLTS $\frac{1}{2}$ " NYLOCKS $\frac{1}{2}$ " WASHERS + 2 MUDGUARD WASHERS	2 2 4
REAR BUMPER TO TUB	$\frac{1}{2}$ " UNF x $1\frac{1}{2}$ " LONG $\frac{1}{2}$ " UNF NYLOCK $\frac{1}{2}$ " MUDGUARD WASHERS	2 2 4
FIT WIRING LOOM SOCKETS TO FRONT & REAR BUMPERS	4mm x $\frac{1}{2}$ " LONG BUTTON HEADS 4mm WASHERS 4mm NYLOCKS	8 16 8
ENGINE TOP STEADY	7/16" UNF NYLOCK 7/16" MUDGUARD WASHERS	2 2
INNER DOOR PULL BEZEL, TO INNER FRAME	4mm x $\frac{1}{2}$ " C/S SCREWS	2
CLUTCH PIPE BRACKET TO SUBFRAME	$\frac{1}{2}$ " UNF x $\frac{1}{2}$ " LONG SETS $\frac{1}{2}$ " UNF NYLOCK $\frac{1}{2}$ " WASHERS	2 2 4
ENGINE STEADY BRACKET TO TUB	$\frac{1}{2}$ " UNF x $1\frac{1}{2}$ " LONG BOLTS $\frac{1}{2}$ " UNF NYLOCK $\frac{1}{2}$ " PLAIN WASHERS $\frac{1}{2}$ " MUDGUARD WASHERS	2 2 2 2
BOLTS FOR FITTING JACKNUTS THROUGHOUT THE KIT	6mm x 1" LONG BUTTON HEAD CAP SCREWS 5mm x 1" LONG BUTTON HEAD CAP SCREWS 3mm x 1" LONG BUTTON HEAD CAP SCREWS	3 3 3
DOOR STRICKER IN TUB	12mm FREE ENDING NUT	2

APPLICATION	DESCRIPTION	QTY
REAR SUSPENSION CONVERSION	½" UNF R.H. LOCK NUT ½" UNF L.H. LOCK NUT 5/16" UNF x 1" SETS 5/16" WASHERS 5/16" UNF NYLOCKS	2 2 2 4 2
RADIATOR PIPES		
FRONT HOSES TO RADIATOR	40mm JUBILEE CLIPS	2
FRONT HOSES TO FERRULE	35mm JUBILEE CLIPS	2
TUNNEL HOSES TO FERRULE	35mm JUBILEE CLIPS	2
TUNNEL HOSES TO S.S. PIPES	35mm JUBILEE CLIPS	2
S.S. PIPES TO TOP & BOTTOM ENGINE HOSE	40mm JUBILEE CLIPS	2
TOP & BOTTOM HOSES TO ENGINE	40mm JUBILEE CLIPS	2
HEATER PIPES & PETROL PIPE		
BOTTOM HOSE TO FERRULE	23mm JUBILEE CLIPS	1
TOP SWITCH TO PIPE	20mm JUBILEE CLIPS	1
PIPE TO FERRULE	20mm JUBILEE CLIPS	3
FERRULE TO 90° BENDS	20mm JUBILEE CLIPS	2
BENDS TO HEATER	20mm JUBILEE CLIPS	2
PETROL	12mm JUBILEE CLIPS	4
TOP PIPE	15mm JUBILEE CLIPS	2
BRAKE & CLUTCH TEE PIECES TO TUB	½" UNF x 1½" LONG BOLT ½" WASHERS ½" UNF NYLOCK NUTS	2 10 2
INNER HANDLE TO INNER DOORS	5mm x ½" LONG BUTTON HEADED CAP SCREWS 5mm NYLOCKS 5mm WASHERS PLAIN	4 4 8
WATER PIPE CLAMP TO FRONT SUBFRAME	"P" CLIP 1½" DIA. ½" UNF x 1" LONG SET ½" WASHER ½" UNF NUTS	2 1 4 3
FLEXIBLE CLUTCH PIPE BRACKET TO REAR SUB- FRAME	½" UNF x ½" SETS ½" PLAIN WASHERS ½" UNF NYLOCK	2 4 2
SEAT BELT MOUNTING ROD TO BRKTS	7/16" UNF NUTS 7/16" WASHERS 7/16" SPRING WASHERS	4 8 4
TUNNEL RODS	5/16" UNF NYLOCKS 5/16" PLAIN WASHERS	6 6
STAINLESS STEEL WATER PIPES TO REAR TUB	½" UNF x 2" SET ½" WASHERS ½" NYLOCK	4 8 4

199064

SUPPLEMENT TO ROSSA MANUAL FOR ROSSA II

FIT BONNET & BOOT STAYS

Both stays consist of $\frac{1}{4}$ " diameter rod secured to the bottom mouldings in the positions indicated on the diagrams below. Use nylock nuts and washers to secure the stays to the bottom mouldings. The clips which secure the stays when not in use are provided in the kit. Secure these clips with 5mm bolts, washers and nuts provided in the kit. It is necessary to stand the clip off the mouldings as shown below with the red fibre washers provided.

The top of the stay locates in the underside of the bonnet and boot in the positions shown. Drill a $\frac{1}{4}$ " clearance hole in the inner mouldings being extra careful not to follow through with the drill on to the outer moulding!

FIT BONNET LOCK, CATCH, STRIKER & STRIKER PLATE

The bonnet catch mechanism is secured to the top of the radiator moulding in the position shown. Cut a suitable slot and drill 2 x $\frac{1}{4}$ " clearance holes to suit the mechanism and secure with 2 x $\frac{3}{4}$ " UNF x 1" long bolts, washers, and nylock nuts provided.

The bonnet lock and key is situated in the right hand side of the front number plate as shown in the diagram. Drill and file hole to suit lock and secure with clip provided. Note, it is necessary to extend the slots in the key barrel to allow for the extra thickness of the glass fibre moulding, compared to steel for which the lock was designed.

A rod can now be bent up to pass over the top of the radiator and connect between the mechanism and the lock and key. Make sure that all operates freely before proceeding further.

Secure the bonnet striker plate to the inner bonnet moulding in the position shown. In the first instance, secure with 1/8" 'pop' rivits. Fit the bonnet striker to the bonnet striker plate with 2 x $\frac{1}{4}$ " UNF x $\frac{3}{4}$ " long bolts, washers, and nylock nuts provided, as shown in the diagram. Shut the bonnet and adjust striker to plate until correct fit is obtained. If necessary, drill out 'pop' rivits and re-fit. Once satisfactory fit is obtained, drill through holes in bracket, remove bracket and fit 2 x 6mm jacknuts provided and refit bonnet with 10mm long 6mm screws, washers, and spring washers.

FIT BOOT LOCK, CATCH, STRIKER, AND CATCH PLATE

All the components used for the boot lock, apart from the catch plate, are the same as for the bonnet.

Fit the boot striker to the bottom moulding in the position shown in the diagram using 2 x $\frac{1}{4}$ " UNF x $\frac{3}{4}$ " long bolts, nylocks and washers.

continued

Fit the boot lock to the boot top moulding in the position shown in a similar manner to the bonnet lock.

Fit the boot catch plate to the boot moulding in the position shown in the diagram using six 'pop' rivits provided.

Fit the catch mechanism to the plate using 2 x $\frac{1}{4}$ " UNF x $\frac{3}{4}$ " long bolts, nylocks, and washers provided.

Bend up rod provided to fit between lock and mechanism clutch for correct operation.

Shut boot and adjust striker as necessary.

FIT BONNET SAFETY CATCH, AND SAFETY CATCH STRIKER

Fit bonnet safety catch to inner moulding in position shown in diagram in using 3 x 5mm jacknuts and 3 x 5mm x 10mm long allen screws, washer and spring washers.

Fit bonnet safety catch striker plate to top of radiator box in position shown in drawing using 2 x 6mm jacknuts and 2 x 6mm 10mm allen screws, washers and spring washers. Cut a small hole in the radiator box as shown in diagram to allow the safety catch to enter when bonnet is closed. Adjust safety catch to obtain correct operation.

NB It is extremely important that the safety catch works correctly as it must stop the bonnet lifting if the bonnet is not correctly shut. Do not be satisfied until you are completely happy with the operation!!

FIT HEADLAMPS TO BONNET

The headlamps are held in the bonnet using special plastic retaining rings supplied in the kit. Drill three holes in each headlamp aperture in the positions indicated on the moulding. Fit the headlamp retaining plastic rings with the springs between the plastic rims and the bonnet moulding. Remove when working satisfactorily and fit headlamp units (not provided in kit) to plastic mouldings. Refit complete assembly to bonnet.

FIT PLASTIC COVERS TO BONNET (OPTIONAL EXTRA)

Offer up plastic covers to bonnet. These are made larger than required and hence require trimming. Trim back carefully to obtain correct fit using coarse grained production/sand paper.

Fit 4 stainless steel retaining clips to each headlamp in the position shown on the diagram. Use the instrument headed stainless steel 4mm screws provided. Prior to fitting these clips, radius the ends as shown in the diagram to present a neater appearance. With the four retaining clips fitted to the plastic covers over them up to the bonnet and mark position of clips on top surface of the bonnet with a pencil. Remove covers and drill four x $\frac{1}{8}$ " diameter holes in the side flange of bonnet to accept clips.

continued

Work very carefully so as not to come through top surface. The covers can now be fitted to bonnet.

FIT INDICATORS TO FRONT MOULDING

The front indicators provided in the kit require slight modification before they can be fitted in the moulding. Remove small clip on top of light shown 'A' in diagram. Reduce the two flanges 'B' and 'C' on bottom of light, flush with outside lens. Drill 3mm clearance hole in centre of small side flange to take retaining rod provided in the kit. Cut moulding as shown in diagram to accept indicator units. Drill 3mm hole in radiator moulding in the position indicated on the diagram. The light can now be fitted and retained by rod and 3mm nylock nut and washer.

FIT DRIVING LAMPS TO FRONT MOULDING (OPTIONAL EXTRA)

The driving lights have to be stripped as shown in diagram and a 3mm hole drilled in the position shown in the diagram. The driving lamps are retained in the front moulding in a similar manner to the indicator units but use two retaining rods. To obtain adjustment of the lamps pack under positions 'd' indicated on the drawing.

FIT REAR LAMPS TO REAR BUMPER

The rear lamps are retained in the rear bumper using the brackets provided in the kit. Use 1 x 6mm nylock nut and washer.

FIT EXHAUST COVER TO REAR MOULDING

The exhaust cover is attached to the rear bumper using four x $\frac{1}{4}$ " UNF x 1" long bolts, nuts, washers and spring washers.

Offer up the exhaust moulding to the boot moulding and mark the boot moulding on the inside so that the bolts would come through the flange on the exhaust cover. Remove the exhaust cover and drill 4 x $\frac{1}{4}$ " clearance holes in the boot floor. Working with an assistant, offer up the exhaust moulding and make through the boot moulding. Drill 4 x $\frac{1}{4}$ " clearance holes in exhaust cover. Fit moulding using the bolts provided.

BATTERY MOUNTING

The battery fits in the front passengers side as shown in the diagram. The battery has to be raised about $1\frac{1}{4}$ " above the floor of the moulding. Two pieces of planed 3 x 2" cut appropriately does the job adequately. The receiving rods go into 2 x $\frac{1}{4}$ " clearance holes drilled 90mm above the moulded floor level.

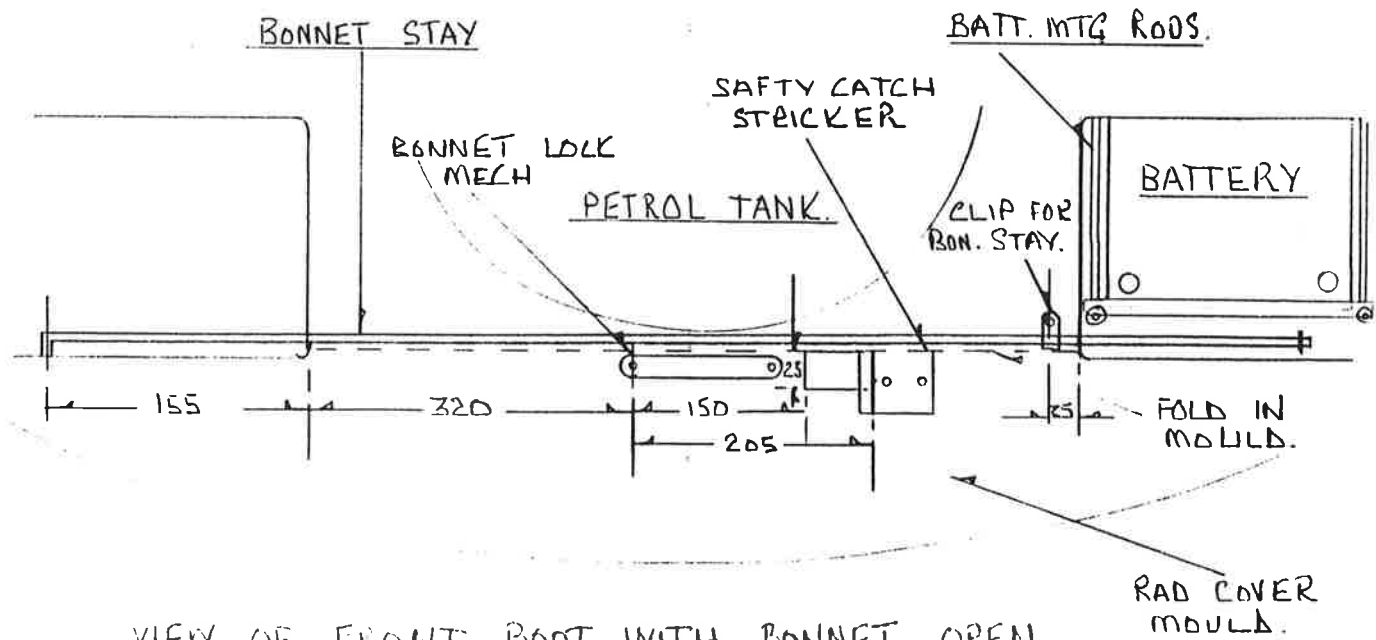
FASTNER LIST ROSSA II (SUPPLEMENT)

Sheet 1

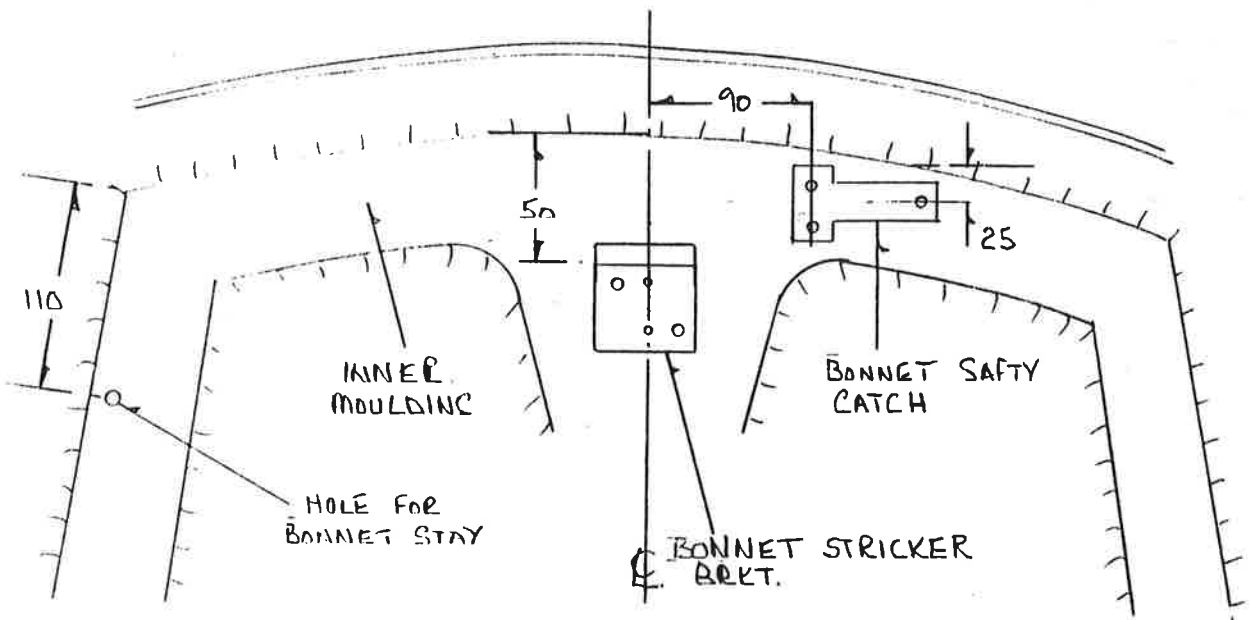
<u>Application</u>	<u>Description</u>	<u>Quantity</u>
Bonnet stay to radiator moulding	$\frac{1}{4}$ " UNF nylock $\frac{1}{4}$ " Washer	1 2
Boot stay to boot moulding	$\frac{1}{4}$ " UNF nylock $\frac{1}{4}$ " Washer	1 2
Boot & bonnet stay clips to mouldings	5mm x 20mm long button heads 5mm nylock nuts 5mm steel washers 5mm red fibre washers	2 2 2 14
Bonnet catch mechanism to rad. mouldings	$\frac{1}{4}$ " UNF x $\frac{3}{4}$ " long sets $\frac{1}{4}$ " washers $\frac{1}{4}$ " UNF nylock	2 4 2
Bonnet striker plate to bonnet	$\frac{1}{8}$ " x $\frac{1}{2}$ " pop rivits 6mm x 10mm long button heads 6mm jacknuts 6mm washers 6mm spring washers	4 2 2 2 2
Bonnet striker to bonnet striker plate	$\frac{1}{4}$ " UNF x $\frac{3}{4}$ " long sets $\frac{1}{4}$ " UNF nylocks $\frac{1}{4}$ " washers	2 2 4
Boot striker to boot moulding	$\frac{1}{4}$ " UNF x $\frac{3}{4}$ " long sets $\frac{1}{4}$ " washers $\frac{1}{4}$ " nylocks	2 4 2
Boot catch plate to boot lid	$\frac{1}{8}$ " x $\frac{1}{2}$ " long pop rivits	6
Boot catch mechanism to boot catch plate	$\frac{1}{4}$ " UNF x $\frac{3}{4}$ " long sets $\frac{1}{4}$ " washers $\frac{1}{4}$ " nylocks	2 4 2
Bonnet safety catch to inner bonnet moulding	5mm x 10mm long button heads 5mm jacknuts 5mm washers 5mm spring washers	3 3 3 3

ApplicationDescriptionQuantity

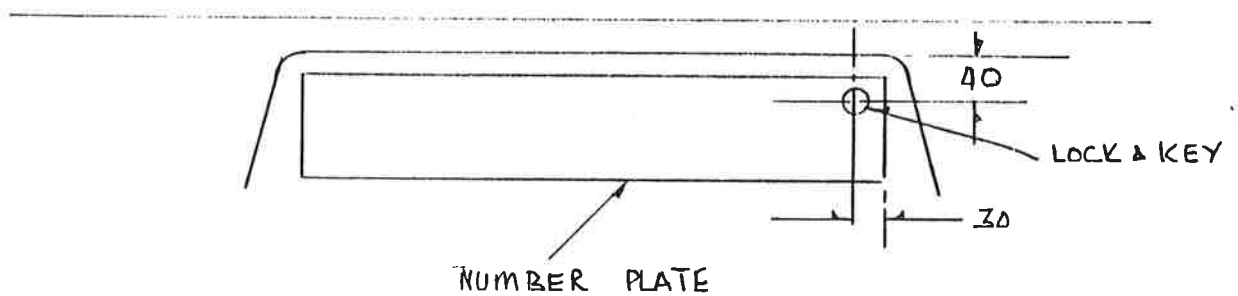
Bonnet safety catch striker plate to rad. moulding	6mm x 15mm long button heads	2
	6mm jacknuts	2
	6mm washers	2
	6mm spring washers	2
Stainless steel cups to plastic lampcovers	4mm stainless steel instrument headed screws 10mm long	8
Indicators/ driving lamps to front moulding	3mm nylock	6
	3mm washers	6
Rear lamps to boot moulding	6mm nylocks	2
	6mm washer	2
Exhaust cover to boot	$\frac{1}{4}$ " UNF nylock	4
	$\frac{1}{4}$ " UNF x $\frac{3}{4}$ " long sets	4
	$\frac{1}{4}$ " washers	8



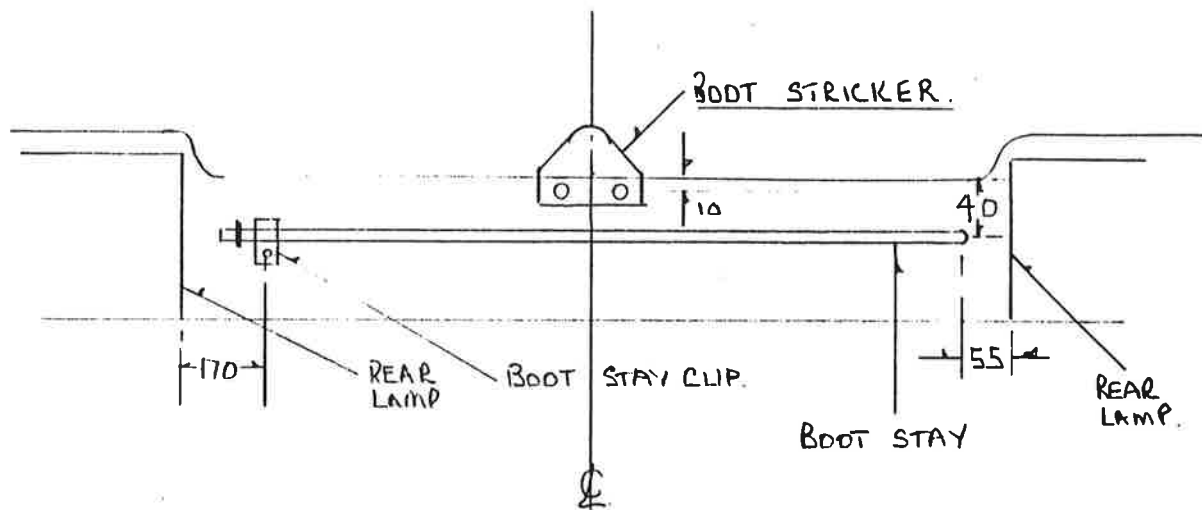
VIEW OF FRONT BOOT WITH BONNET OPEN



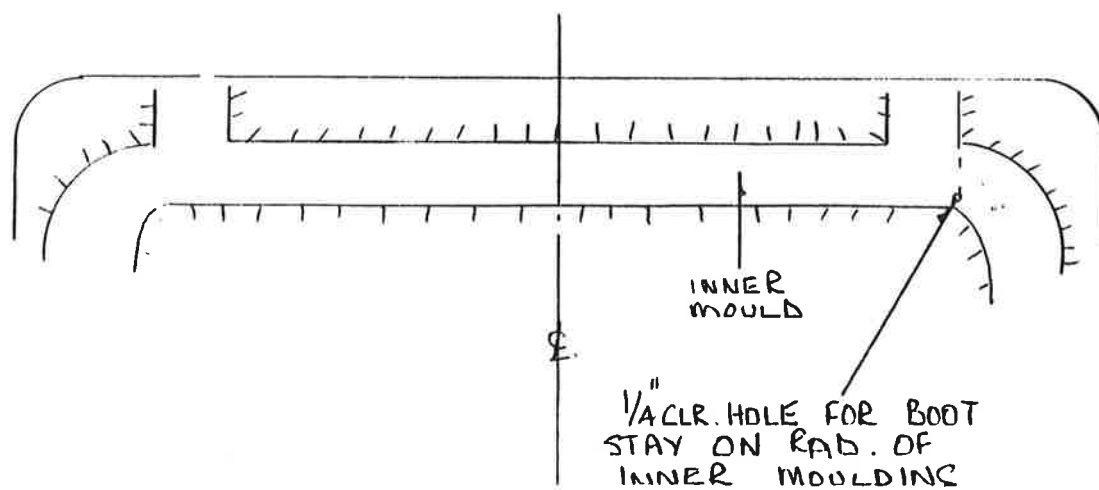
VIEW FROM UNDER SIDE OF BONNET



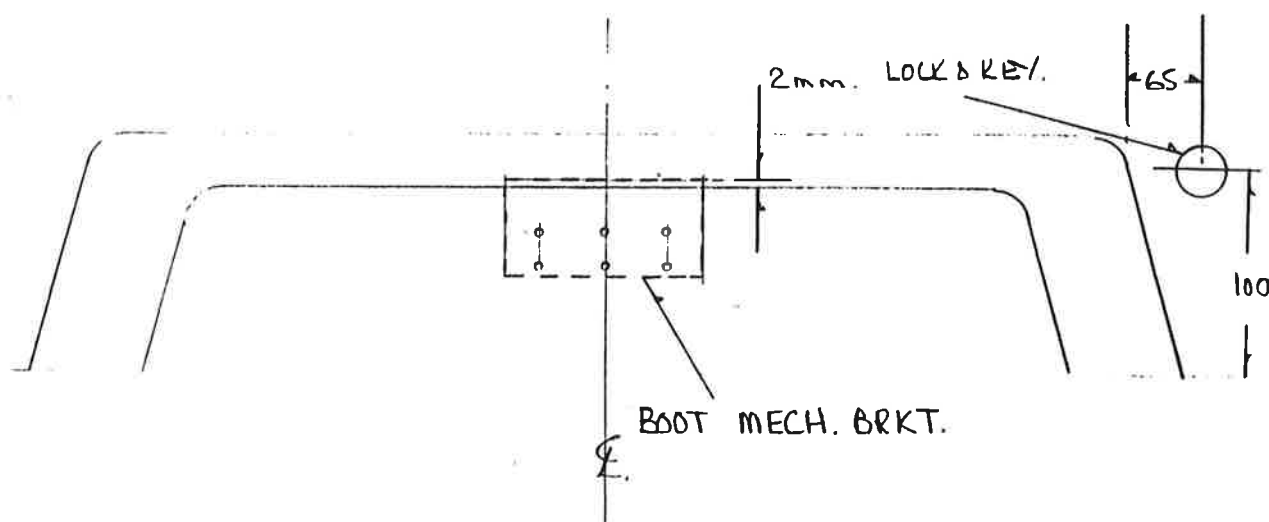
VIEW FROM FRONT OF CAR



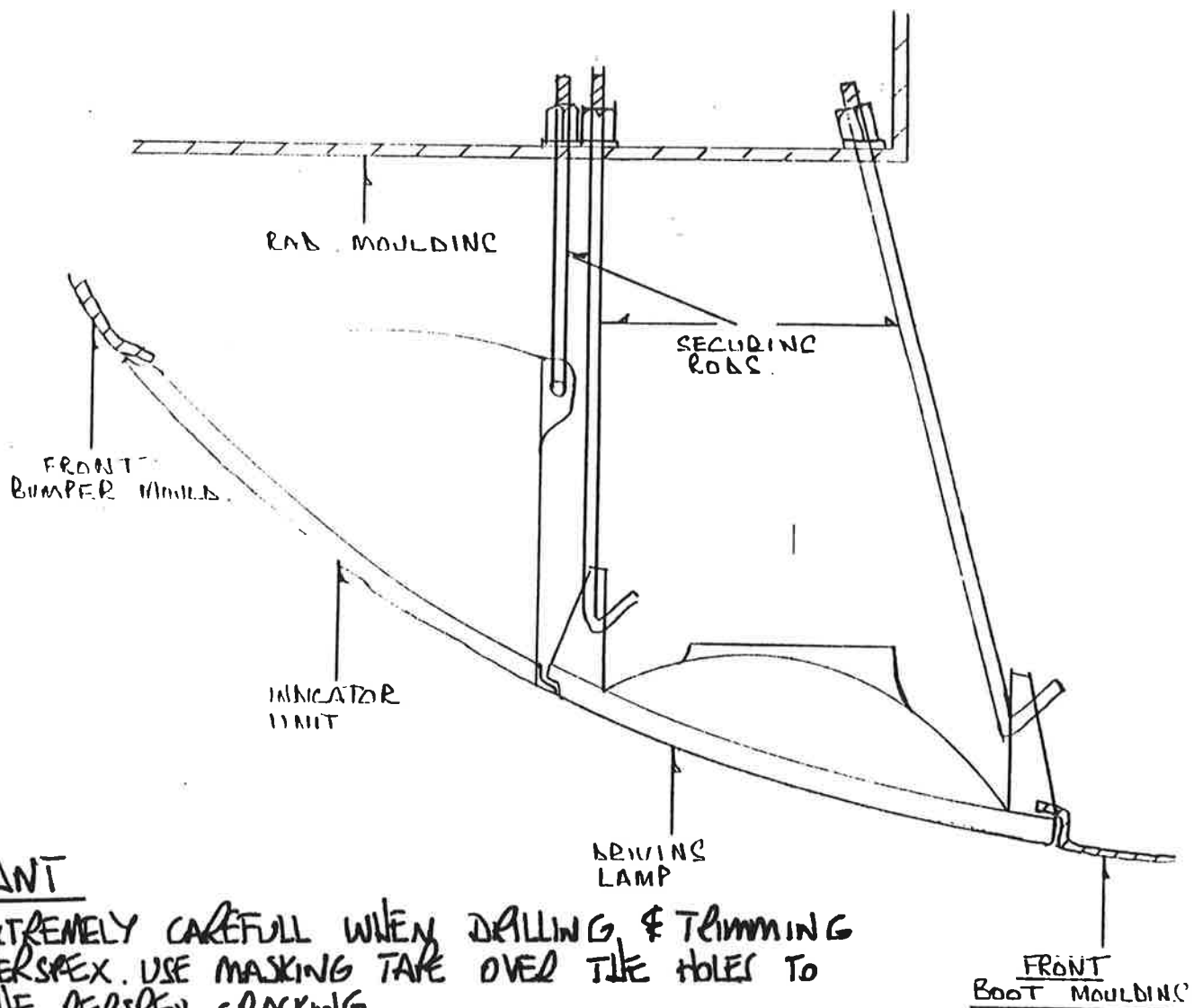
VIEW FROM REAR OF CAR. (BOOT LID UP).



VIEW OF UNDERSIDE OF BOOT LID



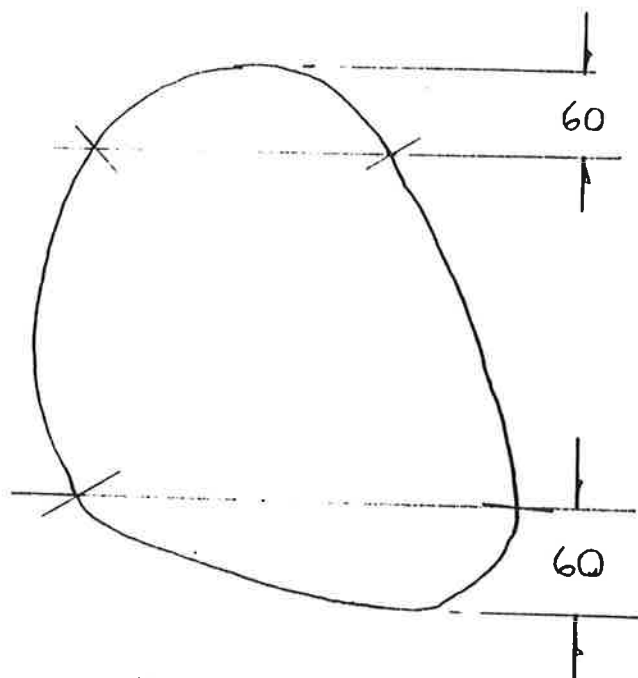
VIEW FROM REAR OF CAR (BOOT DOWN).



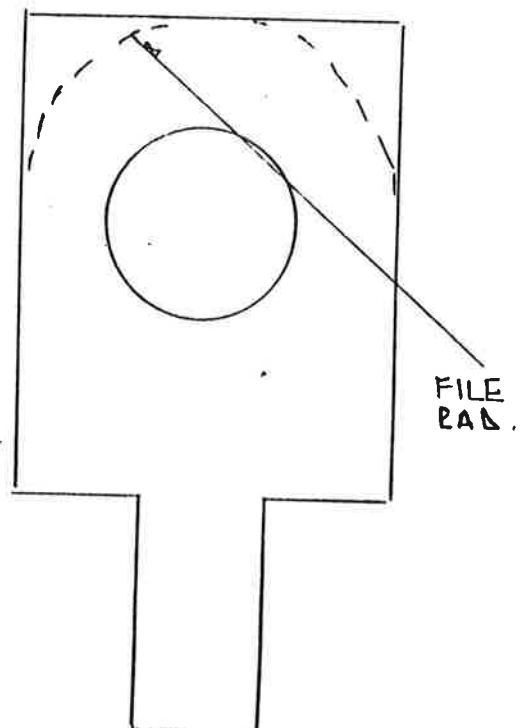
* IMPORTANT

BE EXTREMELY CAREFULL WHEN DRILLING & TRIMMING THE PERSPEX. USE MASKING TAPE OVER THE HOLES TO STOP THE PERSPEX CRACKING.

VIEW (SECTION) LAMP MOUNTINGS



POSITION OF HEADLAMP COVER CLIPS.

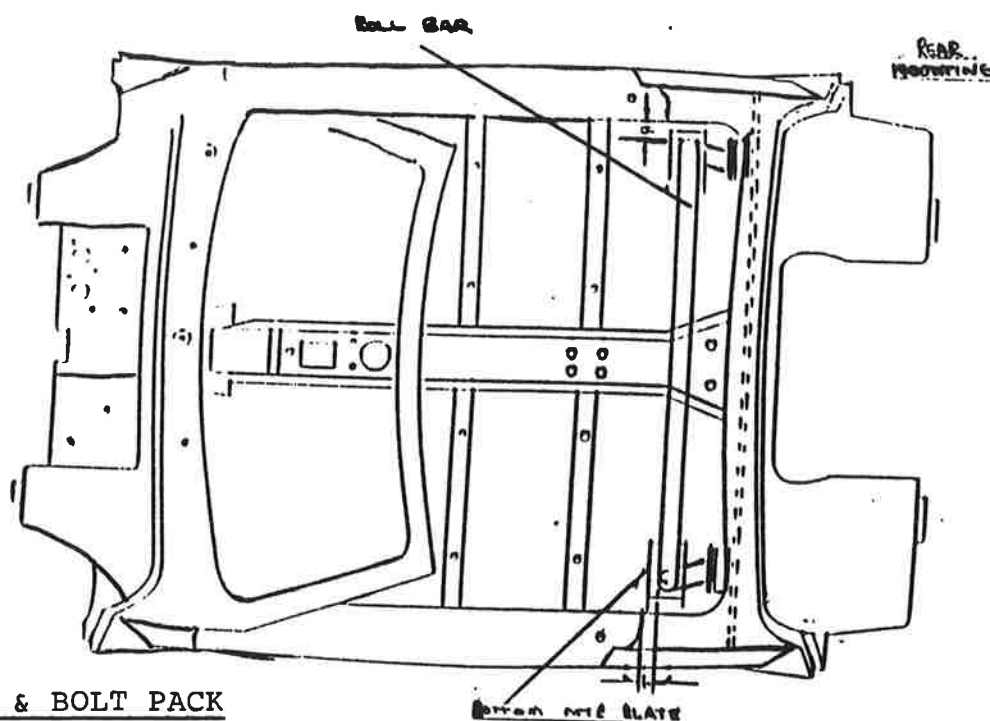


MOD TO CLIPS.



The 4 rear mounting plates fit directly either side of the ply panel. Bolt the rear mountings through the 2 metal plates and the ply forming a sandwich. Use washers to bridge the gap between the rear mountings and the metal plates. Check that everything is correct. i.e. position and vertical. Remove roll bar.

Loosely, fit the rear seat panel into the car and mark and trim two suitable holes for the legs. Drill 4 x 3/8"d. holes for the rear mountings. Fit the rear seat panel securely. Fit the roll bar through the holes and secure with the 2 x 12mm bolts and the 4 x 3/8" UNF bolts.



ROLL BAR NUT & BOLT PACK

<u>Item No.</u>	<u>Size</u>	<u>Description</u>	<u>Qty.</u>	<u>Use</u>
1	12mm	1½" Long Set Bolts	2	Fix Bottom of Roll Bar
2	3/8 UNF	1½" Long Set Bolts	4	Roll Bar to Rear Bracket
2	5/16 UNF	2½" Long Set Bolts	8	Rear Brkt. to Ply Bulkhead
4	½ UNF	1" Long Bolts	4	Bottom Brkt. to Floor
5	12 mm	Washers	2	1. Above
6	12 mm	Spring Washers	2	1. Above
7	3/8 UNF	Washers	4	2. Above
8	3/8 UNF	Spring Washers	4	2. Above
9	5/16 UNF	Nylocks	8	3. Above
10	5/16 UNF	Washers	16	3. Above
11	½ UNF	Washers	8	4. Above
12	½ UNF	Nylocks	4	4. Above
13	5/16 UNF	Washers	100	Packing Rear Brkt.

