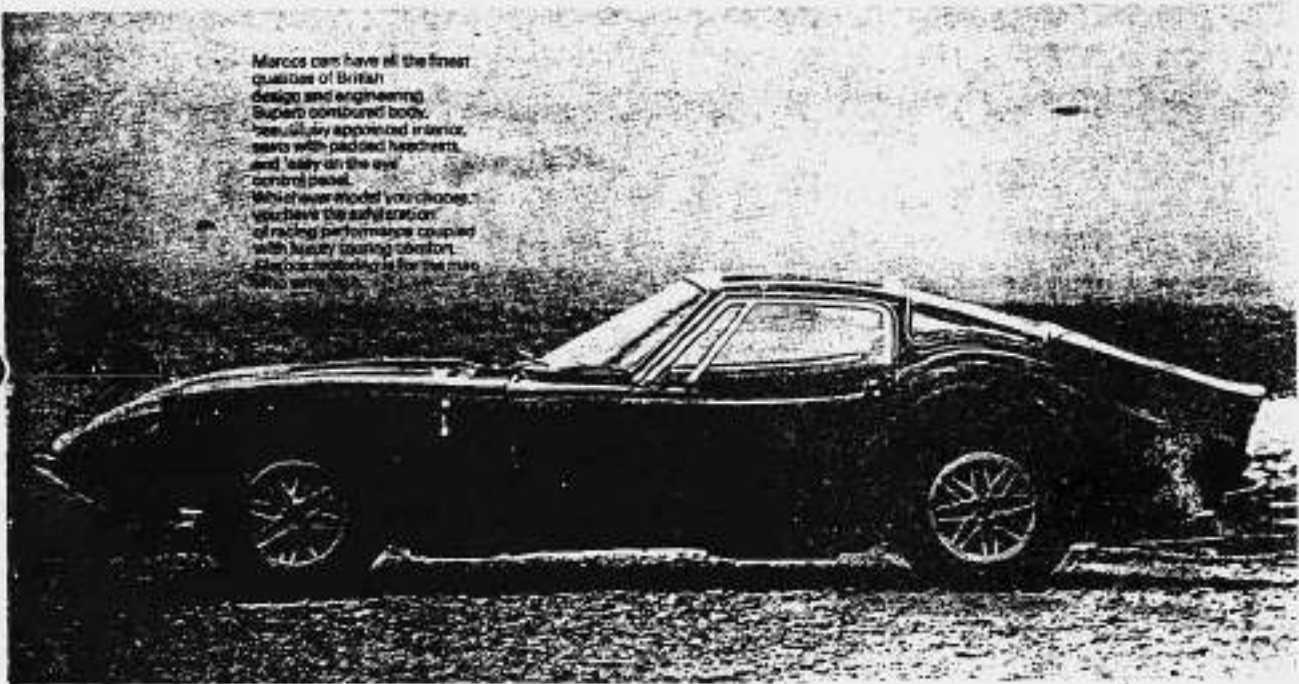




MARCOS CARS OF AMERICA

PRE 1971

Marcos cars have all the finest
qualities of British
design and engineering.
Superb contoured body,
sensually appointed interior,
seats with padded headrests
and easy on the eye
control panel.
Whichever model you choose,
you have the exhilaration
of racing performance coupled
with luxury touring comfort.
Also recommended for the man
who drives hard.



MANUAL

55 OAK STREET • ROSWELL, GEORGIA 30075 • (404) 993-7653

"MARCOS", A LITTLE HISTORY

To anyone who has seen the original "Wooden Wonder" Marcos, it can be difficult to imagine that from such an ungainly vehicle should evolve the sleek and beautiful shape that most people now equate with the name. The story begins in 1959 when Jem Marsh and Frank Costin first met and between them conceived the idea of a car built on a wooden chassis. The result was the strange little car that was raced by a youthful Jackie Stewart in various events, and which interestingly enough still races to this day. In fact the Jackie Stewart car, driven by Jem Marsh himself, has recently won the Historic Group Two Championship, and would seem to be in excellent shape after twenty odd years.

Nevertheless, this car had styling that is best described as unusual, and it had such novelties as a four piece windshield and a great deal of plywood in its construction. By the end of 1960 Frank Costin had left the company, although by this time Dennis and Peter Adams had joined Marsh, Dennis being responsible for styling, and Peter being involved with the intricacies of the wooden chassis that was to become a Marcos hallmark. A move to new premises at Bradford-on-Avon in Wiltshire enabled the company to step up development of the 'Dolly Duckling'; gradually the familiar Marcos shape grew out of this, its shapely fiberglass bodywork being designed by Dennis Adams and based on a wooden monocoque chassis. The car continued in this form until 1969 when the wooden chassis was replaced by a tubular steel unit, and then in 1971 production ceased altogether.

The Marcos is a rewarding car to own and drive, although now I must interject a few words on the motive power units and the model range, which are possibly the most confusing aspects of the car. The very first models, from 1964 to 1966, were fitted with the 1800c.c. Volvo engine, and then from 66 to 67 a FORD engine either 1500 or 1650cc was available. Then from 1967 to 1971 a FORD Cortina 1600 GT crossflow engine was used, although it was at about this time that power was increased quite dramatically with the FORD V engines and so on. In fact, between 68 and 71 the 3-litre Ford V-6 was available on the wooden chassis, from 69 to 70

the car was available with the Ford V-4 (although only 40 examples were made), and from 1969 to 1971 the car was available with the 3 litre straight six engine from the Volvo 164.

Now the famous MARCOS sports car is being built again by its originator Jem Marsh in England and imported to the United States by Marcos Cars of America Ltd. of Roswell, Georgia. The new Marcos is powered by the 2800cc Ford V-6 and is built with the all steel chassis with minor changes and improvements.

THAT'S RIGHT!! Now you have a second chance at owning one of the worlds last true hand-built sports cars. Don'T miss it.....

Bob Boston

This manual is to assist purchasers of Marcos body/chassis units in the completion of their vehicles. We must emphasise that this is only to help you build your vehicle and there are many other parts and ways of fitting the body/chassis units up to road going standards.

Set out below are parts which can be purchased either used and overhauled, or in some cases purchased new through the normal trade channels.

Front suspensions from a Tr Spitfire or GT-6 models. This includes the wish-bone uprights, steering arms, brake discs, calipers and hubs. The shock absorbers and springs cannot be used.

Steering column Triumph Spitfire or GT-6. Preferably the later type which has the 3 position light switch. This must be complete with the top mounting brackets and all clamps and fittings, right down to the rack and pinion on the vehicle concerned.

Rack and Pinion these can be taken off of any Spitfire or GT-6. Preferably the later type which has a rubber seal between the brackets and the rack. The earlier models had aluminum brackets and are not so desirable.

Checks to be made on the used parts. Obviously, if you are using used parts you must check every item very carefully and insure that everything is cleaned and oiled, and repacked with grease in the case of the front hubs.

Front Suspension Bottom trunnions are very often worn, due entirely to lack of maintenance. These are shown on figure D. The calipers should be carefully checked for leaks. New rubber seals for these are easily obtained if need be. Wishbone bushings are normally satisfactory but should be checked also.

The brake discs should not be too badly corroded. The vertical link on the front suspension, in conjunction with the trunnion, should also be checked for any undue wear.

Rack and Pinion The rack and pinion should be carefully checked for any tight spots. These normally give very little trouble but would be advisable to strip the rack and clean it out and repack with the appropriate grease. The ball joints on the end of the rack should be checked and replaced if necessary.

Rear Axle if using rear axle other than supplied by Marcos, You should check for bearing and oil seal leakage which could leak onto brake shoes. In the rear of this manual is a diagram of the Marcos rear suspension set up. The brackets must be attached correctly and by electric welding other than gas welding which might cause axle shaft heat distortion. You would also have to change rear brake drum bolt pattern to match the front as in figure A.

ASSEMBLY INSTRUCTIONS

The front suspension fits right onto the Marcos frame using the nuts and bolts as listed in our nut and bolt sheet in the rear of this manual. The spring and shock should be fitted with the adjusting screw at the bottom, using the correct bolts.

The rack and pinion steering should be bolted on the chassis using the standard Triumph brackets and rubbers.

The rear axle should be fitted with the 4 radius rods. The adjustable radius rod to be fitted last and adjusted to suit the correct length between the axle bracket and the chassis. The panhard rod can then be fitted. (Refer to figure H) Fit it to the chassis first then onto the axle. The panhard rod must be adjusted to insure that the back plates of the axle, on both sides, are the same distance away from the main chassis tubes. The spring/shock units are fitted with the adjusting screw on the bottom.

Ensure that the lock nuts on the adjustable radius rod and Panhard rod are done up really tight.

Having fitted the front and rear suspension and modified the axle halfshafts in regard to the bolt pattern for the rear wheels, you can now fit your wheels.

Fit master cylinders, these are Girling 3/4 inch bore with an adjustable rod and vertical reservoirs, to pedal carriage. Fit flexible hoses to suit onto cylinders and to steel brake lines, via a suitable bracket in order to support them, see drawing (5). The brakes can now be bled. It is best to bleed them once then let them set overnight, and then you can bleed them again to ensure there is no air in the lines.

Having already your handbrake (from Cortina), cut a hole in the floor to accept the moving part of the brake and bolt onto the support bracket underneath (as in Marcos chassis drawing). Fit the Marcos handbrake cable to the moving part of the handbrake, using the cable and clevis pin supplied. The other end of the cable fits to the compensating mechanism of the rear axle.

It is very often better to hear the engine you have chosen running before you buy it. If possible drive the car to ensure it has good oil pressure and does not smoke from the oil filler cap. Thoroughly check and clean all engine accessories (starter, alternator, etc.) to minimize any chance of failure at future dates.

The engine can be installed in the Marcos with all the accessories mounted with the exception of the exhaust manifolds which should be left off until later.

Exhaust manifolds for the 2800cc V-6 Ford engine are special and can be supplied from Marcos. The 1600 cc Cortina and 1500cc Cortina are also special and can be supplied by Marcos. The Triumph TR-6 and the Volvo 6 cylinder engine both use their standard manifolds. The exhaust system can be custom made or supplied by Marcos.

Connect the fuel line to pump using a suitable 3" length of flexible tubing ensuring there is no leakage. Connect the other end to the fuel tank.

To connect up the wiring of the car, thoroughly study the wiring diagram. Take great care with all connections, nothing is more frustrating than an unreliable wiring system.

Next, mount ignition coil in a suitable place on the chassis as near the distributor as possible and connect it up.

Fit a suitable flexible line to the clutch slave cylinder and make sure slave cylinder is mounted firmly via bracket to bellhousing. Then run brake line to pedal carriage to be connected to clutch mastercylinder and bleed air out.

To obviate the cost of a new radiator, the Ford 2800cc V-6 radiator can be used after modifying bottom outlet to clear steering rack. Many other radiators can be used if size permits but should be mounted so top of radiator leans forward. It is recommended that an electric fan be used rather than the stock engine fan. Numerous fans are suitable for this such as the Flex-a-lite fan which bolts directly onto the radiator. Convoluted flexible radiator hose should be used for cooling system.

A suitable driveshaft must be used according to what engine and rear axle you have used and can be made up from parts of the original driveshaft then cut and balanced. Or these driveshafts can be supplied by Marcos if you give us the specifications you require.

The brackets on the top end of the Spitfire steering column concerned can be used and bolted onto one of the three positions on the dashboard to suit driver. An angle bracket is needed to carry out this operation(see drawing F). The bottom fitting of the special Marcos universal joint in the steering must be fitted carefully ensuring that the angles are not too sharp, thus making the steering tight. It is essential that the two pinch bolts holding the Marcos universal joint assembly to rack and pinion are fitted so that they go through the grooves in the rack shaft and the Marcos special assembly correctly.

To fit Fuel Tank use special bracket shown in figure F in this manual.

We recommend fitting, then removing the door and frames before painting the car to minimize damage to paintwork. Fit the quarterwindow and dropglass rubbers into windowframe. Fit quarterwindow into rubbers and secure with small brackets (shown in Figure G). Fit the window regulator channel onto dropglass using an old innertube between the two, ensuring the bracket does not touch the frame when fitted. Slide the dropglass complete with channel into frame and tape into position to facilitate fitting. Fit the frame complete with glasses into the door shell. Trim the door to ensure that the frame fits into the aperture with an even gap all the way around. Drill and fix the front and the back edge of frame to door. Close the door and adjust the top frame edge either in or out by moving the bottom of the frame. When an even gap is obtained, bolt the frame to bottom of door. The frames should now be removed and doors painted. Refit the frames after painting car by same procedure as above. Fit window motor and regulator, ensuring that the wires are on the motor as these are fairly inaccessible after motor is fitted. Connect all the wires for the window motors and switches. Move the dropglass into the full up position and mark the regulator gear tooth nearest the gearwheel. Repeat the procedure in the down position. Fill the gap between the relevant teeth with weld as shown in figure G2.

Fit door lock as shown in drawing H2. Fit locks and striker plates using bolts listed. These door mechanisms are from MGB or TR-6. Use control rods modified from the same vehicle and the interior handles. Fit the outer door push button and fix brackets as in drawing H2 (MGB trunklatch)

Fit trunk hinges and trunk lid. Fit hinge brackets to rear bulkhead. Attach the hinges to the bracket and adjust to fit. In some cases it may be necessary to bend hinges to suit. Fit the trunk lid stay to the passenger side hinge and to trunk undertray as in drawing G2.

Fit trunk push button lock to back panel. Fit interior lock assembly to back panel and the bracket to the lid. Adjust to fit.

To fit rear windscreen, cut (4) 3" lengths of rear screen rubber supplied and fit onto aperture, 2 forward and 2 rear. Fit the screen into the rear rubbers and mark around the aperture, then grind the screen down to size using a grinding disc on a drill. Periodically check the screen in the aperture until there is an even gap all the way round of approx. 3/8 inch. Then fit the complete rubber into the aperture. Fit the back of the screen first, then the front edge, leaving the sides until last. When screen is fitted, fit the chrome filler strip. The tool used for this is called a Clayton Wright filler strip tool.

Ensure that any holes between the engine compartment and the cabin are effectively sealed. This is as much for noise as for the intrusion of fumes. Before fitting any upholstery, fit 1/2 inch sound deadening felt everywhere except the arm rest area adjacent to the door shut. Also felt glued to the inner side of the door skin will considerably reduce noise. Now is time for upholstery which can be done custom or upholstery kits can be ordered from Marcos Cars of America.

If you are using the headlights supplied with the Stage III kit you will also need front side marker turn signal lamps which are Morris Minor, Austin Healey 3000 MkIII or can be supplied by Marcos.

A rain gutter should be installed to the top, front, and back edge of the door opening. This is a J shaped aluminum channel and should be non riveted to the body.

Wheels and tires. Previous production Marcos' were fitted with either 175X13 or 185-70X13 on 5 1/2 inch rims. (Spitfire bolt pattern) We do not recommend any wider than a 6" rim.

After the headlining has been fitted, the interior rear view mirror can be fitted. If you use a screw fitted mirror, you must feel for the wooden block bonded to the roof panel approx. 1/2 to 1 inch back from the windscreen opening in the middle. Make sure the screws are not too long and penetrate the roof.

When the inner mudguards have been fitted and prior to painting, the lower scuttle should be lined up to match the line of the hood. To do this close the hood and the side catches. Using a piece of wood, prop the lower scuttle panel (this is the F/glass part of the body directly underneath the hood latch) until it is directly in line with the side hood line. Then using F/glass cloth and resin obtainable from any bodyshop supply store, laminate the inner mudguard to the inside of the lower scuttle panel and leave overnight to dry properly.

windshield wipers. The wiper motor is a Lucas 14W model with a sweep of 120 degrees. The wheel boxes too are again Lucas part #72879, and the drive rack is standard Lucas. The wiper tubes to use are made up with the ends flared to the following lengths 20", 10 1/2" with nut 2 1/2". Most of these wiper parts are used on British Leyland sports cars such as TR-6 or MGB or can be supplied to you by Marcos Cars of America.

We strongly advise you use some type hood lock for security and safety reasons.

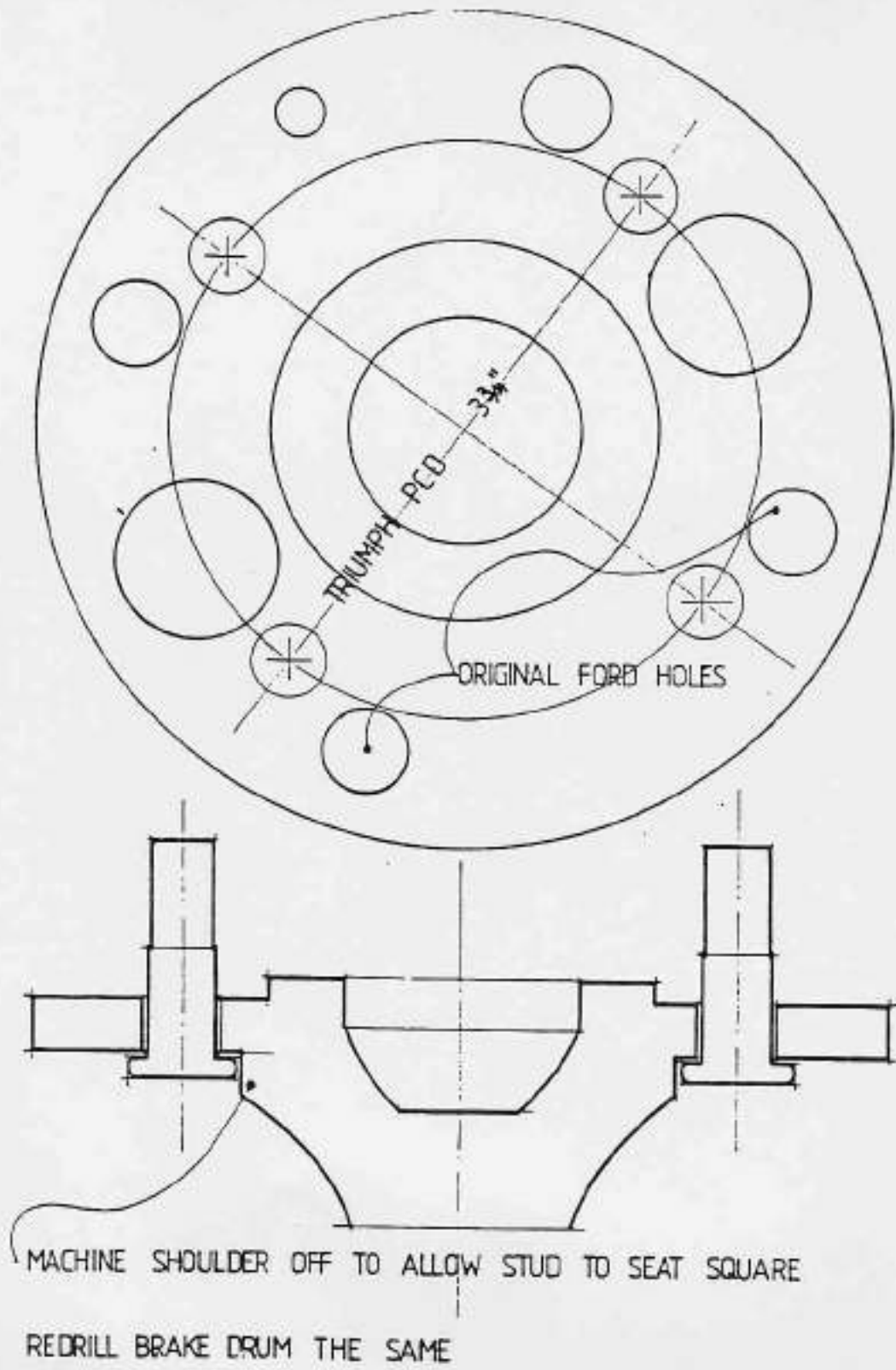
The glove box can be made up to your specs. using pressboard obtainable thru any upholstery shop.

Paintwork. Fiberglass cars are painted in exactly the same way as steel ones, but ensure that there are at least 2 good coats of fiberglass sealer applied before any other paint. The sealer should under no circumstances be rubbed down before priming as this breaks the seal, as its name implies, and could cause problems when applying the color coat. We have found through experience that the car is best painted without any body parts fitted i.e. door frames, locks, screens, bumpers etc..as this ensures that there are no unsightly marks and lines when the masking tape is removed.

Radio Noise Suppression. It must be pointed out that the cheaper radios are always harder to suppress. The antennae must be mounted at the rear of the car and not on the roof or near the engine compartment. A large suppressor should be fitted to the coil so the current runs through it. A smaller suppressor should be fitted to the alternator. In some cases it might be necessary to put a small one on the lead wire to the wiper motor as well. Ordinary cooking foil can be glued to the underside of the hood and should be grounded to the chassis by a wire.

Should you have any difficulty obtaining any of the parts needed to complete your Marcos, we should be able to supply what you need.

It is clearly understood that Marcos Cars of America cannot be held responsible for any purchasers of body chassis kits who use parts which we do not recommend.



HALF SHAFT MODIFICATIONS
FIGURE A

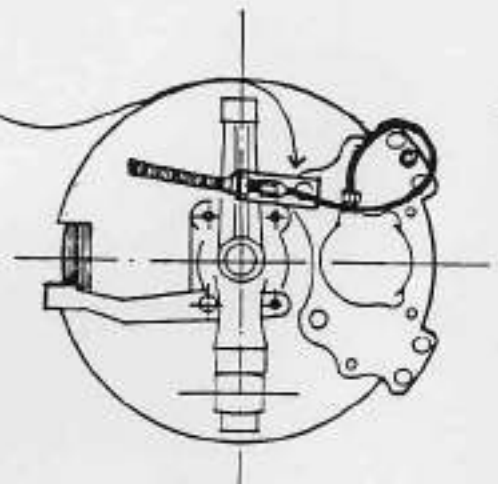
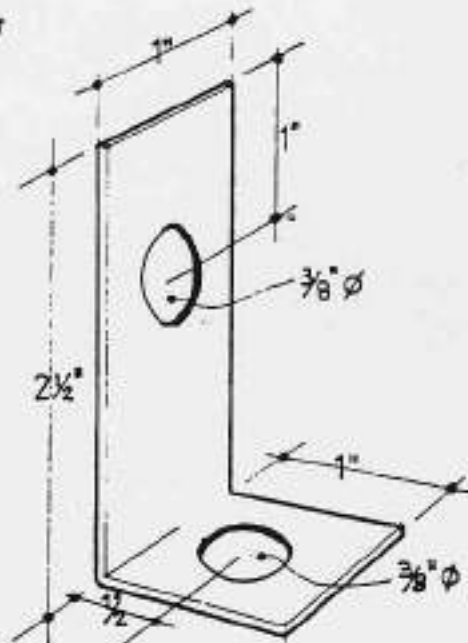
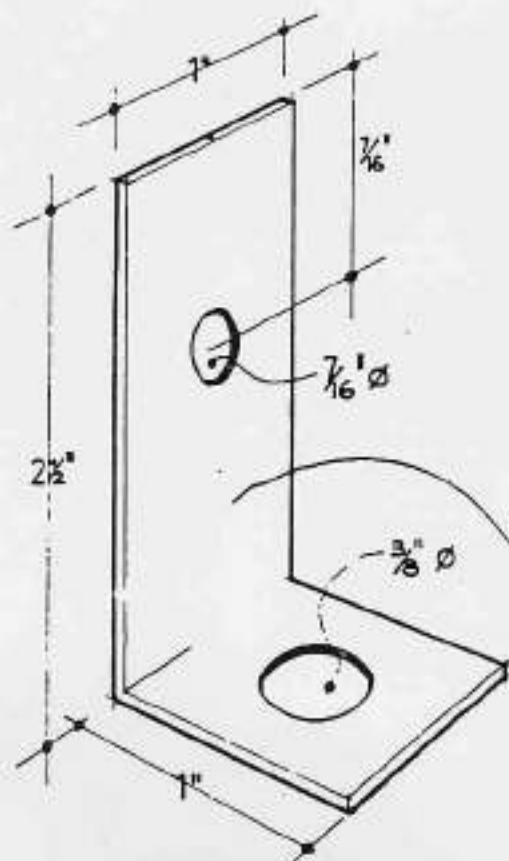
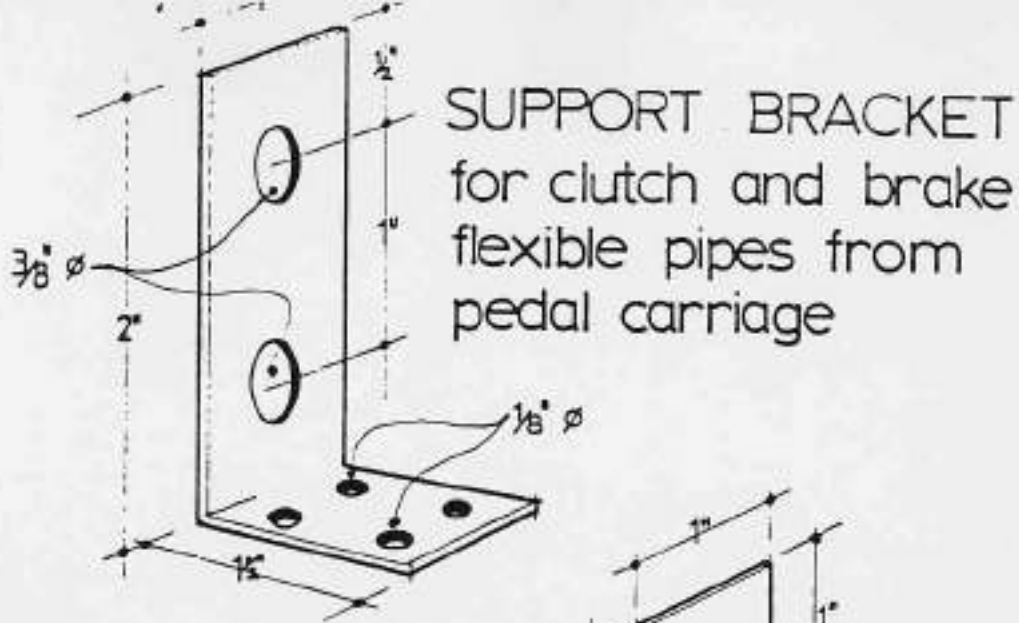
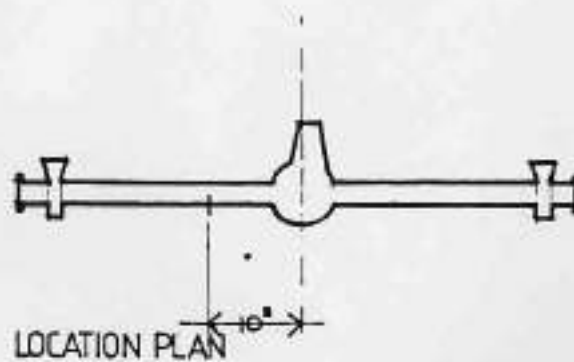
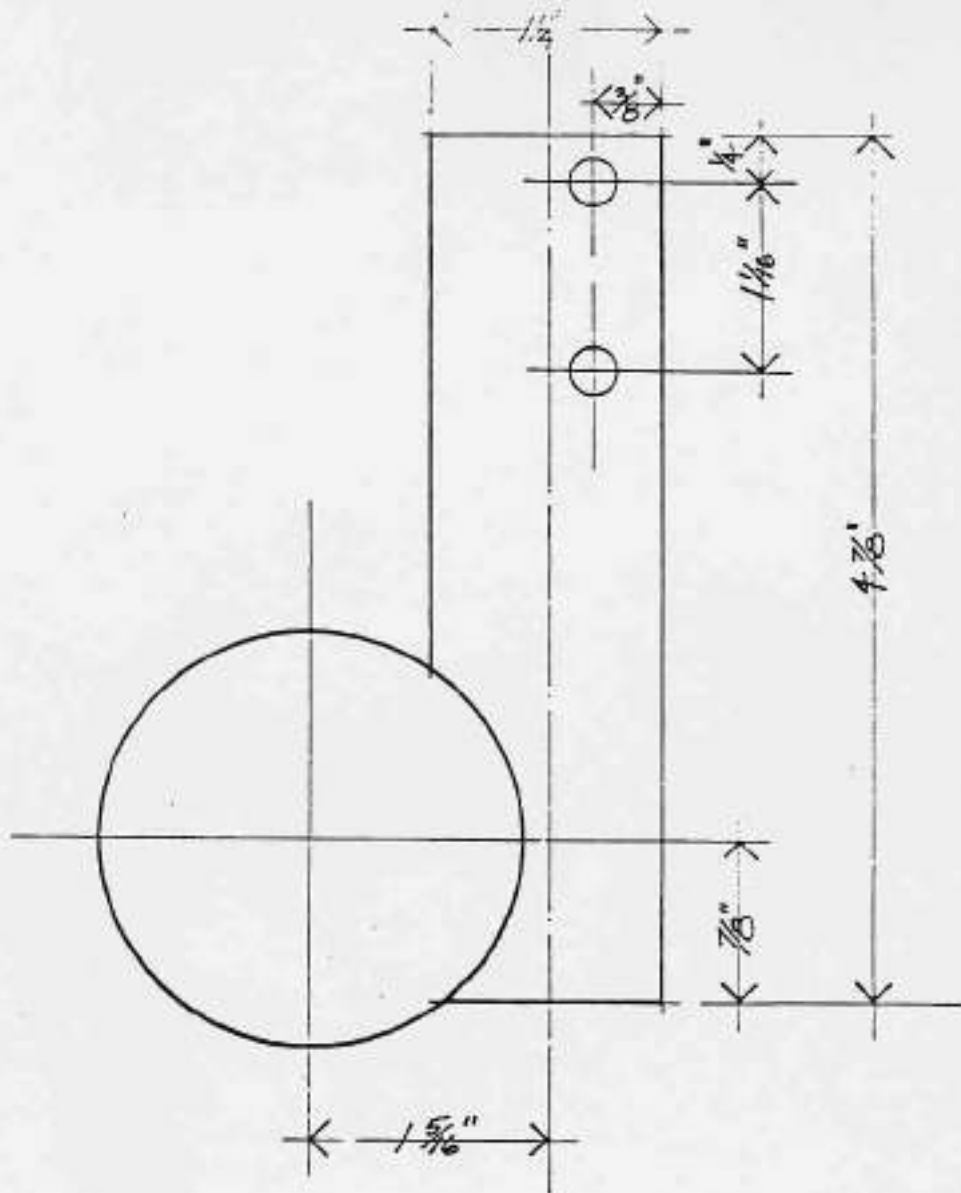
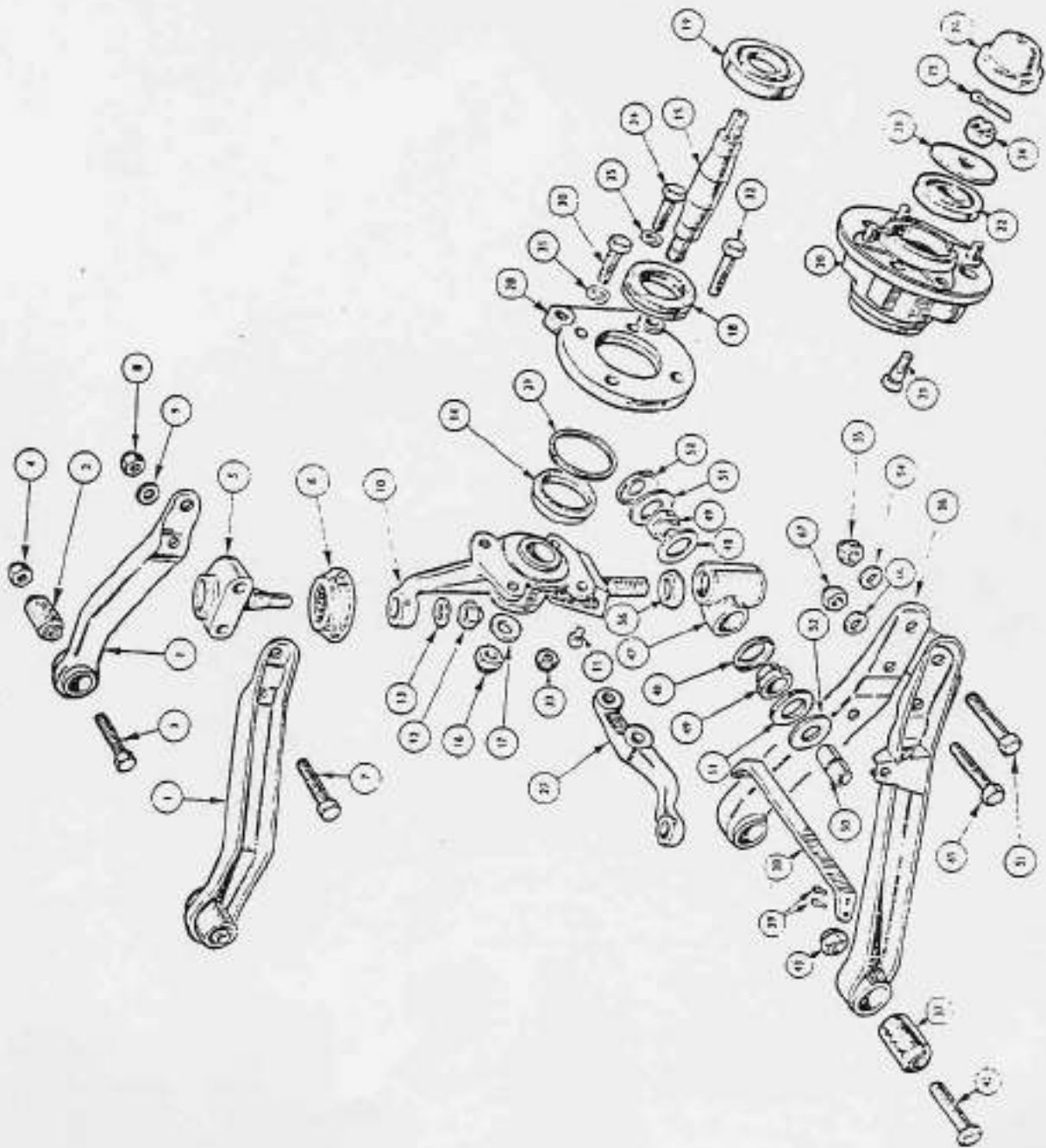


FIGURE B

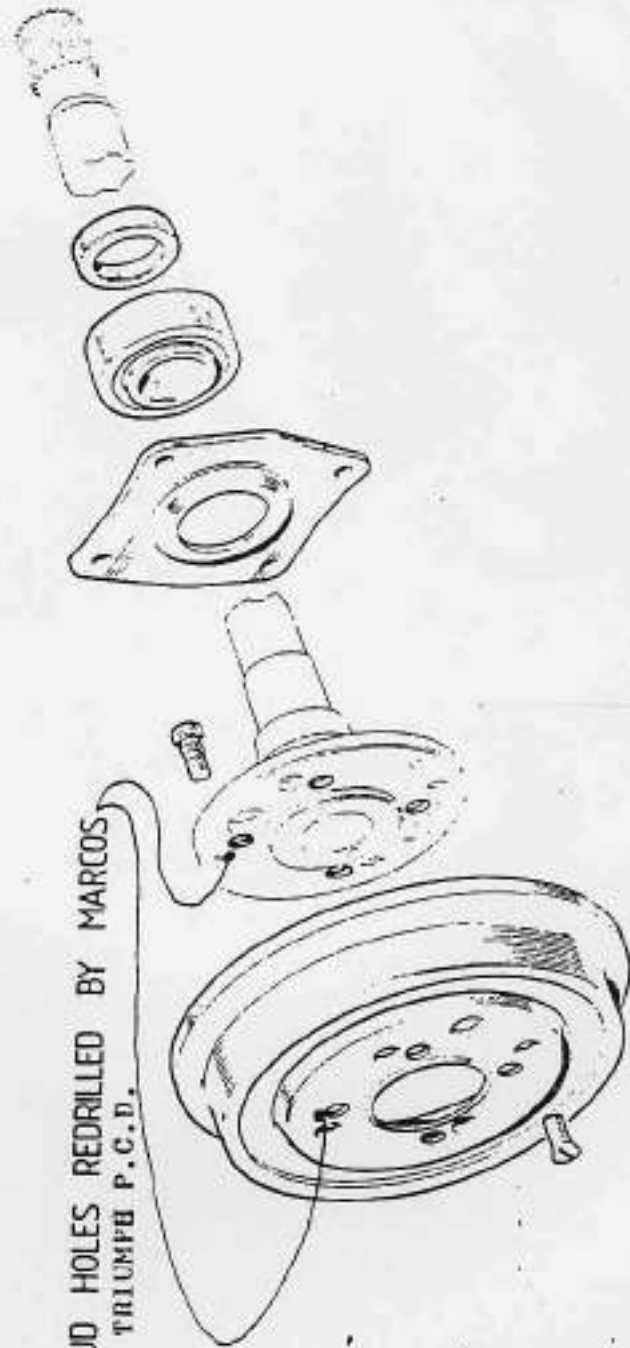


HANDBRAKE BRACKET
FIGURE C



TRIUMPH VITESSE MK 2 FRONT SUSPENSION

FIGURE D



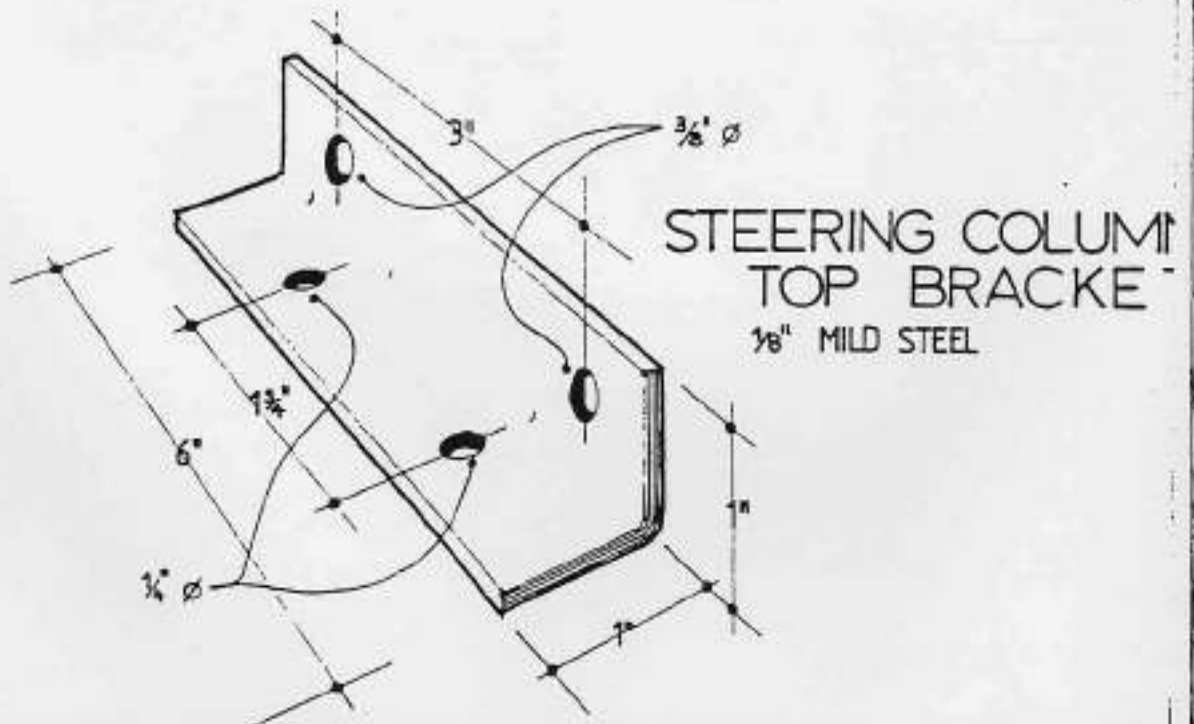
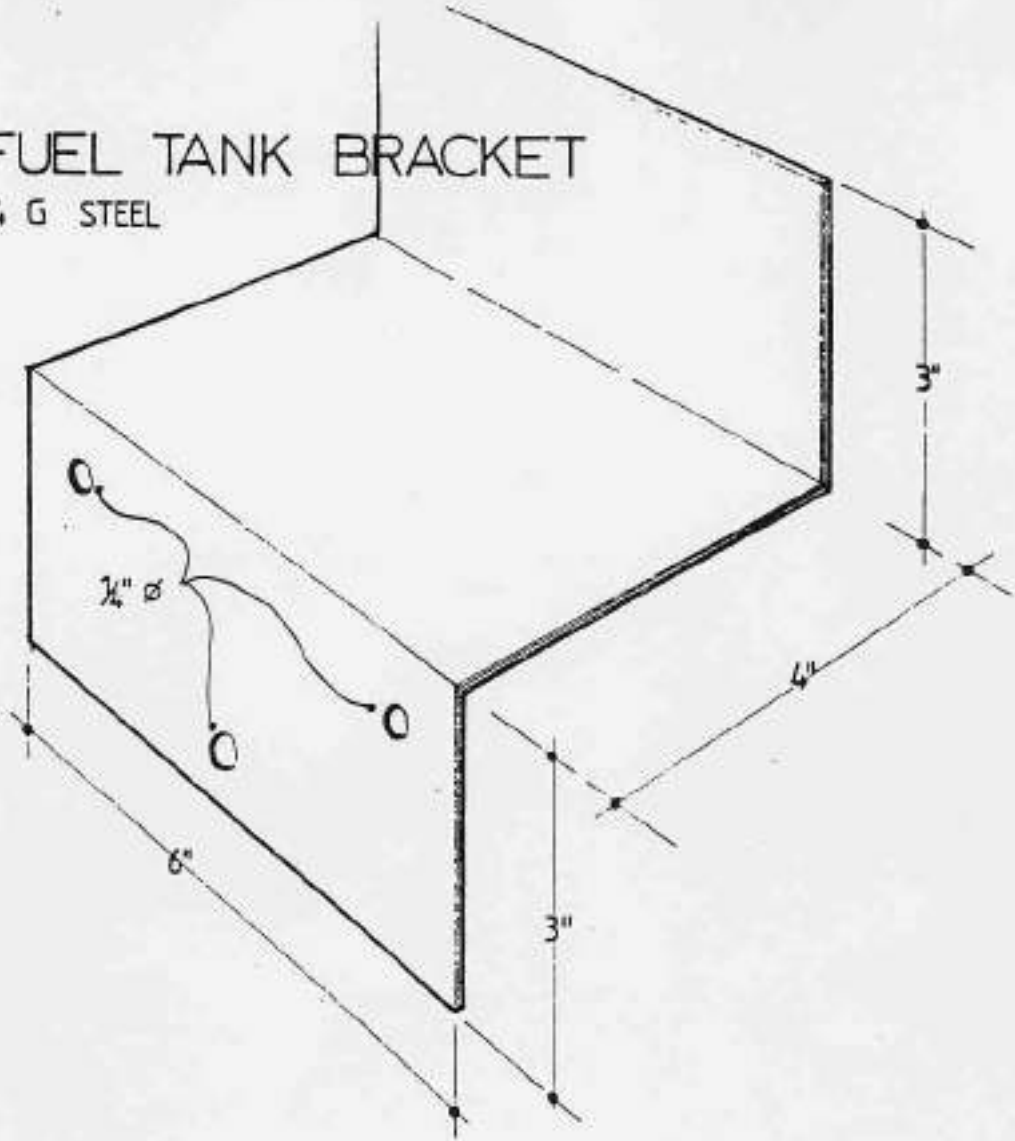
STUD HOLES REDRILLED BY MARCOS
TO TRIUMPH P.C.D.

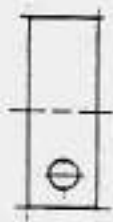
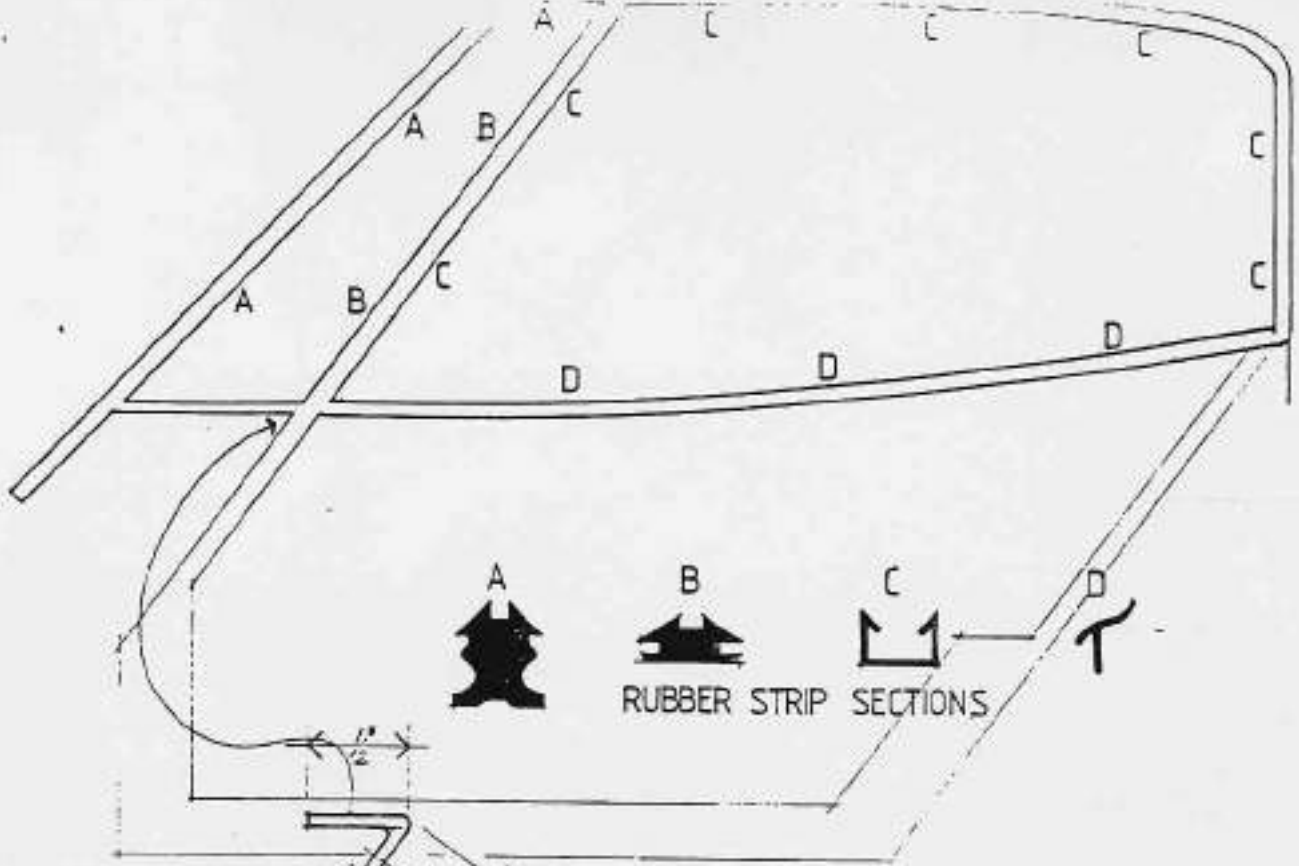
FIGURE E

CORTINA MK 2 REAR AXLE AS USED BY MARCOS

FUEL TANK BRACKET

14 G STEEL



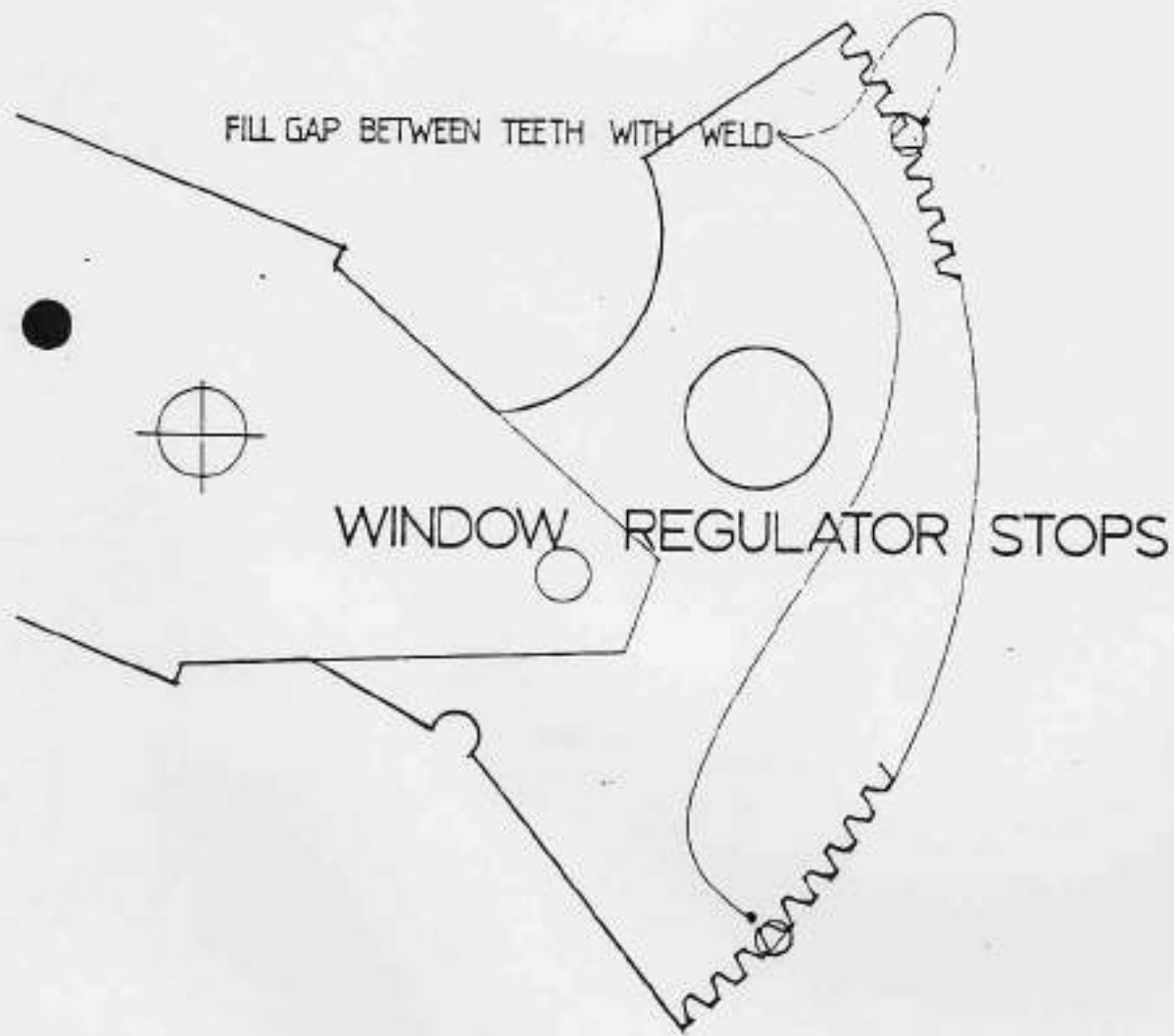
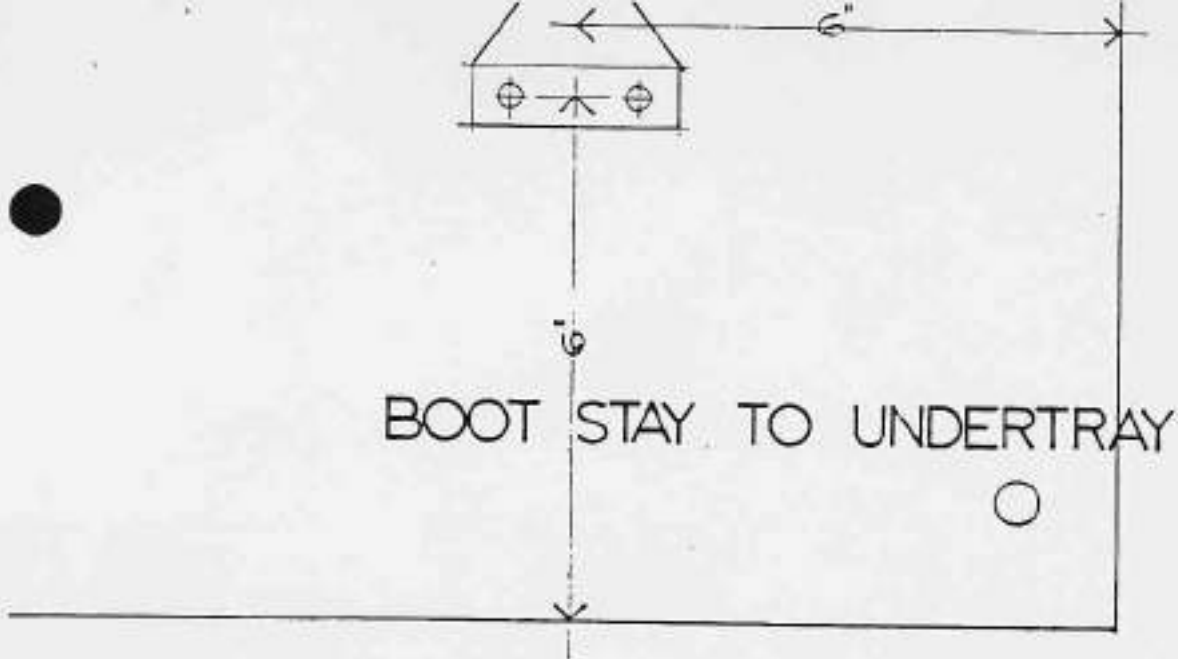


QUARTER LIGHT FIXING BRACKET



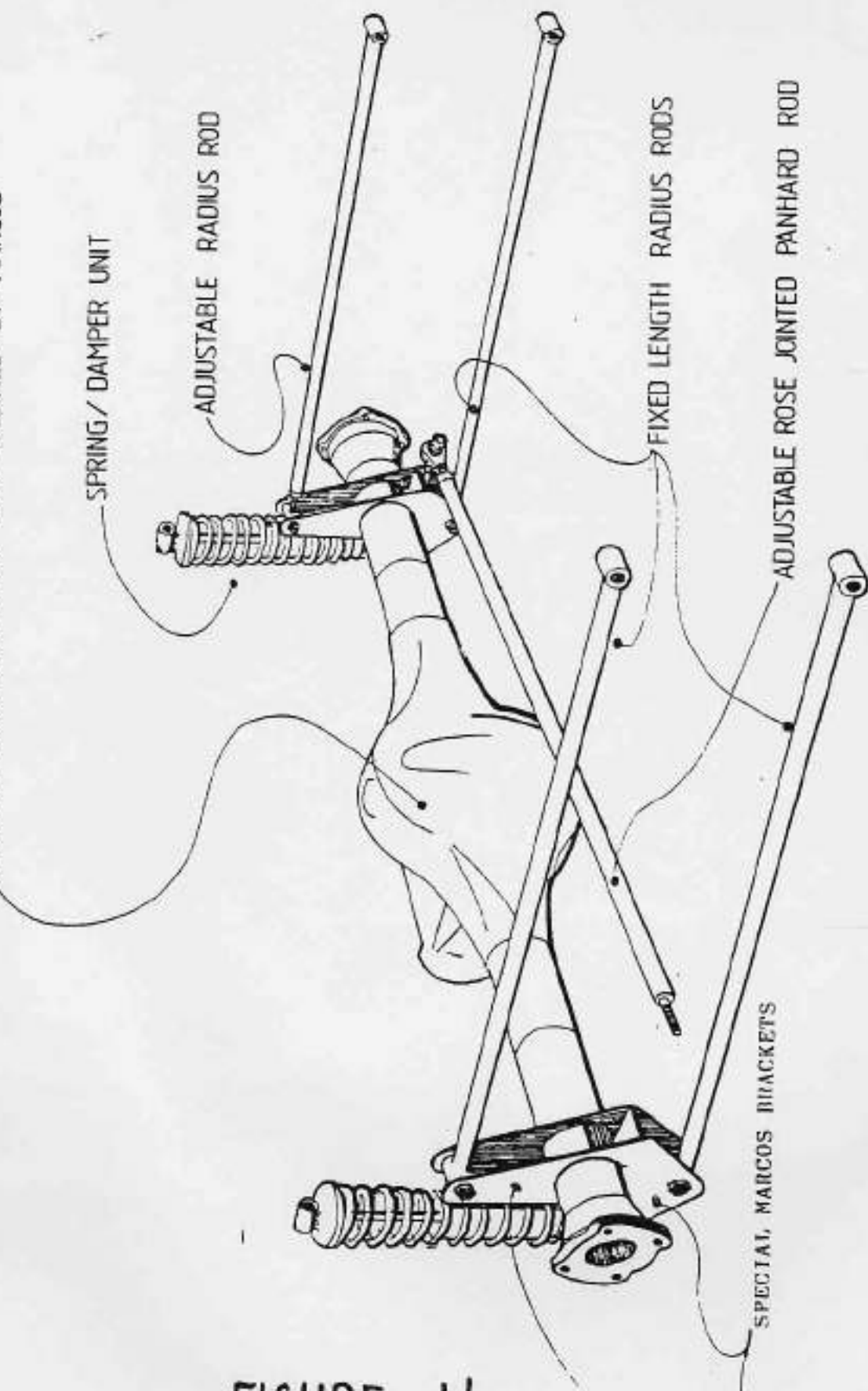
WINDOW REGULATOR CHANNEL

WINDOW FRAME
DRAWING G



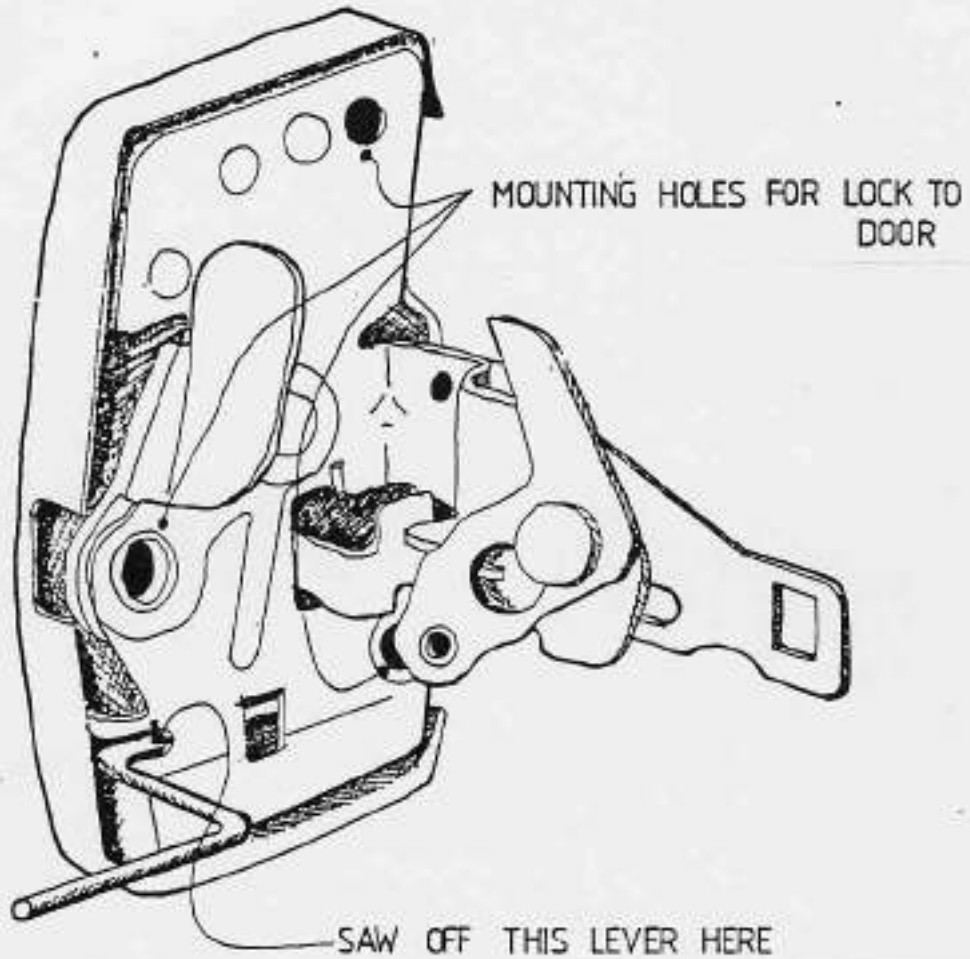
DRAWING G2

FORD 3L CAPRI OR CORTINA AXLE MODIFIED BY MARCOS

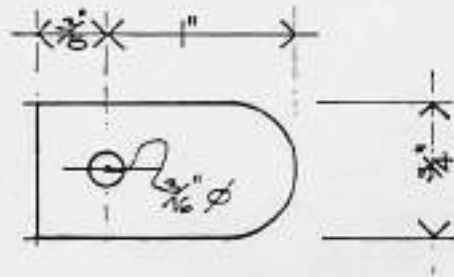
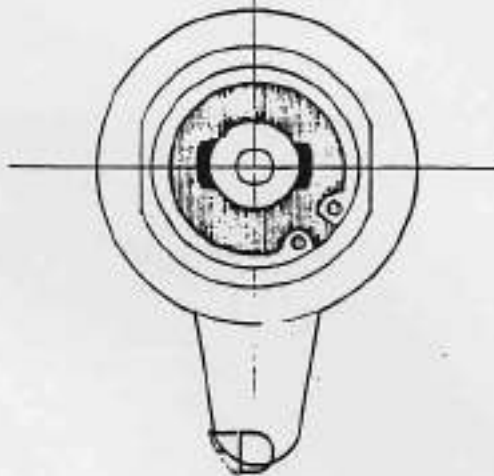


MARCOS REAR SUSPENSION SY

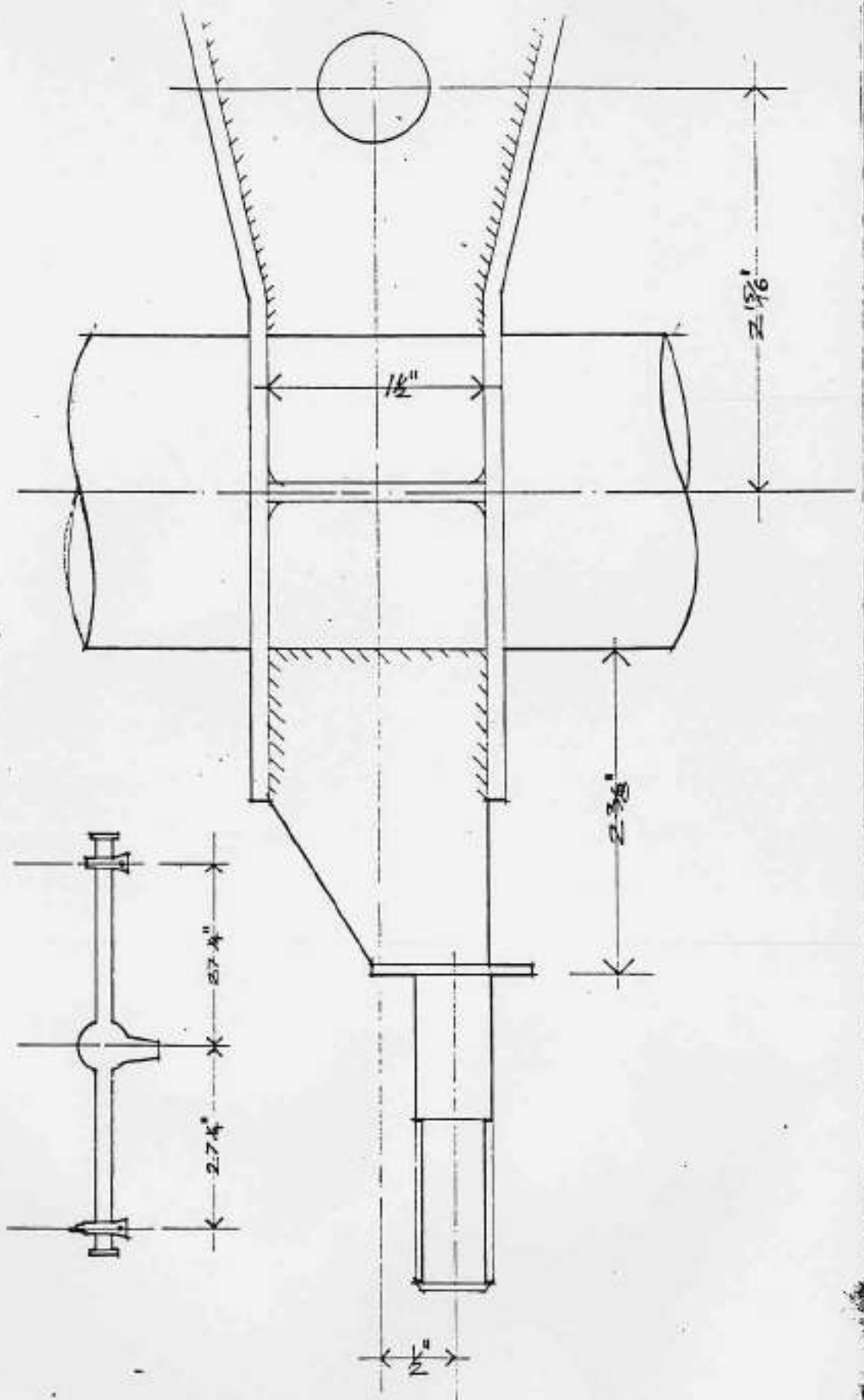
FIGURE H



LARGE TRUNK LID HANDLE
AND LOCK

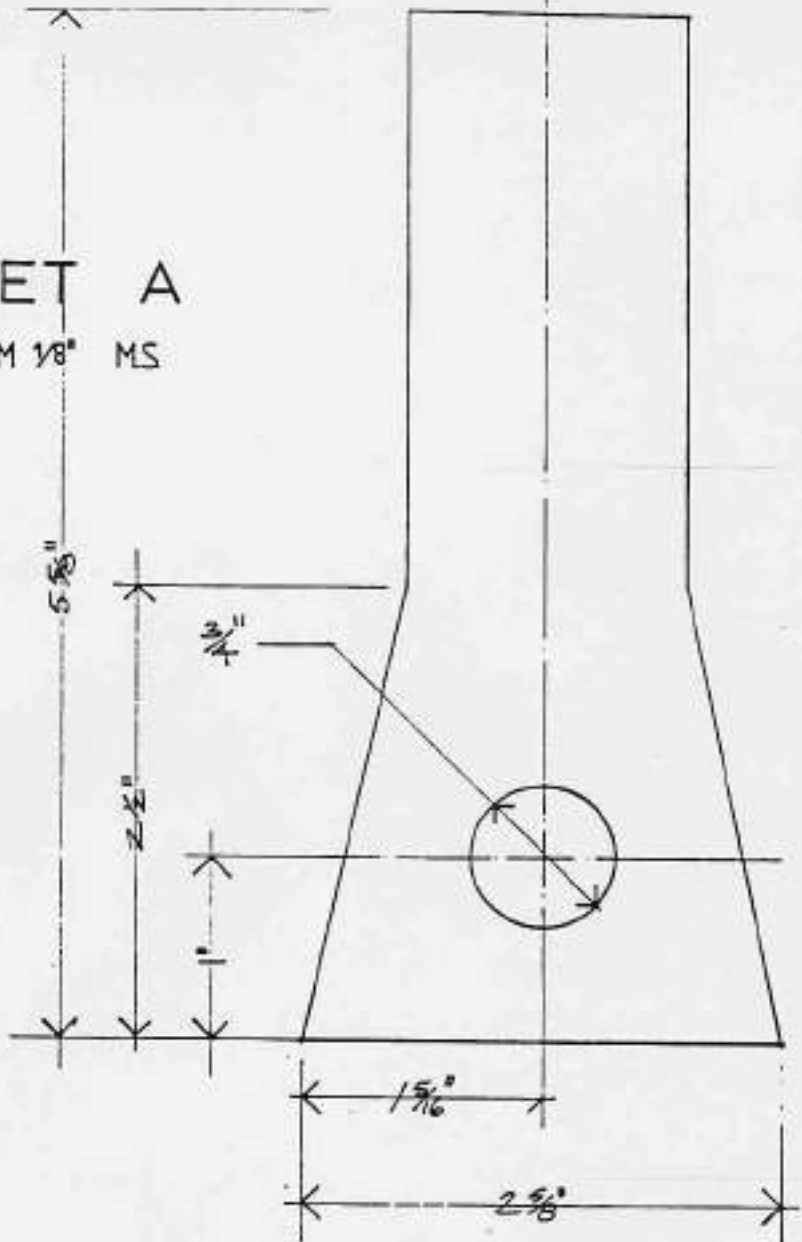


DRAWING H2

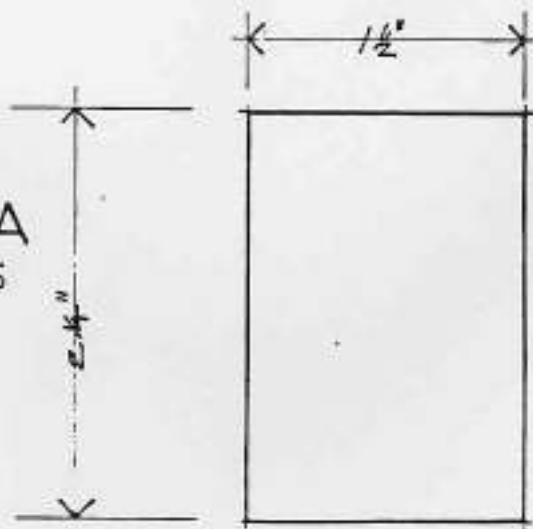


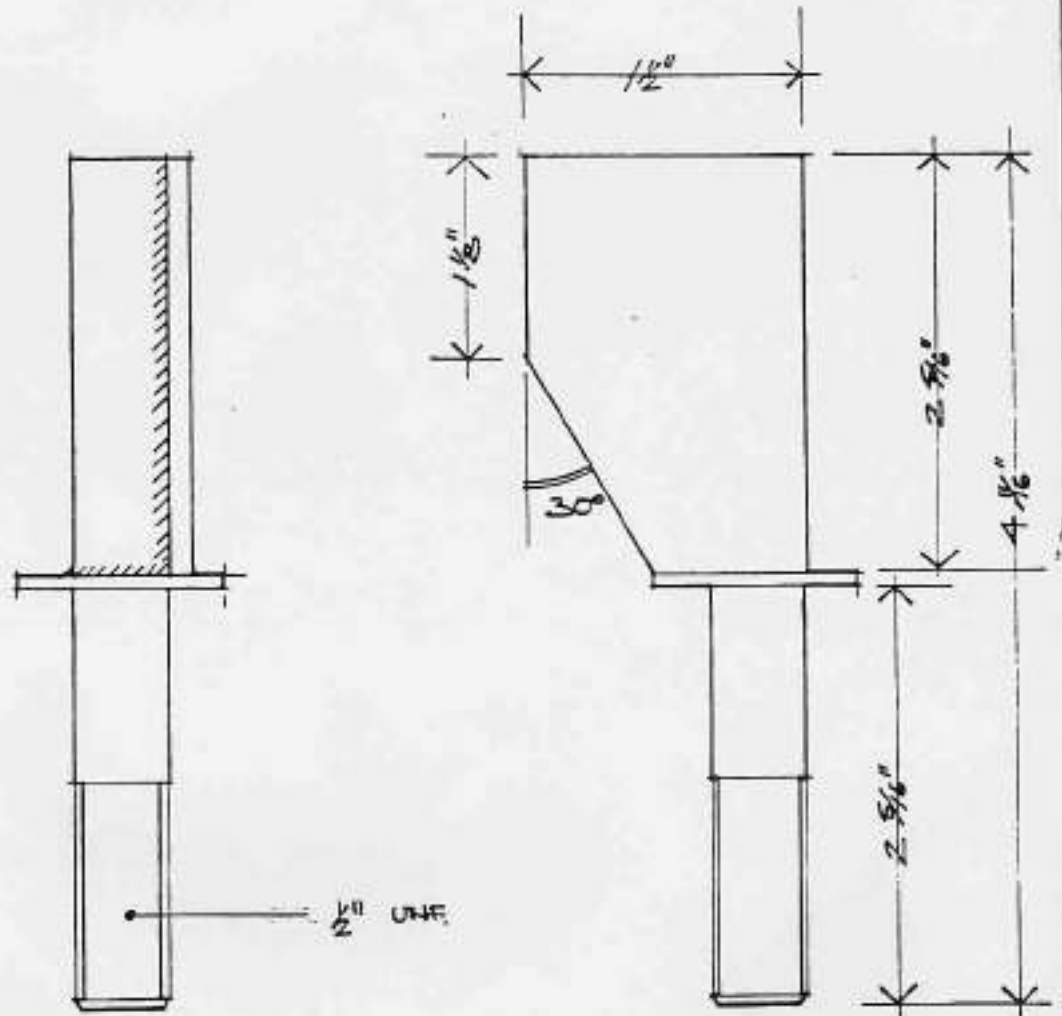
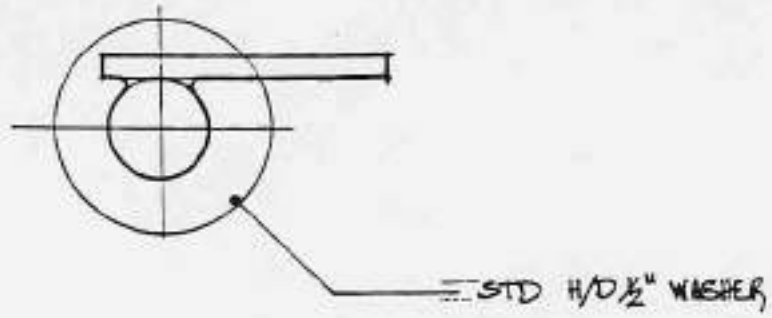
TOP VIEW RIGHT HAND BRACKET

GUSSET A
MAKE FROM 1/8" MS

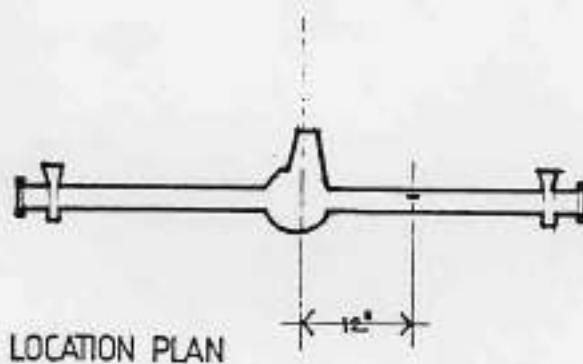
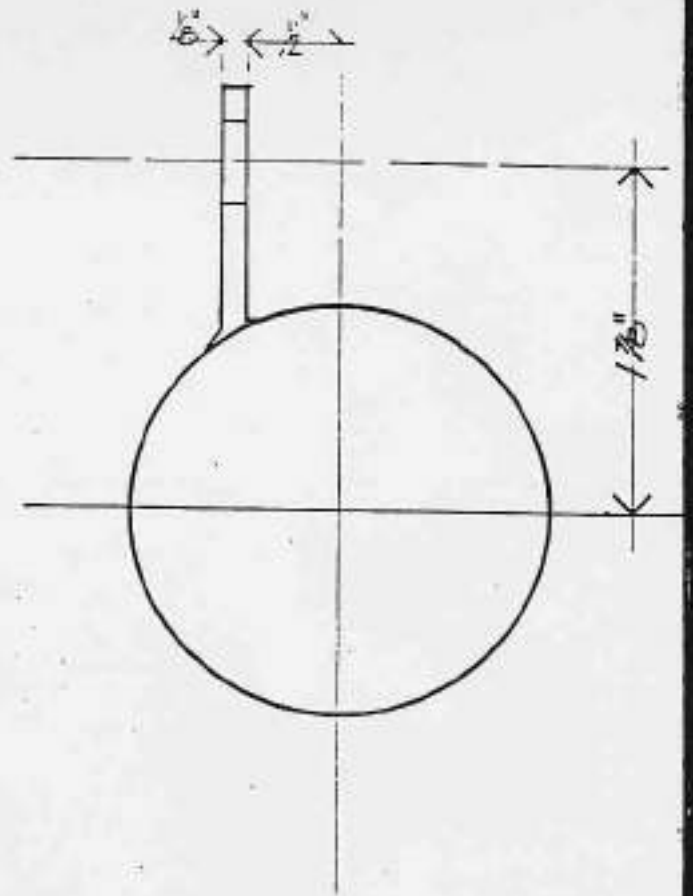
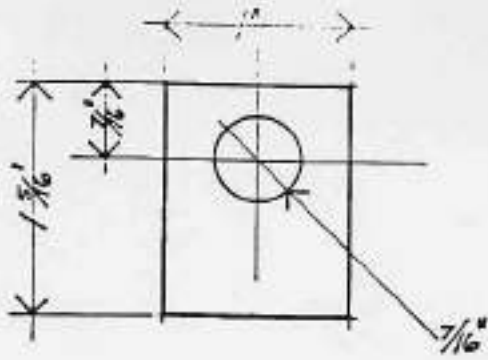


GUSSET A
MAKE FROM 1/8" MS

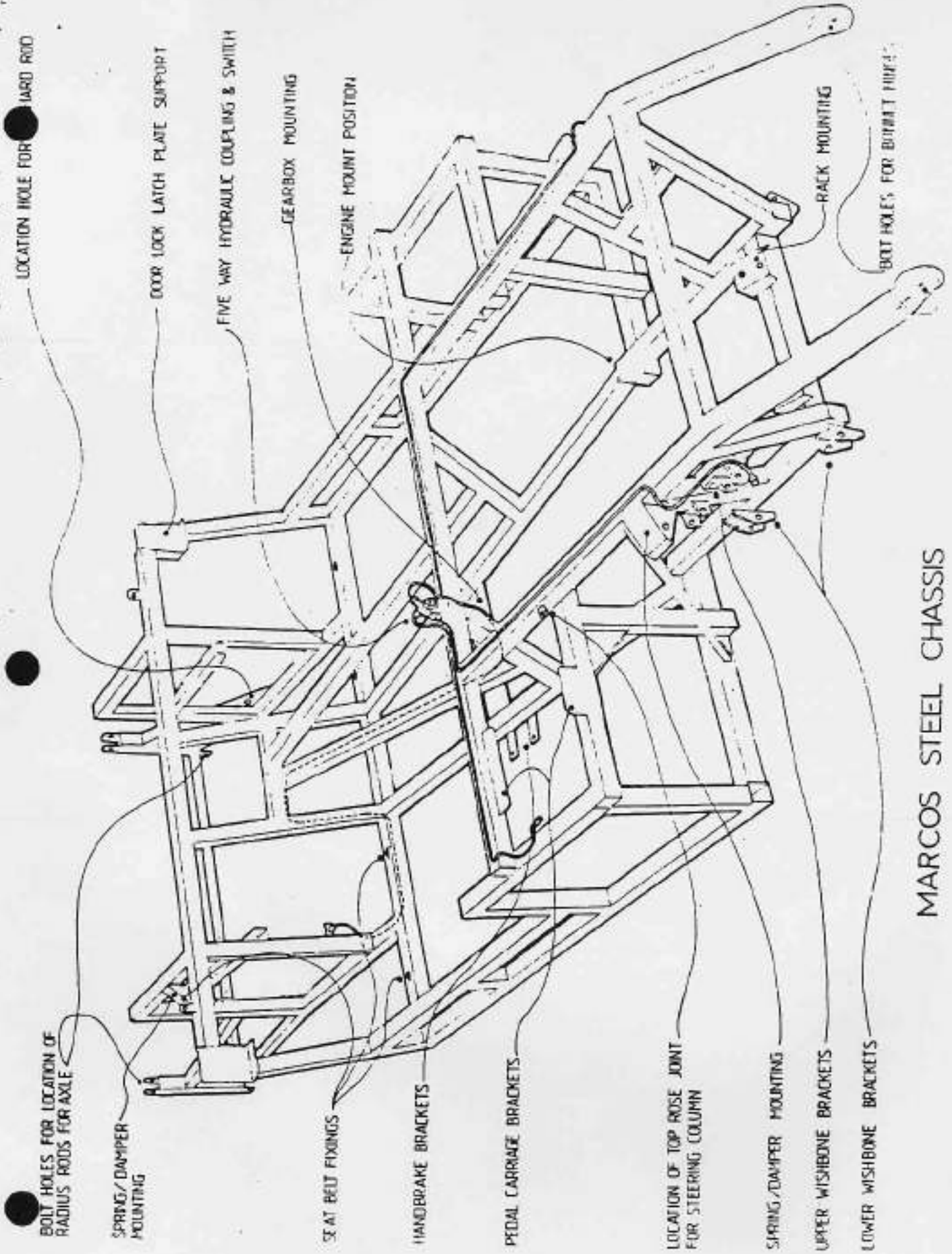




PANHARD ROD BRACKET



BRAKE PIPE SUPPORT BRACKET



MARCOS STEEL CHASSIS



SMITHS INDUSTRIES LIMITED
 MOTOR ACCESSORY SALES & SERVICE DIVISION
 (1964-1970)

MARCOB CARS
 MODEL 1500S MODEL 1600 MODEL 1800S
 (1964-1970)

SERVICE REPLACEMENTS AND OPTIONAL EQUIPMENT
 286+6

EQUIPMENT	JUNE 1964 - APRIL 1966			MAY 1966 - MARCH 1967			APRIL 1967 - 1970		
	SMITHS INDUSTRIES CODE No.	SPEC.	VEHICLE MAKERS PART No.	SMITHS INDUSTRIES CODE No.	SPEC.	VEHICLE MAKERS PART No.	SMITHS INDUSTRIES CODE No.	SPEC.	VEHICLE MAK PART No.
MODELS 1500S and 1600									
Speedometer (Miles)				SN. 6135/11	AC		SN. 6135/11	AC	
Speedometer (Kiloes)				SN. 6135/12	AC		SN. 6135/12	AC	
Speedometer Flex Complete (RHS & LHS)				DP. 1134/00	3'9"		DP. 1134/00	3'9"	
Inner Flex only				DI. 1114/05	3'9"		DI. 1114/05	3'9"	
Outer Flex only				DO. 1134/00	3'9"		DO. 1134/00	3'9"	
Revolutions Indicator				RVI. 2402/02	AD		RVI. 2410/02	•AE	
Temperature Indicator				TI. 2204/08			TI. 2204/08		
Transmitter (Temp. Ind.)				TT. 6611/00			TT. 6611/00		
Fuel Gauge				RF. 2201/09			RF. 2201/09		
Tank Unit				TA. 1114/013			TA. 1114/013		
Oil Pressure Gauge				PL. 2102/27			PL. 2102/27		
Voltage Stabiliser				BR. 1300/01			BR. 1300/01		
MODEL 1800S									
Speedometer (Miles)		AB		SN. 6135/08	AB		SN. 6135/08	AB	
Speedometer Flex Complete (RHS)		F 4'9"		DP. 1104/00	F 4'9"		DP. 1104/00	F 4'9"	
Speedometer Flex Complete (LHS)		F 5'3"		DP. 1104/00	F 5'3"		DP. 1104/00	F 5'3"	
Revolutions Indicator		AD		RVI. 2402/02	AD		RVI. 2410/02	•AE	
Temperatures Gauge		3'0" Dep		TL. 2302/17	3'0" Dep		TL. 2302/17	3'0" Cap	
Fuel Gauge				FG. 2333/12			FG. 2333/12		
Tank Unit				FT. 5300/112			FT. 5300/112		
Oil Pressure Gauge				PL. 2302/27			PL. 2302/27		
MODELS 1500S 1600, and 1800S									
Heating Equipment (P.260)									
Heater Unit				PRS. 3086			PRS. 3086		
Radiator & Seals only				FHP. 2301			FHP. 2301		
Water Valve only				SHP. 7914			SHP. 7914		
Blower Unit				FHW. 1273/30			FHW. 1273/30		
Motor only				FHB. 3392			FHB. 3392		
Push/Pull Control (Air)				FHM. 4342			FHM. 4342		
Push/Pull Control (Water)				FHC. 6132/05			FHC. 6132/05		
				FHC. 6103/02			FHC. 6103/02		

* Indicates a change NOT INTERCHANGEABLE with previous code
 ▲ Indicates a change INTERCHANGEABLE with previous code

SPECIFICATION	FINISH
A Chrome Bezel Black Dial White Printing & Pointer 12 Volt.	
B 4" Remag Angle Trip 140mph 1152rpm.	
C 4" Remag Angle Trip 140mph 1000rpm/220mph 620rpm.	
D 4" Impulse Type 8000rpm & Cylinder Positive Earth.	
E 4" Impulse Type 8000rpm & Cylinder Negative Earth.	
F Inner Flex only DI.1110/00 Outer Flex only DO.1104/00	

MARCOB CARS
 MODEL 1500S
 MODEL 1600
 MODEL 1800S
 (1964-1970)



SMITHS INDUSTRIES LIMITED
MOTOR ACCESSORY SALES & SERVICE DIVISION

MARCOSS
2 LITRE V.4 & 3 LITRE V.6
(1969 - 1973)

SERVICE REPLACEMENTS AND OPTIONAL EQUIPMENT
286*7

EQUIPMENT	OCTOBER 1969 - OCTOBER 1970		NOVEMBER 1970 - 1973		SMITHS INDUSTRIES CODE No.	SMITHS INDUSTRIES CODE No.	VEHICLE MAKE PART No.	VEHICLE MAKE PART No.
	SMITHS INDUSTRIES CODE No.	SPEC.	SMITHS INDUSTRIES CODE No.	SPEC.				
Speedometer (Miles)	SN. 6135/11A	AB	SN. 6135/13	* AC				
Speedometer (Kiloes)	SN. 6135/12A	AB	SN. 6135/14	* AC				
Speedometer Flex	N.O.M.		N.O.M.					
Rev. Indicator 2 LITRE V.4	RVI. 2410/02	AD	RVI. 2410/02	AD				
Rev. Indicator 3 LITRE V.6	RVI. 2611/02	AE	RVI. 2611/02	AE				
Temperature Indicator 52mm	RT. 2204/08		RT. 2204/08					
Transmitter (Temp. Ind.) FORD ENGINE	TT. 6811/00		TT. 6811/00					
Transmitter (Temp. Ind.) VOLVO ENGINE	TT. 3802/00A		TT. 3802/00A					
Fuel Gauge 52mm	FP. 2202/09		FP. 2202/09					
Tank Unit	TR. 1114/013		TR. 1114/013					
Oil Pressure Gauge 52mm	PL. 2302/27		PL. 2302/27					
Voltage Stabiliser FORD ENGINE	BR. 1300/01		BR. 1300/01A	▲				
Voltage Stabiliser VOLVO ENGINE	BR. 1311/00		BR. 1311/00					
Heating Equipment	PES. 7569		PES. 7569/3	▲				
Heater Unit	FHF. 2302		FHF. 2303					
Radiator & Seals only	SHF. 7914		SHF. 7914					
Water Valve only	FHM. 1273/30		FHM. 1273/30					
Pullover Unit	FHB. 5402/24		FHB. 5402/24					
Motor only	FHM. 5352/04		FHM. 5352/04					
Push/Pull Control (AIR)	FHC. 6132/05		FHC. 6132/05					
Push/Pull Control (WATER)	FHC. 6102/02		FHC. 6102/02					
Runner only 4x	SHB. 3134/04		SHB. 3134/04					

★ Indicates a change NOT INTERCHANGEABLE with previous code

▲ Indicates a change INTERCHANGEABLE with previous code

FINISH SPECIFICATION	A	B	C	D	E
	Chrome Bessel Black Dial White Printing & Pointer 12 Volt.	4" Nemaq Angle Trip 1400rpm/2200rpm/2200rpm 62Orph.	4" Nemaq Angle Trip 1400rpm/2200rpm/2200rpm 562.5Orph.	4" Impulse Type 8000rpm 4 Cylinders Negative Earth.	4" Impulse Type 6000rpm 6 Cylinders Negative Earth.

MARCOSS
2 LITRE V.4
&
3 LITRE V.6
(1969 - 1973)

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