COMPILATION OF BUILD BOOKS

1988-1999

INTRODUCTION.

As with all vehicles prepared for use in Motorsport, any advice or hints regarding their preparation cannot possibly cover every eventuality.

The following pages are therefore guidelines based on experience with the works cars, and feedback from members of the Peugeot Rally Club, which since its formation in 1988 has seen over 500 drivers competing, names such as Colin McRae, Richard Burns, Martin Rowe, Justin Dale and Mark Fisher among them.

It is undeniable that the Peugeot is a reliable car, but even so, it is the small faults caused by either poor preparation or lack of maintenance that could cause problems. We can only repeat our advice that you should check over ALL the car before each event, and not just change the oil !

With safety always in mind, we strongly recommend you fit the best safety cage, seats, seat belts, and fire system that you can afford. This also applies to crash helmets and flameproof overalls.

SECTIONS.

Group N preparation 205/309

"Challenge " specification 205/309

Group A specification 205/309

Group N 205 Rallye 1300cc

Group A 205 Rallye 1300cc

106 Rallye and XSi

306 S16

Super 106 Cup

N.B.
Throughout this build book, all part numbers used are those of Peugeot Sport Special Tuning Department.
If you are competing in a controlled one-make series, reference should be made to the Technical Regulations, which list the Special Tuning parts allowed in this category. If you compete in a National or International series, refer to the FIA Yearbook and vehicle homologation form.

1. ENGINE.

Within the Group N regulations there is some scope for increasing the power output of the engine, however blueprinting is expensive and although this will give the most power, good results will be obtained by maintaining the engine in prime condition and paying careful attention to items such as the spark plug condition and the ignition timing. Careful setting up on a rolling road involving resetting of the airflow meter will be of some benefit. The rev-limiting function of the fuel injection control box can be disabled but this is not advised for a Group N engine since no performance increase will be obtained and engine durability will suffer if the engine is used beyond 7,500 r.p.m. consistently.

The free flow air cleaner element 7008 is recommended, and will give 2-3 bhp increase with the standard engine over the standard element.

Sump baffles are now legal in Group N, and 7027B (1900cc) are particularly recommended for tarmac rallies and circuit racing. to reduce oil surge on high g corners.

Two options are available for the exhaust system, either using the specific Group N system (205 - 7065, 309 - 8065) or adding skids to the standard system. When using the standard system the mounting rubbers should be retained as shown in Figure 1. The Group N system is a direct replacement for the standard system. With both systems an exhaust downpipe skid should be welded in place to protect the downpipe from damage (Figure 2).

The hard rubber engine mounting set 7108 is a direct replacement for the standard parts. The faces of the upper mounting rubbers should be smeared with a suitable grease, Part No 971355. Packing shims, Part No 184112 should be used to take up any gap which develops as the rubbers bed-in.

The heavy duty throttle cable kit 7114 replaces the standard items and includes an additional spring to close the throttle butterfly. The plate should be welded to the bulkhead to locate the throttle cable abutment.

The windings of the distributor induction coil are subject to damage by vibration. This problem can be avoided by carefully dismantling the distributor and covering the coil winding in Araldite, paying particular attention to the unsupported ends of the windings. Some production cars are fitted with Ducellier amplifiers which in conjunction with some Bosch distributors can give a misfire problem. Ducellier amplifiers should be replaced with a Bosch amplifier which is compatible with all distributors.

2. TRANSMISSION

To increase the durability of the clutch, the standard driven plate should be replaced by the cerametallic plate 7000. This is a direct replacement for the standard unit with no other modifications.

Differential gears in a production gearbox may give trouble under rallying conditions and they should be replaced by the differential assembly 7123. Installation is exactly as for a standard unit.

The differential casing will eventually wear and it is advisable to periodically inspect the casing for signs of wear. If significant wear takes place the differential gears will come out of mesh and be destroyed. The gearbox should only be lubricated with an HD 75W or 75/90 grade oil, quantity 2 litres, or semi synthetic Esso BV.

When using the standard gear shift rods, these should be regularly inspected to ensure that there is no play in the joints. If any sign of wear is apparent in either the main fore-aft rod or the cross rods, then they should be changed. The hairpin clip which retains the bell crank should be lockwired in position. It is also essential that the clip-on heat shields are in place over the ball joints.

There is a risk under certain conditions of the gear rods, particularly those nearest the exhaust manifold, actually falling off. As this always happens at the worst possible time, for example in a special stage, and there is a risk of injury from the hot exhaust, it is advisable to loosely lockwire all the ball joints together, ensuring they still have full articulation.

An alternative non-homologated set of gear shift cross-rods 7125 is available.

3. FRONT SUSPENSION

Assemble the front strut and spring unit as shown in Figure 4.

The tarmac and forest units differ in two respects - the rating of the insert and the fitment of the spacer tube.

Fitment of the strut assembly to the body and to the upright is standard. After each event the top bearing must be inspected for ingress of water and dirt.

The front wishbones should be replaced with the heavy duty item 7238. When installing these, ensure that the groove in the ball joint is in line with the pinch bolt hole in the upright.

Toe-in setting : parallel.

The ride height must conform with the Group N regulations at all times. These regulations specify a minimum dimension from the ground to the top of the wheelarch - see Figure 5 - and is determined by the spring length and spring pan position.

During and after each event the front suspension uprights must be inspected for any signs of "bellmouthing" where the ball joint locates in the upright. If there is any sign of distortion then the upright must be replaced.

Please note that Group N regulations do not permit any change to the anti-roll bar. The standard anti-roll bar must remain in place and connected.

Bilstein strut bodies with an adjustable spring pan 7228 are available, which are allowed for Group N from 1st January 1991, use these with the Bilstein inserts 7233 or 7234. If using this type of strut, be careful that the lower pan is not adjusted downwards too far, otherwise the spring will have no tension should a wheel lift, and there is a risk of damaging the top bearing when it becomes displaced.

4. REAR SUSPENSION

The rear ride height of all torsion bar type Peugeots is adjustable, and is controlled by the dummy shock absorber length used when installing the torsion bars. As a general rule, 1,0mm of dummy shock length equals 3,0mm difference to the ride height We often hear drivers say that they have dropped the rear ride height "by one spline", this is not the correct way. The rear arm, once the shock absorber is disconnected, will settle under gravity (depending on the diameter of the torsion bars) so the only accurate way is to disconnect the bar with a slide hammer clear of the splines, set the dummy shock length accurately, then by rotating the bar one spline at a time, find the splines that slide in easily (the splines are unequal to give this vernier effect). For forest use the dummy shock absorber length is 205 - 315mm, 309 - 319mm. For tarmac rallying the length is 205 - 312m, 309 - 315mm. The dummy shock absorber length should be re-checked prior to each event and, if necessary, re-set to compensate for any settling of the bars. See Figure 6 for the dummy shock absorber details.

The Bilstein dampers are fitted in the same way as the standard units. They are available in a choice of settings, drivers sometimes using a stiffer setting on smooth forest stages, but this is a personal decision.

We recommend as a starting point 7236 - 205 forest, 7237 - 205 tarmac and 309 forest, 8237 - 309 tarmac.

The following procedure should be followed to control the free play in the rear wheel bearings on 1900 cars. Torque the rear hub nut to an initial torque of 220lb/ft and then, using a suitable drift, make sure that the stub axle pin is driven fully home in the trailing arm. Slacken off the hub nut, re-torque to 180lb/ft and peen over the nut. During an event the rear wheel bearing free play should be checked regularly.

For competition use, we strongly recommend the motorsport wheel studs 7209/2 and nuts 7206/1 which replace the standard wheel bolts, and will give faster wheel changes. The wheel studs may be fixed in place using Loctite.

The rear axle mounting rubbers can be replaced with harder rubbers 7204.

The trailing arm pivot tube should be regularly checked to ensure that it is a good interference fit in the trailing arm casting. It is possible under some conditions for the pivot tube to become loose and this can be rectified by welding the tube and arm together.

Rear anti-roll bars must remain standard in Group N.

Torsion bars (springs) are free, and we recommend the following:

7239	20mm	205 forest
7246	23mm	205 tarmac
8243	21.5mm	309 forest
8274	26mm	309 tarmac

When fitting torsion bars, it is advisable to use 'Copaslip' around the splines, otherwise it is difficult to remove them, even with a slide hammer, after miles of muddy forest use.

PLEASE NOTE:
Early 1600 cars have a different arrangement of the torsion bar splines Later model torsion bars will not fit early model trailing arms. Torsion bars for 1600 models are not available if the chassis number is prior to 5895923.

5. BRAKES

In order to obtain a better balance for competition use, the pressure limiting valve in the rear brake line should be replaced by the connectors 8266 for forest rallies, although they must be retained for tarmac events. For gravel use, the servo should be disconnected by using blanking plug 7267 which screws into the inlet manifold. For tarmac rallies the servo should be retained. On 1600 models fitted with the ball and ram type pressure limiter, the angle at which the limiter is fitted may be altered to increase or reduce the pressure limiting.

Mintex 1144 competition pads 7251 and 7252 replace the standard pads at front and rear. These are the recognised standard competition material for most applications, but brake pads in 1155 material are available for tarmac events, and 1155 and 1166 material is available for circuit racing. It is essential for safe and reliable brake performance that the standard brake fluid is drained and replaced by high boiling point competition fluid 4001 or 4002. On drum brake cars the standard rear shoes are retained for most events, as a harder material may have a better wear rate, but will give a less effective handbrake for gravel use.

As an added precaution against the rear disc brake pads being allowed to move out of their correct position in the caliper, lock wiring of the pad to caliper locking slide is recommended, see Figure 15.

On the caliper bracket retaining the disc pads, there is a casting lug adjacent to the inner hole on the pad retaining slider. As shown on the diagram overleaf, this lug

should be drilled with a 2.0mm diameter drill in a position leaving at least 1.0mm of wall thickness of material around the hole.

A suitable length of 0.60mm diameter stainless steel locking wire is passed through the slider, in its normal operating position, twisted once and then passed through and aroung the drilled lug before being finally twisted together.

N.B. The pad locking slide and retaining spring clip remain in their normal positions. The wire locking is additional and completely independent. Please ensure (especially when changing brake pads) that the side and clip are in top condition, (renew the retaining spring clip regularly) and are both fitted correctly. The addition of wire locking will, if carried out as instructed, help ensure this.

An example of a caliper modified in this manner will be available for inspection in the Club's Triaxle at all events attended.

Aviation type brake hoses 8265F and 825R replace the standard flexible pipes. See Figures 7 and 8 for installation. These pipes may be covered with plastic spiral binding for added protection.

The fly-off handbrake 7225/2 is a direct replacement for the standard item.

7. BODY

It is advisable to fully seam weld the bodyshell to improve its strength and to increase its useful life. Seam welding should include all the major body seams excluding the door and window apertures. Pay particular attention to the major body chassis rails and to the suspension pick-up points. Plating is permitted within the Group N regulations, but gussetting is not, see Figures 9 & 10 for information.

Two sumpguards are available for each model, the tarmac guard gives cover for the sump, the forest guard is heavier and gives additional protection to the gearbox, (Figure 11). If a Safety Devices multipoint rollcage is used, it is important to take care with the installation. The roll cage should be installed loosely in position with plates the same thickness as the mounting plates fitted under the rollcage feet. The rollcage can then be fitted firmly together with its door bars and lined up accurately with the screen pillars and the B post. The positions of the mounting plates and the multi-point fixings can then be marked out through the rollcage mounting holes. The rollcage should be removed and the multi-point pads together with the rollcage foot mounting plates can be welded in position. The rollcage can then be refitted to the body, using additional packing washers where necessary between the cage and the multipoint pads. Under no circumstances should excessive loads be applied to the rollcage in order to bolt it in position.

A footrest is available for co-drivers 7310 which may require trimming off around the wheelarch depending on the position in which it is installed.

The fuel tank guards comprise three sections - under tank LH, under tank RH and the filler neck cover. Once the shields are in position, the gap between the tank and shield can be filled with expanding foam to prevent the entry of small stones.

For safety, bonnet pins 4000 must be fitted front and rear, although the option tailgate spring set 4014 can be used. The standard bonnet and tail gate locks must be removed.

You are reminded that, if the original seats and attachments are changed, the following FIA requirements at the time of print are to be respected:

1. 4 attachments per seat using minimum of 8mm diameter bolts.

2. Minimum material thickness for bolts and plates is 3mm for steel and 5mm for alloy.

3. Minimum surface area for each mounting point (brackets and counterplates) is 40 square centimeters.

Although front seats are now free in Group N, you must ensure that the fixings comply with the above criteria, and also mounted with no free play.

It is a very prudent precaution to fit the works front wheel mudflaps 7315 to minimise underbody damage from stones thrown up by the front wheels. Mudflaps 7316 should also be fitted ahead of the rear shock absorbers to prevent stone damage and these can be attached to the rear edge of the fuel tank guard with tie wraps.

Fuel and brake pipe guards should be fitted to prevent damage to the pipes under the car . This is the most cost effective way of protection, but total protection is acheived by using aviation type hoses. If these are used, you have the option, (current FIA regulations permitting), of moving them inside the car, but with no connections in the cockpit.

When the spare wheel is mounted inside the car, a spare wheel mounting kit is required to firmly and securely locate the wheel in the boot area, you have a choice of the 3640 post and 3641 ratchet tie-down strap.
Although for International events you must retain the spare wheel carrier in its original location, for other events it may be moved with the wheel into the luggage area.

8. ELECTRICAL

The wiring loom is shown to represent a typical motorsport application, and covers the auxiliary lights, master switch wiring, interior wiring for maplights, tripmeters and a two-way radio. Connections for the additional wiring can be made mostly in the standard fuse box as indicated in the wiring diagrams. The additional wiring attaches to the standard wiring only at the indicator switch, see Figures 12 & 13. Figure 14 shows the wiring diagram for electrically triggered fire systems.

It is advisable to fully inspect the standard wiring loom during the car build and in many places the loom can be tidied and its route altered to improve the installation.

The panel provided for the supplementary switches is fitted in the space for the standard car radio.

The lamp pod 1700 for Hella 3000 type lens is fixed as follows:

Drill the pod for two fixing bolts at the rear. Offer up to the bonnet, and mark the centre line. Drill the bonnet in line with the fixing holes, checking that the front face of the pod is vertical above the mid point of the bumper. The captive nuts can now be fitted under the bonnet, or currently the slide latch / bobbin system (see instruction sheet included with kit)
For the stabiliser bar, the fixed ball joints are mounted in the front face of the pod, with the quick release joints onto the right angled brackets on the bumper.

To fix the Hella 3000 lens units to the pod, follow the fitting instructions supplied.

9. TYRES

Recommended pressures:-

	Front		Rear	
Gravel	1.6	1.8 bar	1.6	1.8 bar
	1.9	2.0 bar	1.9	2.0 bar
	1300	1.8 bar	1300	1.8 bar
Tarmac	1.6	2.0 bar	1.6	1.8 bar
	1.9	2.0 bar	1.9	1.8 bar
	1300	2.00 bar	1300	1.8 bar.

Tyre pressures should only be checked when the tyres are cold. The pressure will rise when the tyres warm up and no attempt should be made to reduce pressures in these circumstances. The choice of tyre pressures for circuit racing may vary from the above.

Tyre wear is not a big problem with a Group N car such as the Peugeot 205 or 309 GTI. The main problems likely to be sustained are punctures in the sidewalls. It is therefore very important to check all the tyres at every service point on a rally, not only for wear but also for any signs of damage to the sidewall.

Short valves should be used on all occasions. Valves which protrude beyond the rim risk being torn out on rallies.

"CHALLENGE" SPECIFICATION CARS

This section gives additional information for vehicles that complied with the Peugeot GTI "Challenge" specification in previous years, and gives a well proven Clubmans car, stopping short of the expensive full Group A components, by allowing trim removal and the use of a limited slip differential, different final drives, and an adjustable bias brake setup.

1. ENGINE

The airflow meter is moved in line with the throttle body, and mounted with an "L" bracket. The existing inlet hose between the grille and air cleaner can be cut to provide a suitable connector. A foam type element is fitted directly onto the airflow meter, and situated behind the headlamp.
The free flow element 7093 is available from Peugeot Sport Special Tuning .

The performance camshaft 7060 is a direct replacement for the standard cam, and uses the standard cam pulley.

The adjustable fuel pressure regulator 7047/1 should ideally be set on a dyno for optimum performance, but an initial setting of 3-3.5 bar is a good starting point.

The Group A exhaust systems 7037 is a direct swap for the standard parts, and uses a specific bigger bore siamesed downpipe.

2. TRANSMISSION

A The crown wheel and pinion change is as per the standard unit, and entails no other parts if the gearbox is in good condition.

B The needle bearing type pinions available only from Peugeot Sport Special Tuning must be used when converting to any of the permitted ratios for reasons of durability caused by the increase in first gear speeds relative to the input shaft.

C The Peugeot specification of the 7101 Quaife limited slip differential is for a direct replacement for the standard unit. As there may be slight differences in gearbox casings, it is advisable to trial fit the diff., and relieve the casing if contact is occuring.

D The gearbox should only be lubricated with an HD75W or 75/90 grade oil, or semi synthetic Esso BV, quantity 2 litres.

E When fitting the full rose-jointed gearchange kit 7115, the initial settings for the cross-rods is the same length as the standard rods. Final adjustment should then be made to centralize the gear lever in the car for the optimum fore and aft travel.

3. BRAKES

When fitting the Peugeot Sport Special Tuning bias adjustable pedal box, the following points must be observed, see diagram 16 :-

A The pedal box is a direct replacement for the original production part.

B The adjuster cable should be fitted to the right hand side of the bias bar, and turned through 180 degrees before being fixed in an accessible position under the fascia panel.

C Using the diagram as reference, the following points should be noted;

- **a** pedal sleeve to yoke clearance.
- **b** pushrod thread into yoke minimum threads to observe.
- **c** pushrod overall length and thread length to observe.
- **d** ensure rose-joint is lightly greased and slides freely within pedal sleeve.
- **e** ensure that the pushrods retract fully against the master cylinder stops.

D The most popular master cylinder sizes are:

Forest, 5/8" front and rear. Tarmac 5/8" front and 3/4" rear.
(The rear cylinder may be swapped to suit driver preference).

E Brake piping should be routed as per diagram.

F The hydraulic handbrake using a 5/8" master cylinder should be connected as per the diagram. Ensure that the pushrod is adjusted to be against the cylinder stop when the lever is 4mm above the fully down position.

G The Peugeot/Alcon/AP Racing brake kit 7255 is designed for use with the controlled standard road wheels used in the Rally Challenge, and is a replacement for the standard brakes. It is essential that the wheel spacers supplied in the kit are used at all times to ensure adequate wheel to caliper clearance if road wheels are used.

H When bleeding the brake circuit, it is essential that the front and rear circuits are bled at the same time i.e. one front and one rear caliper. Open the inboard front bleed screws first, then the outboard ones, and occasionally operate the hydraulic handbrake lever to move any airlocks within the cylinder.

I It is essential to use a Competition brake fluid such as the AP Racing type used by our Works Team and supplied by Peugeot Sport Special Tuning as 4001 or 4002, they are supplied in half litre bottles, two are required for initial fill

Even racing fluid has a finite life, and deteriorates rapidly if it should reach its maximum operating temperature, so use new fluid at all times, and change the fluid frequently.

4. SUSPENSION

Rose-jointed top strut mounts 7231 are fitted using only the long spindle Group A inserts and a special top pan 7244 and spacer 7231/3 (supplied in 7231 kit) with a choice of gravel or tarmac settings.

5. STEERING

The quicker ratio steering rack 7207 is obsolete now, but please note that the series production power steering version already has a quicker ratio as standard, and with the trend to higher loading limited slip differentials, power steering is more driver friendly in reducing torque steer through the steering wheel..

205/309 GROUP A CARS

Above and beyond the Group N and "Challenge" specifications that have been the basis of the Rally Club for so long, there are several levels of preparation up to full Group A. In simple terms, apart from the development and testing time spent by the factory on the chassis, the main differences are under the bonnet.

1. ENGINE

In terms of reliability, the main advantage comes from blueprinting and balancing the block, crank assembly, and con rods, and fitting the forged pistons 7025C for 8 valve engines or 7025D for 16 valve. Group A valve head sizes are standard, but better quality and different shape valves using double springs are available, which are safer at higher revs. The cylinder head to maximum sizes can be obtained from Special Tuning, or the standard head modified by an engine tuner to the FIA form dimensions. It is advisable to use the 205T16 steel head gasket 7005X which, although expensive, has proved reliable on engines of up to 12:1 compression ratio.

It is worth noting that we have a simpler system of tightening cylinder heads than the normal degree plate system as follows -

1. Tighten all bolts in a circular pattern starting at a centre bolt and spiralling outwards to an end bolt to 20 lbs ft.

2. Then all bolts in the same spiral to 40 lbs ft

3. Then each bolt to 55 lbs ft working from the centre spiralling outwards.

Some important points to note are -

The block must be machined to give 0.3mm liner protrusion, and the Torx head elastic head bolts must be lubricated with Copaslip grease.

Other parts such as air cleaner, exhaust system, and the works camshaft 7048 (wide band gravel) are all bolt on items, but the fuel and electronic systems available are quite varied according to budget allowance. This will determine the choice of either a simple Bosch ECU modification or a fully mapped system such as Zytek, which completely replaces the original production system.

2. TRANSMISSION

A close ratio five speed conversion kit 7102 is available for 1600cc 205 models, but 309 8v and 16v and 205 1900cc cars can only use a 6-speed synchro Peugeot France gearbox as well as the standard ratios. The "Challenge" specification of standard ratios plus the Peugeot/Quaife LSD is the best value setup, with a choice of final drives, as it uses the standard driveshafts, not the special ZF type.

As a result of the 306 S16 rally programme, it is now possible to use the Peugeot/ZF plate type differential 3102/4 from that six speed gearbox in older BE3 family gearboxes, please see the current 205/309 Special Tuning catalogue for details.

3. CHASSIS/BRAKES

Apart from taking advantage of all the Group A freedoms regarding trim etc., a "Challenge" specification setup is the best value, indeed this is effectively that which Ricky Evans used to win both the 1994 and 1995 BTRDA Peugeot Gold Star Championships. For tarmac events, it may be worth converting to the larger 315mm front brake setup for maximum stopping power, and maybe the rose-jointed front wishbone kit 7226 to allow finer adjustment of the front geometry, and increased strength and reliability. Apart from these considerations, it is simply a case of changing the springs, inserts, torsion bars, and dampers to stiffer tarmac settings.

Front antiroll bars can stay standard for most types of events, indeed they can be removed for gravel, giving more suspension travel freedom on rough stages, but rear antiroll bars are a personal choice. Most drivers have different views on the stiffness of hatchback rear suspension, but it as well to try the car with the standard diameter initially on smooth gravel, switching to a larger diameter for tarmac.

205 RALLYE 1300cc Group N.

This car is based on the 205 1.6 GTI suspension and brakes, but using the TU24 engine with twin 40DCOE Webers, and the MA type 5-speed gearbox.

The majority of parts required for preparation can be obtained from Special Tuning as 1.6 GTI, with the exception of the following:-

Engine mounting kit	1118
Cerametallic clutch plate	1002
Head gasket	7083
Exhaust interpipe + silencer	7082

The engine is ready in standard tune to be used in competition, but may benefit from a rolling road tune with regard to Weber jets, however, the chokes must remain standard.
The gearbox on early cars uses plastic tips on the selector forks, and it is advisable to Araldite these to the fork. A brass fork kit 1102 is available from the Peugeot 106 range. A close check should be kept on the free play in the differential, as ultimately the planet gears will move out of mesh and break.

The gearbox should only be lubricated with an HD 75W or 75/90 grade oil, or semi synthetic Esso BV, quantity 2 litres.

205 RALLYE GROUP A

As very few of these left hand drive cars exist in the UK it is difficult to give a detailed specification for gravel events. The basic modifications to the chassis are as per 205 1600cc cars, as long as you respect the FIA homologation form, and the engine/transmission modifications are not as detailed as a GTI for example. The important change is probably to convert to the close ratio gears 1100 and the ZF plate type differential 7183 with a choice of final drive ratios.

106 RALLYE and XSi

Introduced during 1994, these cars have appeared in Group N, "Challenge", and Group A specification. Although using many different components to the 205/309 range, the basic preparation guidelines are the same. It is worth noting that the alloy block 1300cc Rallye engine is from the same family as the earlier 205 Rallye, and the cast block 1360cc XSi engine has been superseded by a 1600cc cast block engine.

Group N

Using mainly the Bilstein suspension, safety cage, and protection parts from the Special Tuning 106 catalogue, the 106 Rallye of Adam Kent won its class outright on both the 1995 Thousand Lakes and RAC Rallies, so this is a simple and reliable conversion along the lines of the 205/309 Group N section.

Group A

Apart from the removal of interior trim, and the freedoms given by the FIA Group A section, the obvious difference with this specification is the use of a close ratio five speed gearbox with a plate type ZF differential. Along with the increased traction and

choice of final drives ratios, the engine can be modified within the current regulations to give around 140 bhp at the flywheel. At the time of print, no private cars have been prepared for full Group A gravel use, although there are several in use on tarmac in France. Details of the Peugeot France full Group A parts can be obtained from Special Tuning.

PEUGEOT 306 S16

This new car, introduced 10 years after the first 205 GTI was built, heralds a new era. As a true 2 litre 16 valve 3-door hatchback, it was used during the 1995 and 1996 seasons in "Challenge" specification, drawing on all the previous years experiences with the Rally Club to give "the most car for the least outlay".

Group N

1. As with all Peugeots running to FIA Gp N regulations, similar guidelines to the previous models apply. The engine may be blueprinted, and coupled with the re-mapped computer 3004, and the Peugeot / Magnex exhaust system 3002/3003/3006 more power and torque can be realised. You are advised to fit the engine mounting set 3010 to reduce engine torque movements in the chassis.
It is worth noting that the XU10J4 engine using Bosch Motronic or Peugeot/MBE management systems must use resistor type spark plugs, due to the coil-over-plug delay times in the triggering circuit.

2. The 306 S16 transmission differs from previous models for two reasons -

The diff cage and pin/gears setup are of larger dimensions, which means that the crown wheel is fitted to the opposite side of the differential flange to earlier Peugeots.

The clutch cover is of the pull type (originally used on the 205T16) to give higher plate clamping coupled with a lighter clutch pedal effort.

The gearchange cross rods should be loosely lock wired, to prevent the exhaust heat from displacing the ball joints.

3. The conversion to Bilstein front suspension is a simple case of exchanging the standard large diameter spring/strut assemblies for the adjustable Bilstein bodies and small diameter springs. There is a choice of gravel or tarmac springs, and the inserts have short top spindles, unlike the long top Gp A inserts for rose joints.

The front anti roll bar must remain original.

The front wishbones 3280 A/B are reinforced, and are fitted with harder rubbers.

The outer ball joints 3281 are stronger than the production type.

4. Rear suspension modifications are as per all previous types, the harder axle rubbers 3240 reduce movement within the chassis, and also reduce the rear wheel steering characteristic of the standard car.

Bilstein dampers available are 3237 for gravel use and 3238 for tarmac use.

Torsion bar diameters are free in Gp N, the standard 20mm bars can be increased to 22 or 23 mm with the available choice 3251 and 3253 depending on application. Rear roll bars must remain original.

Road wheel types are free within current Gp N as long as the dimensions remain standard. Wheel fixings are free, and the popular Peugeot motorsport stud and nut system 7206/1 and 7209/2 is strongly recommended for the standard flat face wheels. If taper seat wheels are used, then use wheel nuts 7209/1.

5. For Gp N, brake pad materials are free. Current compounds available from Peugeot Sport include -

3400	Mintex 1144	General applications
3401	Mintex 1155	Tarmac applications
3402	Mintex 1166	Tarmac and/or heavy left foot braking use

(As ever, these applications are only guidelines, individual drivers need to test all types before deciding on a compound)

Rear disc pads are predominantly Mintex 1144 type 7252.

The fly-off handbrake lever 3225/2 is advised for Gp N use.

6. The standard production power steering system has proved excellent, and is also used on Gp A Clubmans cars.

7. Protection devices must include a roll cage, either a dedicated weld in type such as the Custom Cages type used by the factory and most of the Challenge cars, or a bolt in type such as the 3604 series.

Works sump and fuel tank guards should be fitted, the tankguard 3608 in particular, as it is designed to keep exhaust heat away from the fuel tank.

Challenge specification.

These cars have proved to be the best balance between cost, reliability, and performance, in the best traditions of the Peugeot Rally Club. The outstanding results obtained by Justin Dale and Jason Sharpe during 1996, competing in British and European Championship Events, and Richard Burns brilliant drive on the Manx International Rally in a Peugeot 306 with a standard engine speak for themselves.

1. Engine modifications are as per Gp N to limit expenditure, although these cars are allowed the in line air cleaner 3093 and the 3000 twin tube exhaust downpipe, for increased power.
The 3011 engine mounting kit is a stiffer version of the Gp N kit, and should be used with the 3019 gearbox support plate.

The 3049 electric fan from the 205T16 and 3009 oil radiator kits are recommended to reduce engine temperatures.

2. As a cost effective way to acquire a close ratio six speed gearbox, with ZF differential, the 3102 gearbox assembly has proved excellent. An added advantage is that the differential is designed to use the standard S16 driveshafts, unlike other models which need specific Gp A types at higher cost.

The cerametallic clutch plate 3103 should be used with the S16 clutch cover, and as always, the 3115 rose jointed gearchange kit gives a firmer, shorter travel gearshift, with protection against the exhaust heat effect encountered with Gp N cars.

3. Front suspension conversion to Bilstein is the same as Gp N, but with two important changes -

The strut body 3215 is not handed, and has built in 1.5 degrees of negative camber, thus reducing costs by retaining the standard hub uprights.

The specific rose jointed alloy top mounts 3274 allow fine adjustments of castor and camber on each side. These must be used with the 3212 top plates to spread the loadings across the inner wing panels.

The tubular front wishbone kit 3270 is a straight forward conversion using the standard subframe, and although for gravel the front roll bar is generally removed, the 3271 front roll bar kit is a dedicated fitment with these wishbones, and should always be fitted for tarmac use.

4. The rear axle mounting kit 3242 locates the rear beam rigidly, and the wide range of torsion and rear roll bars available should suit all applications.

Rear Bilsteins are as per Gp N types.

5. The front brakes available have evolved over the last two years into a choice of the following -

Standard production 306 S16 or 7255 265mm vented discs or 3310 290mm vented discs
(The 290mm kit is the largest diameter that will fit inside a 15" road wheel, the controlled size for the Challenge)

Coupled with either the 3300 or 3305 pedal box kits, the standard 306 S16 rear disc setup, and the wide choice of brake pad materials available, this has given a range of brake systems that should suit most driving styles.

In addition to the 3225/2 Gp N fly-off handbrake lever, the hydraulic handbrake kit 3225 can be fitted, although this is not allowed under Gp N regulations.

6. Steering as per Gp N.

7. Apart from the protection notes under Gp N, the obvious body modifications include the removal of interior trim as per the Challenge Technical Regulations, plus other freedoms from current Gp A. As these can change annually, you should consult the current Challenge Regulations for clarification.

As most of the cars competing in the Challenge were built from Peugeot Sport white metal bodyshells, it is worth noting that, for example, the 3901 and 3902 wiring harness kits are available when the standard harness is not available from a donor car.

Group A

As full Gp A cars are not eligible for the Peugeot Challenge, details of these cars and the parts available can be obtained from Special Tuning. Recent developments with the works 306 S16 Clubmans car have resulted in new lines being included in the Special Tuning catalogue in print now.

Super 106 Cup

Introduced for the 1999 season, this heralds a new formula in using a brand new donor car and controlled Special Tuning kit of parts which is mandatory in order to compete in a Peugeot Challenge, however, the constant theme of the "best rally car for the least money" is carried over, and the high overall placings of these cars on National and International rallies during 1999 so far has been impressive.

Based on a lightweight Gp A Peugeot 106 GTI 16 valve donor car, the controlled kit of parts to bring this car to Super 106 Cup specification gives a power to weight ratio of around 160 bhp per ton, which is the same as a full works Gp A 1600 Peugeot 205 of 10 years ago.

At the moment these parts are exclusive to the Super 106 Cup, and details can be obtained from Peugeot Sport in Coventry, but we may release some lines to drivers outside the Cup for the 2000 season.

Footnote

The purpose of this book is to provide general information to current and existing drivers of Peugeot cars competing within the Peugeot Challenge, or for new drivers competing outside the Peugeot one-make series. Information regarding full Gp A and 106 and 306 Maxi cars will be available from Peugeot Sport Special Tuning as these models evolve.

E. & O.E. *AWK 11-99*

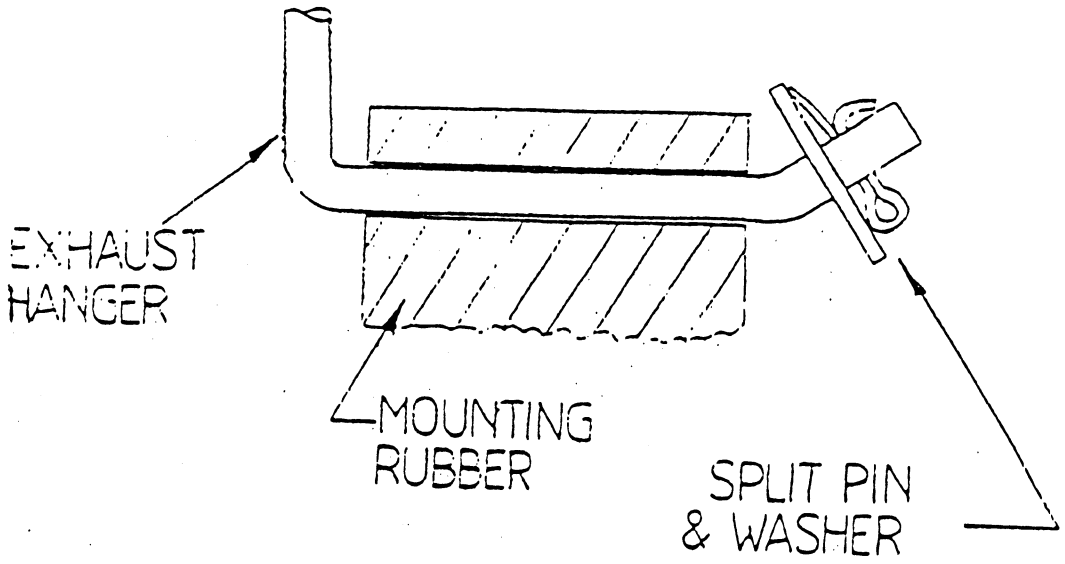


FIGURE 1. EXHAUST MOUNTING RUBBER RETENTION

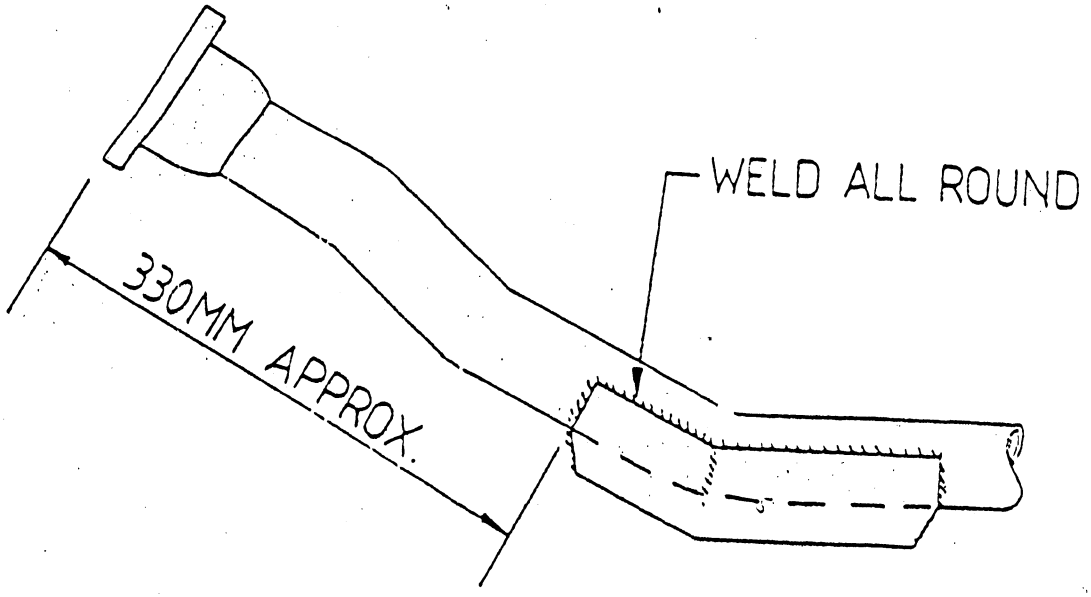


FIGURE 2. EXHAUST DOWNPIPE SKID

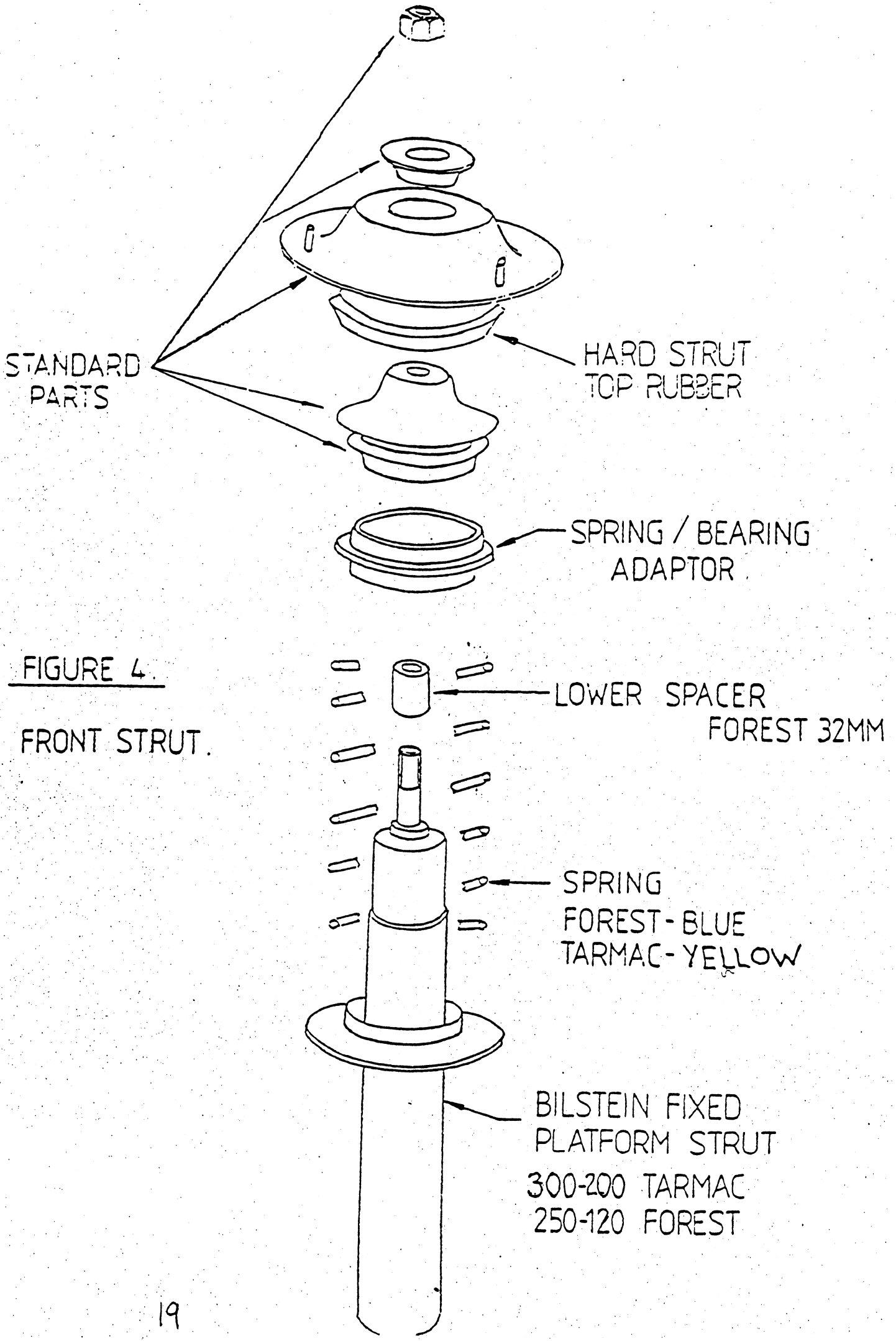
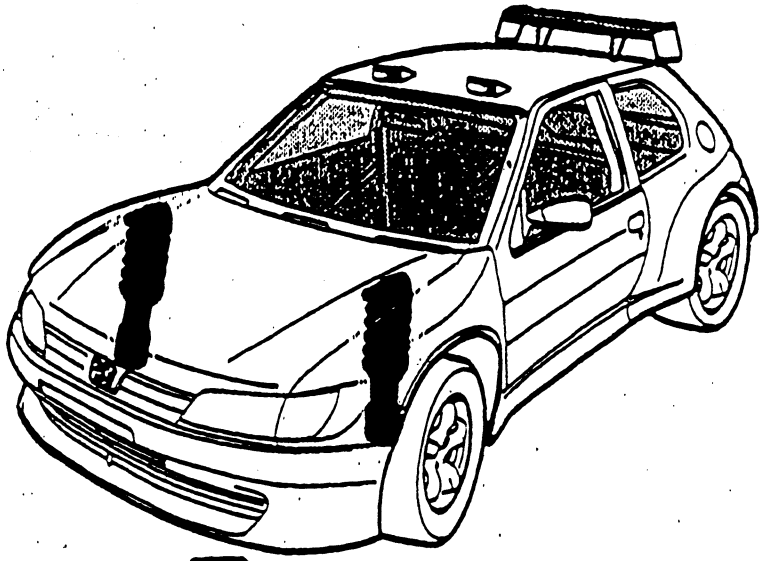
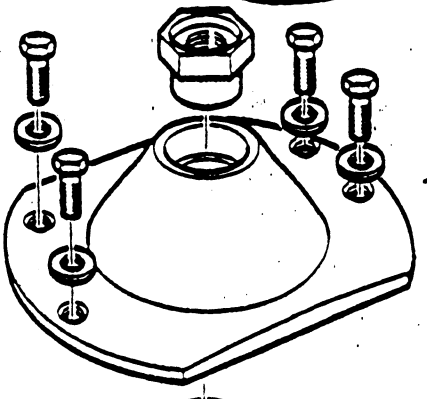


FIGURE 4.

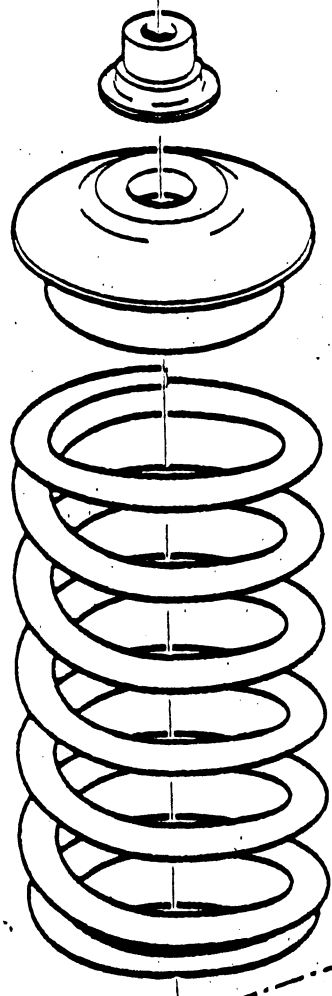
FRONT STRUT.

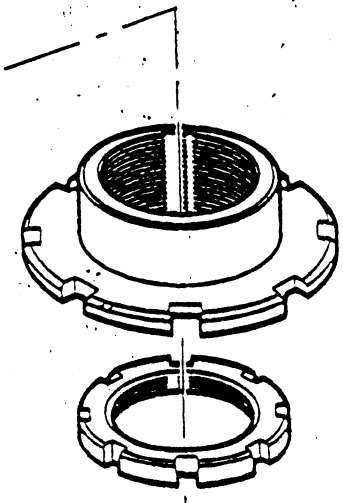
Typical GpA front strut assy

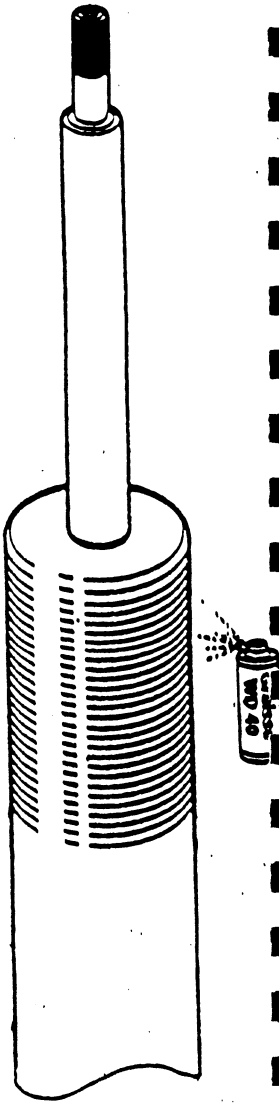




Rose joint







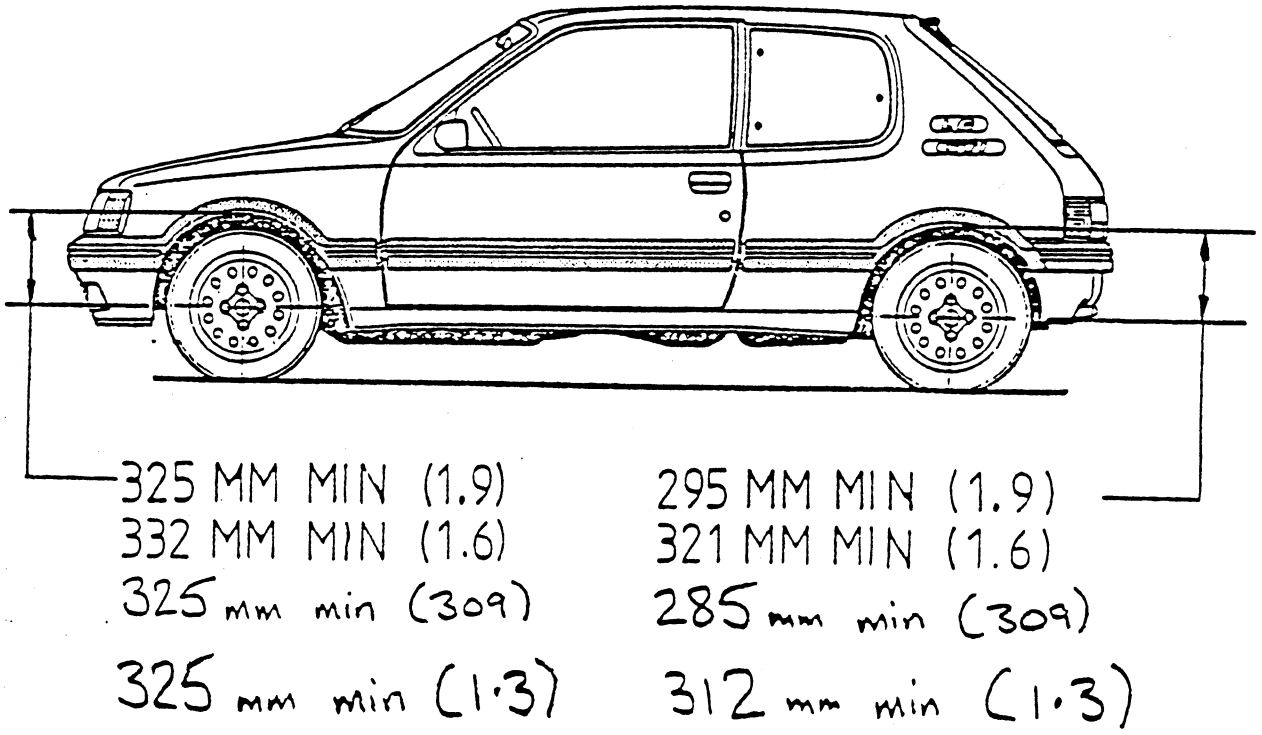
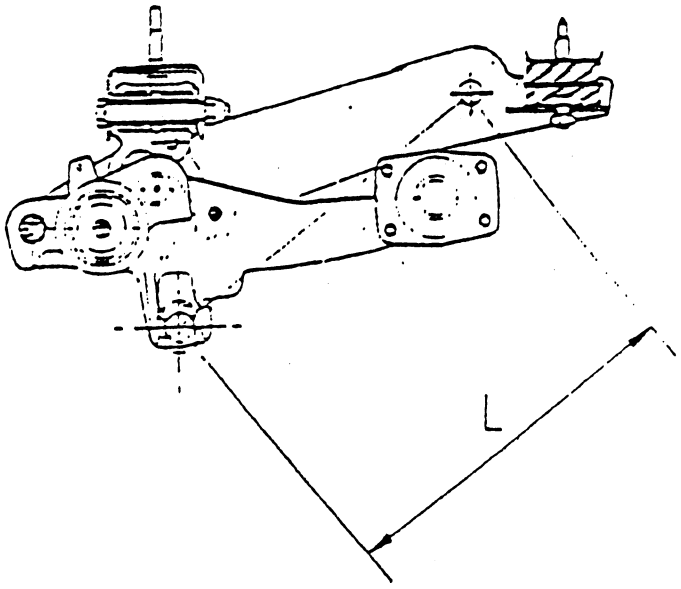
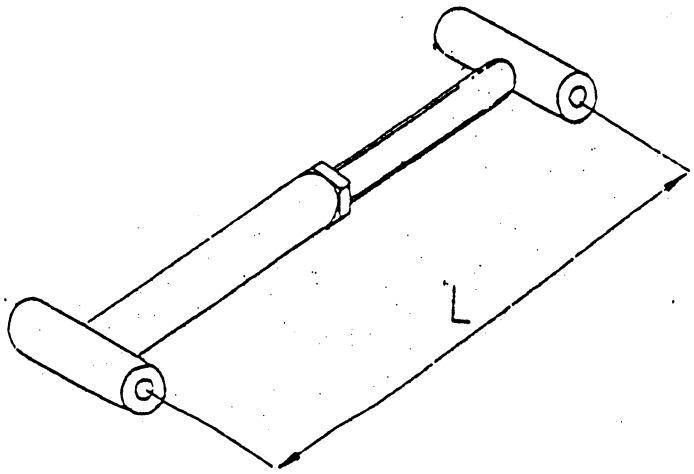


FIGURE 5. MINIMUM RIDE HEIGHT



REAR RIDE HEIGHT SETTING



DUMMY SHOCK ABSORBER

FIGURE 6.

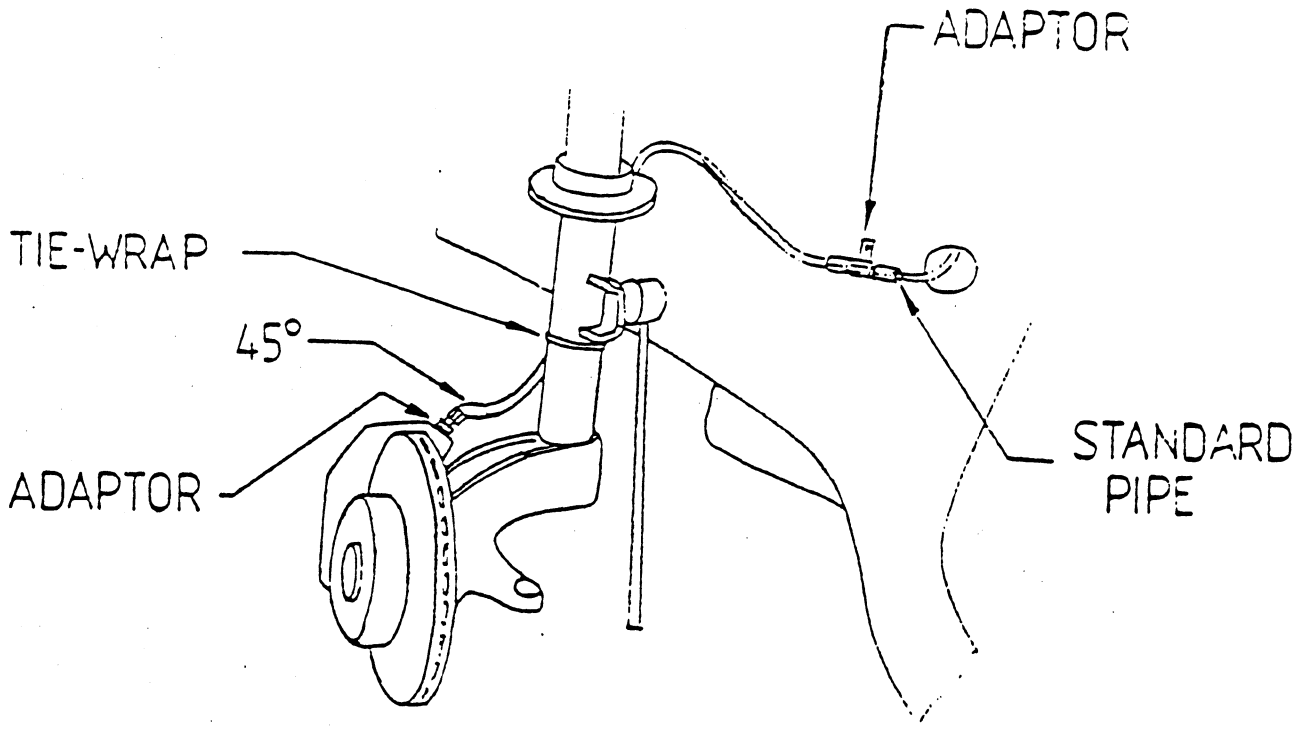


FIGURE 7. FRONT BRAKE HOSE INSTALLATION

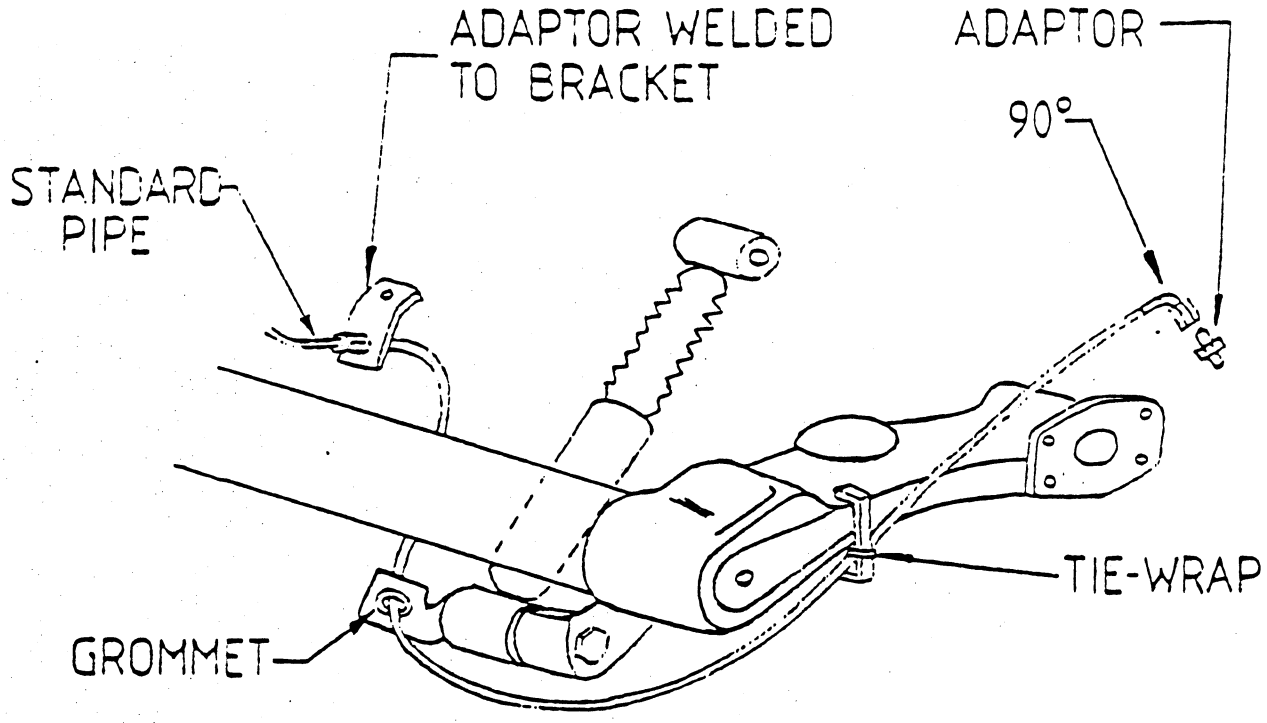
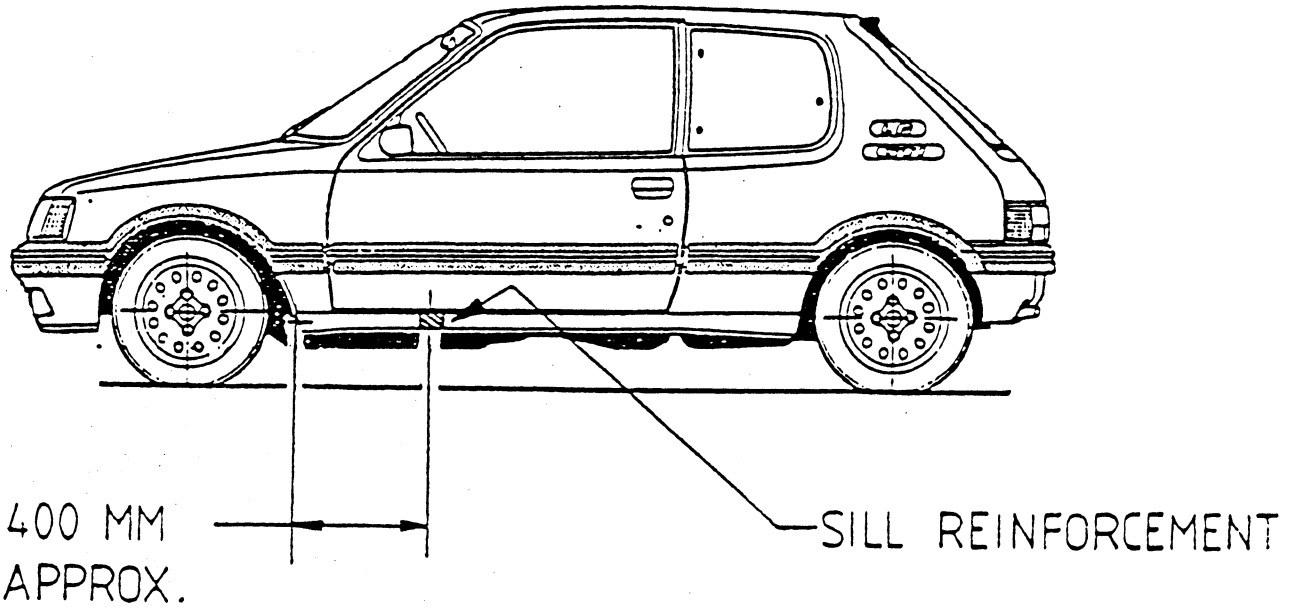


FIGURE 8. REAR BRAKE HOSE INSTALLATION



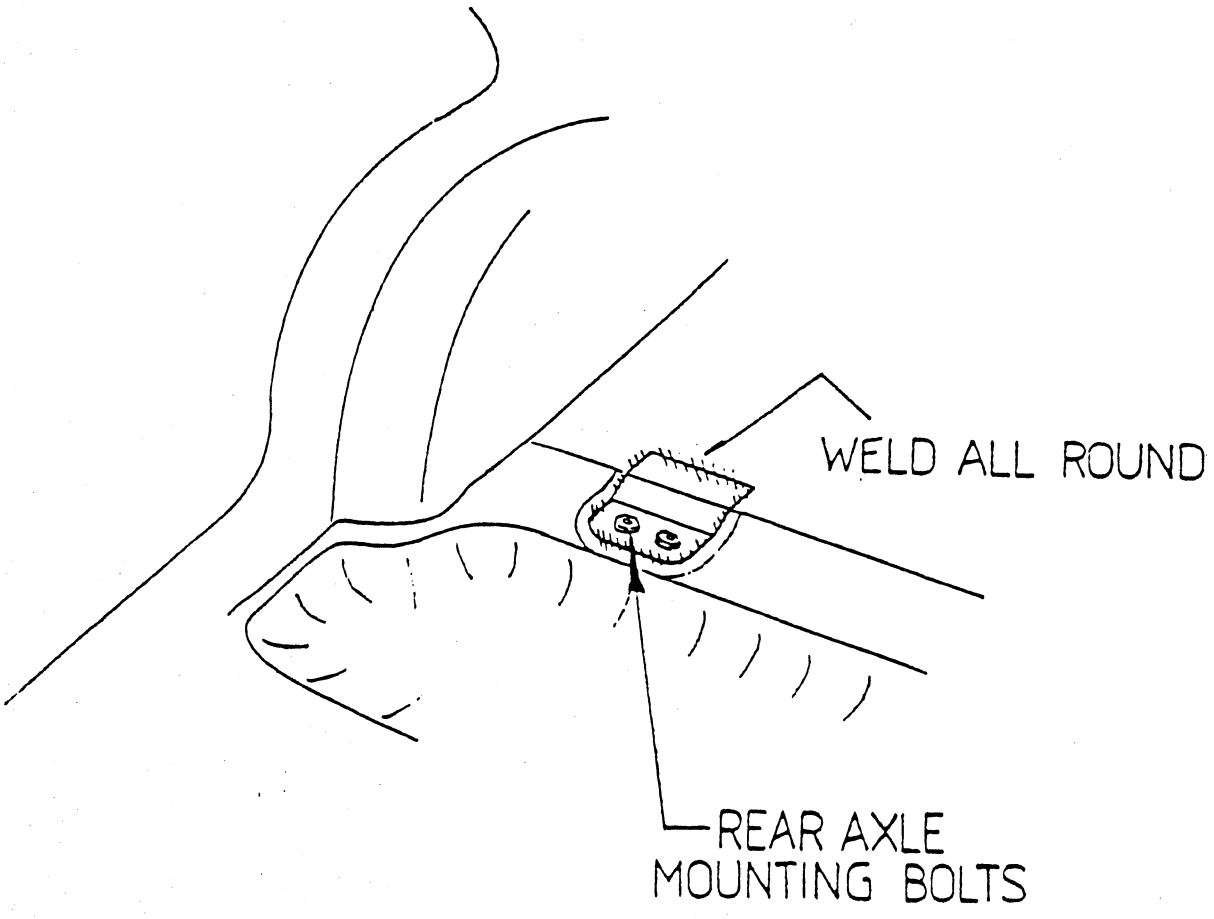


FIGURE 9. BODY PLATING KIT

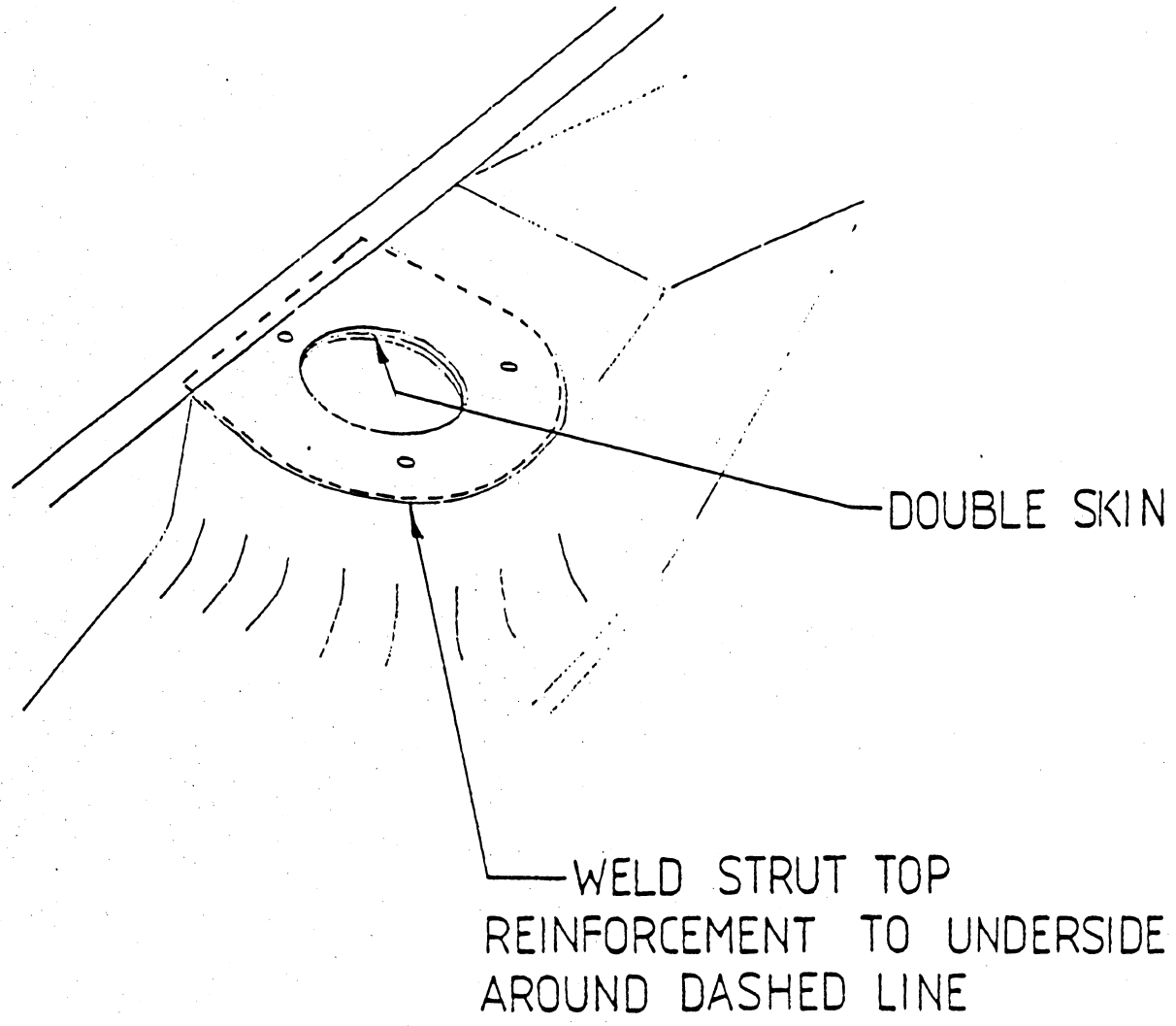


FIGURE 10. BODY PLATING KIT

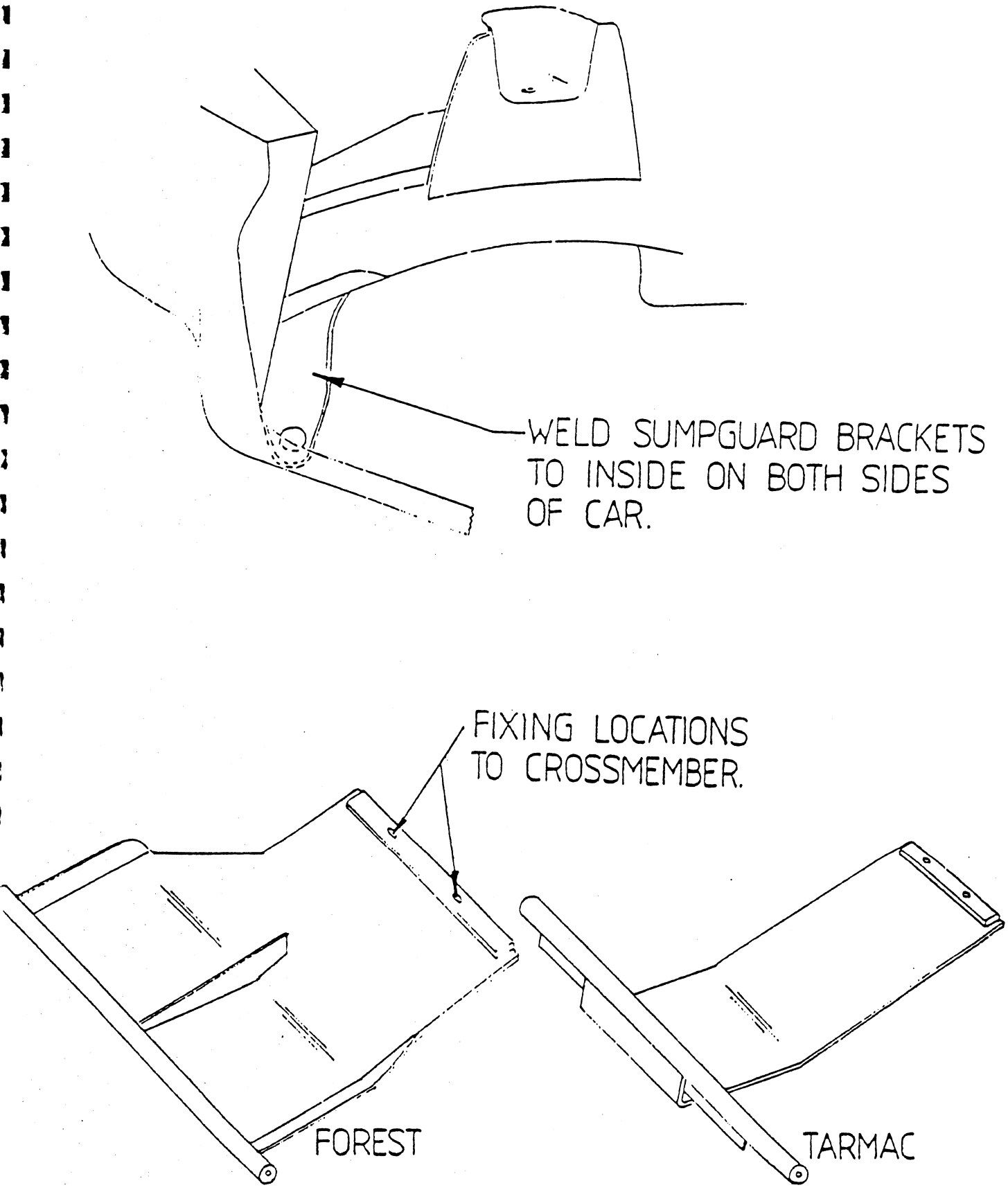
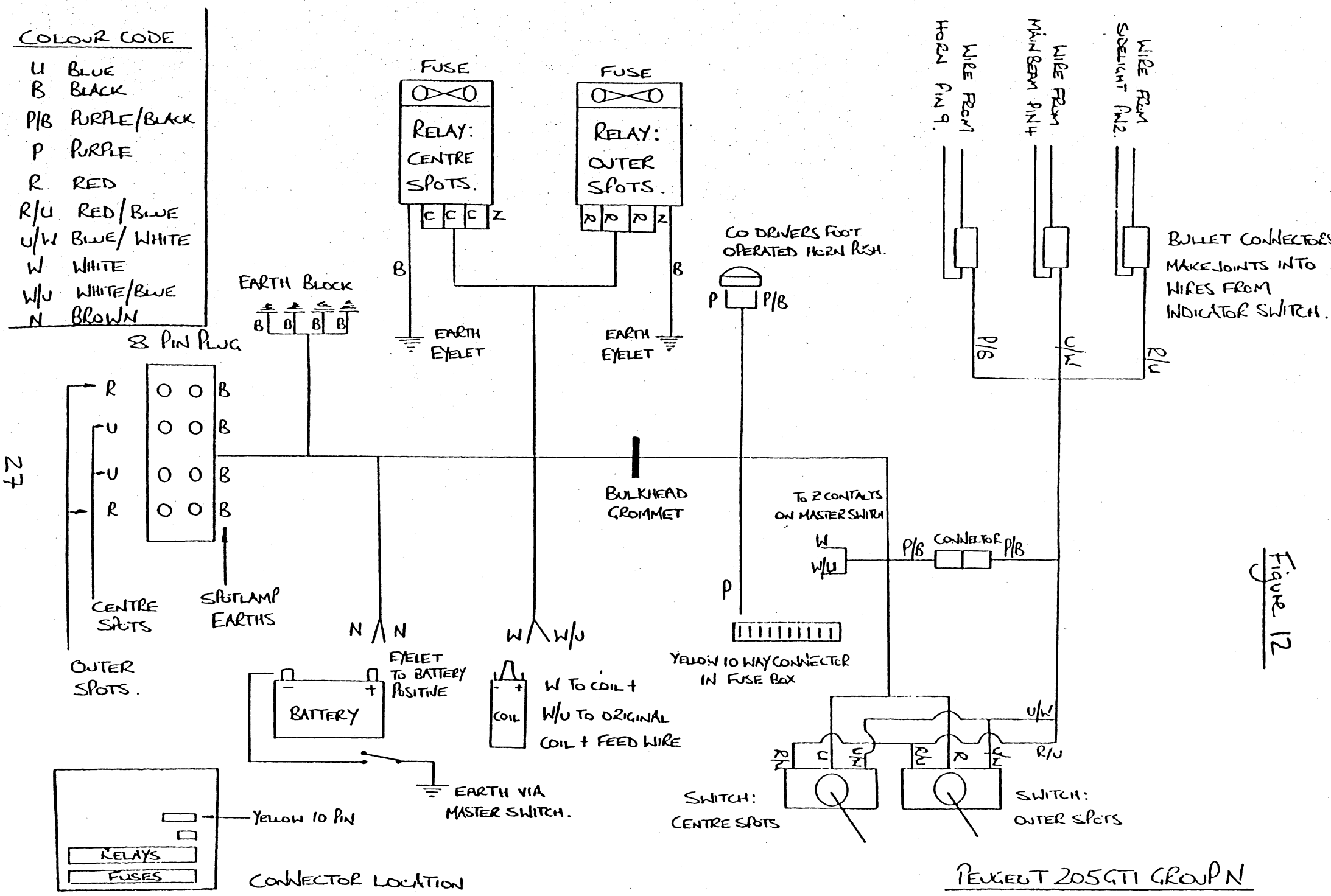


FIGURE 11. SUMPGUARD


COLOUR CODE
U BLUE
B BLACK
P/B PURPLE/BLACK
P PURPLE
R RED
R/U RED/BLUE
U/W BLUE/WHITE
W WHITE
W/U WHITE/BLUE
N BROWN
8 PIN PLUG
R
U
U
R
OUTER SPOTS.
CENTRE SPOTS
SPOTLAMP EARTHS
EARTH BLOCK
B B B B
FUSE
RELAY: CENTRE SPOTS.
C C C Z
FUSE
RELAY: OUTER SPOTS.
Z Z Z Z
B
EARTH EYELET
B
EARTH EYELET
BULKHEAD GROMMET
N N
W W/U
EYELET TO BATTERY POSITIVE
BATTERY
COIL
W TO COIL +
W/U TO ORIGINAL COIL + FEED WIRE
EARTH VIA MASTER SWITCH.
CO DRIVERS FOOT OPERATED HORN PUSH.
P P/B
P
YELLOW 10 WAY CONNECTOR IN FUSE BOX
TO 2 CONTACTS ON MASTER SWITCH
W W/U
P/B CONNECTOR P/B
WIRE FROM HORN PIN 9.
WIRE FROM MAIN BEAM PIN 4
WIRE FROM SIDELIGHT PIN 2.
BULLET CONNECTORS MAKE JOINTS INTO WIRES FROM INDICATOR SWITCH.
P/B
U/W
R/U
U/W
R/U
C
Z
R
SWITCH: CENTRE SPOTS
SWITCH: OUTER SPOTS
YELLOW 10 PIN
RELAYS
FUSES
CONNECTOR LOCATION
27
Figure 12
PEUGEOT 205GTI GROUP N

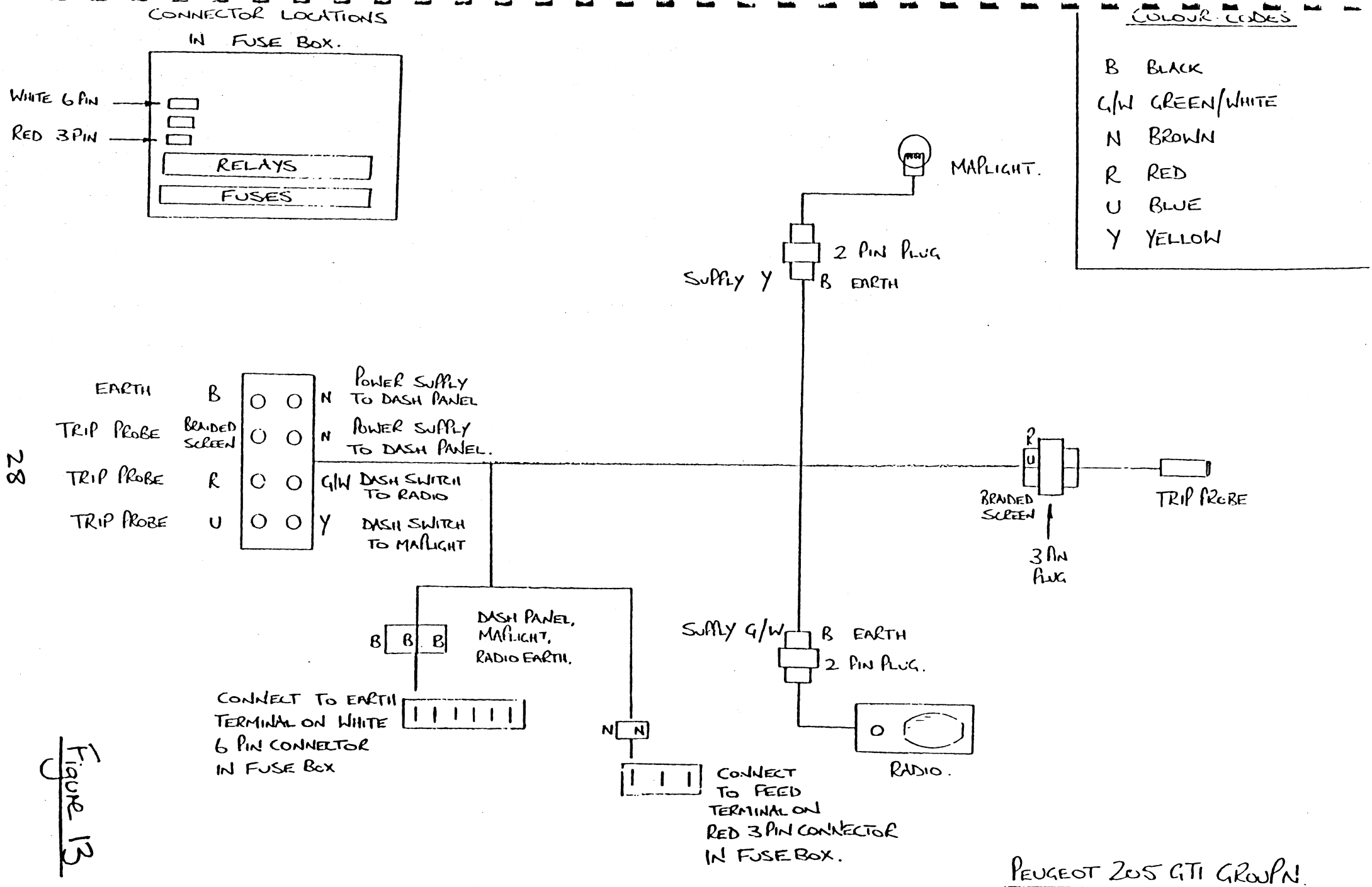


Figure 13

PEUGEOT 205 GTI GROUP N

INTERIOR LOOM.

R - RED

B - BLACK

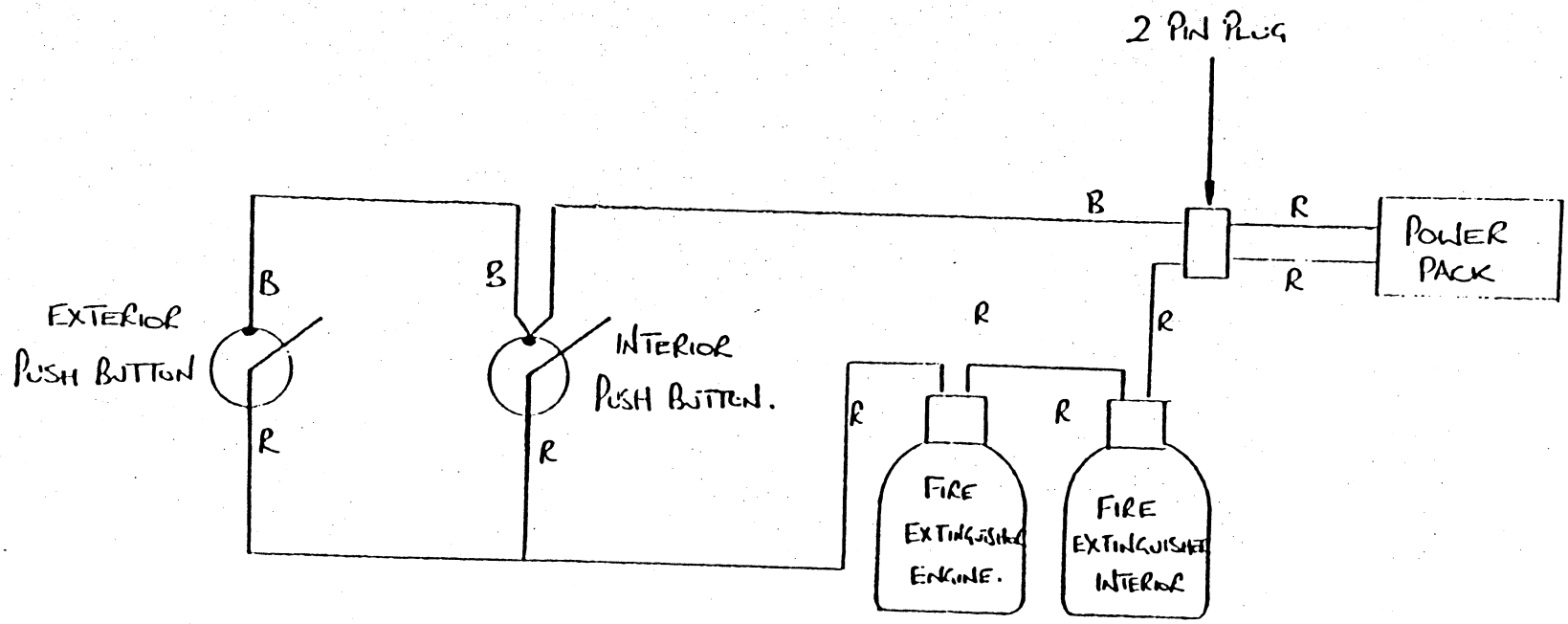


Figure 14.

EXTINGUISHER WIRING.

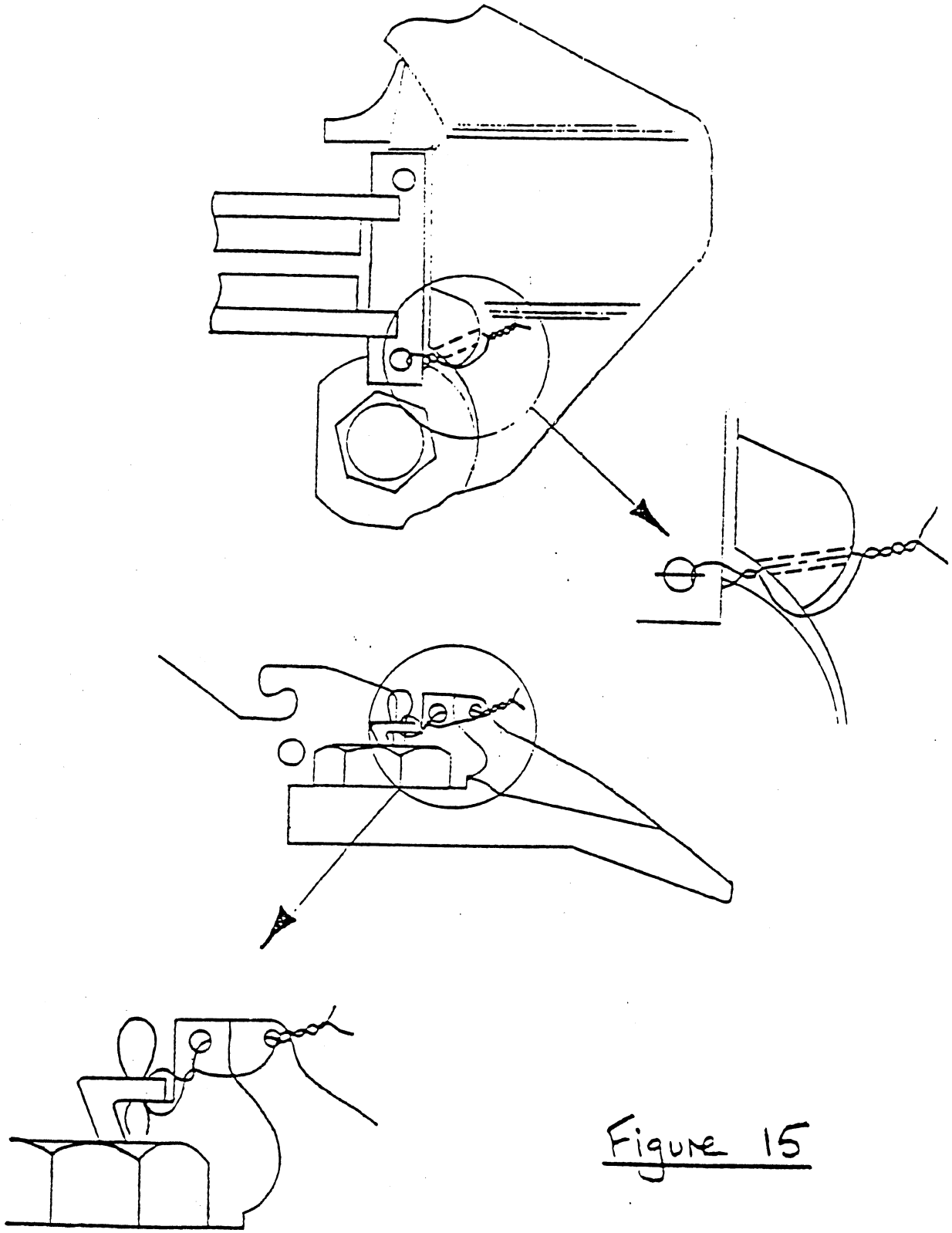
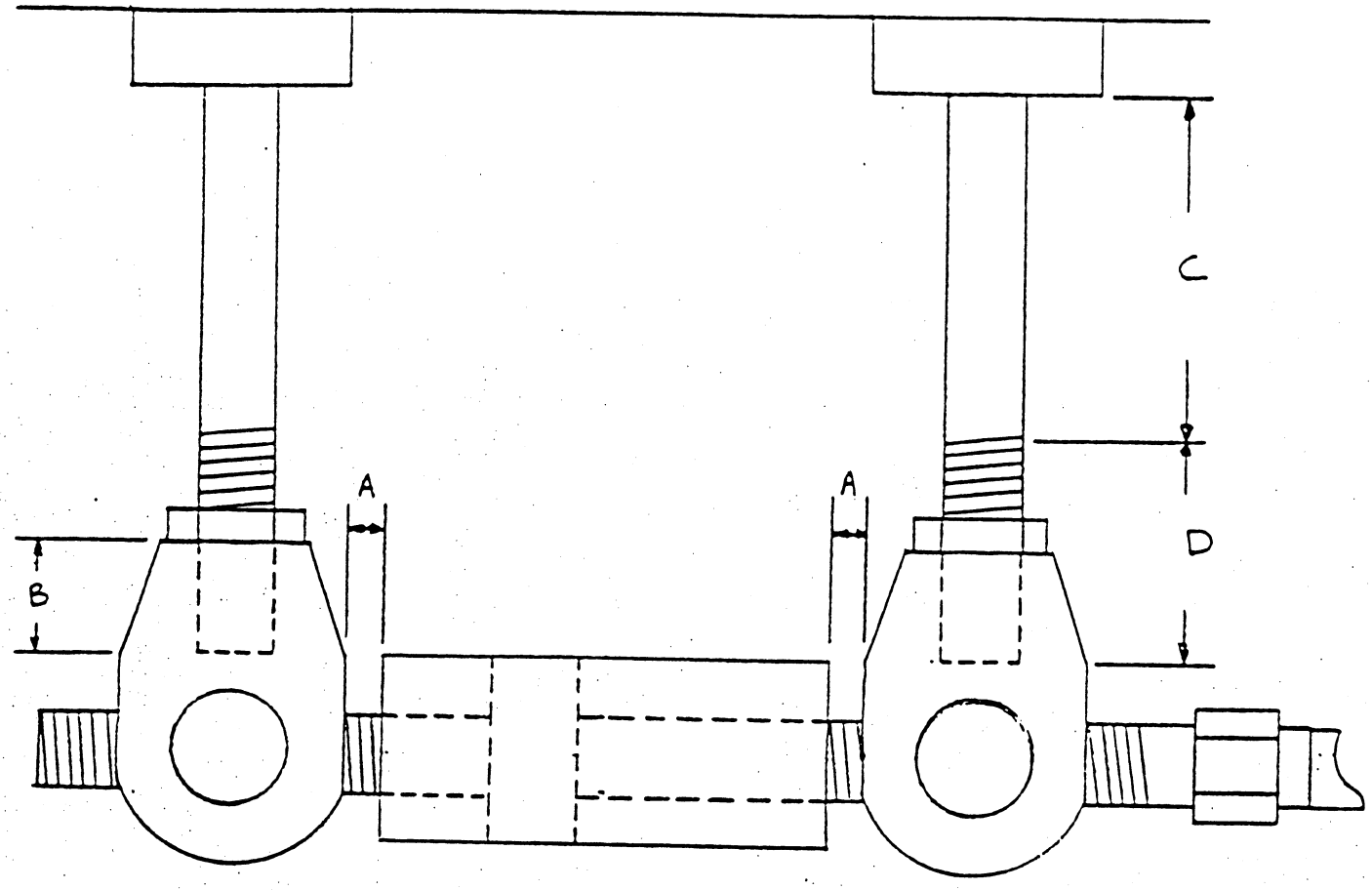


Figure 15

Peugeot GTI Rally Club Pedal box drg.



A = 1.5-2 mm
B = Minimum 10 mm, Maximum 14 mm.
C = 43 mm
D = 26 mm

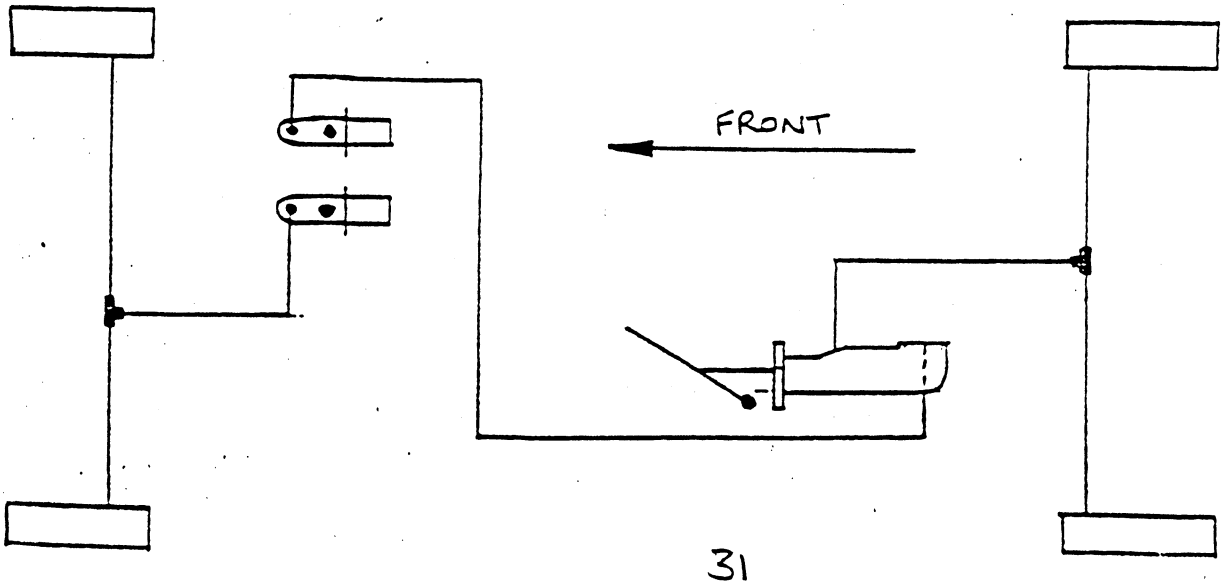


Figure 16