Luggage Compartment Fuse Box

Fuse No.	Fuse Colour Code	Value (amps)	Circuit
F1	Clear	25	Power amplifier – radio / cassette and compact disc player (where fitted)
F2	Tan	5	Tail lamp – left–hand side Number plate lamp – left–hand side
F3	Light Blue	15	Back–up lights Stop lamp – left–hand side Turn indicator – rear left–hand side
F4	Red	10	Security system
F5	Red	10	Body processor unit (BPU)
F6	Tan	5	Data link connector Radio telephone (where fitted)
F7	Light Green	30	Fuel pump
F8	Light Blue	15	Luggage compartment remote release Aerial, Radio /cassette and compact disc player memory feed.
F9	Light Blue	15	Rear fog guard lamps Stop lamp – right–hand side Turn indicator – rear right–hand side
F10	Tan	5	Radio / cassette and compact disc player control relay
F11	Clear	25	Caravan /Trailer module
F12	Tan	5	Accessories and telephone control relay
F13	Red	10	Accessories
F14	–	–	Not used
F15	Clear	25	Heated rear window
F16	Tan	5	Airbag warning
F17	–	–	Not used
F18	Tan	5	Tail lamp – right-hand side License plate lamp – right–hand side

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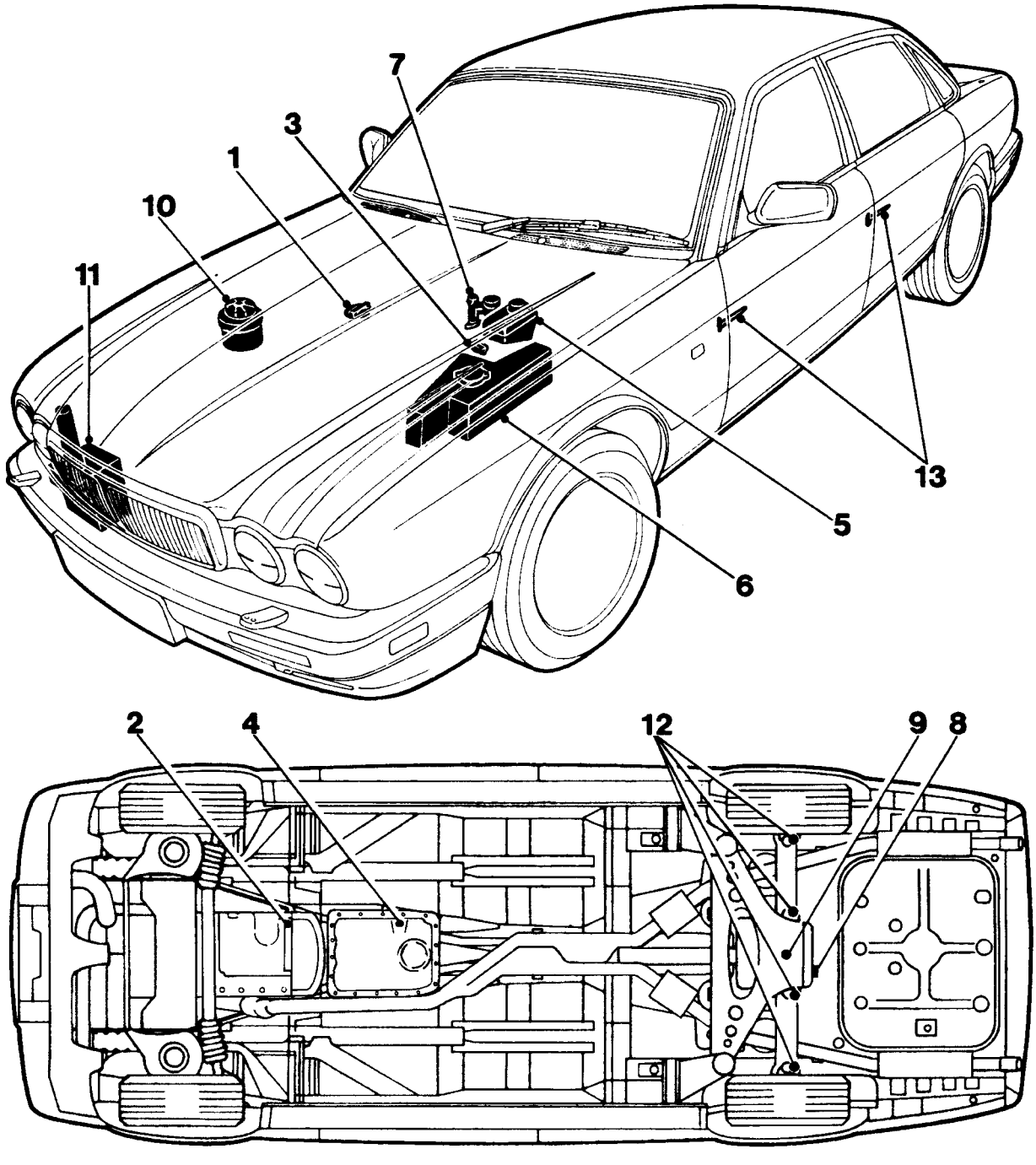
CONTENTS

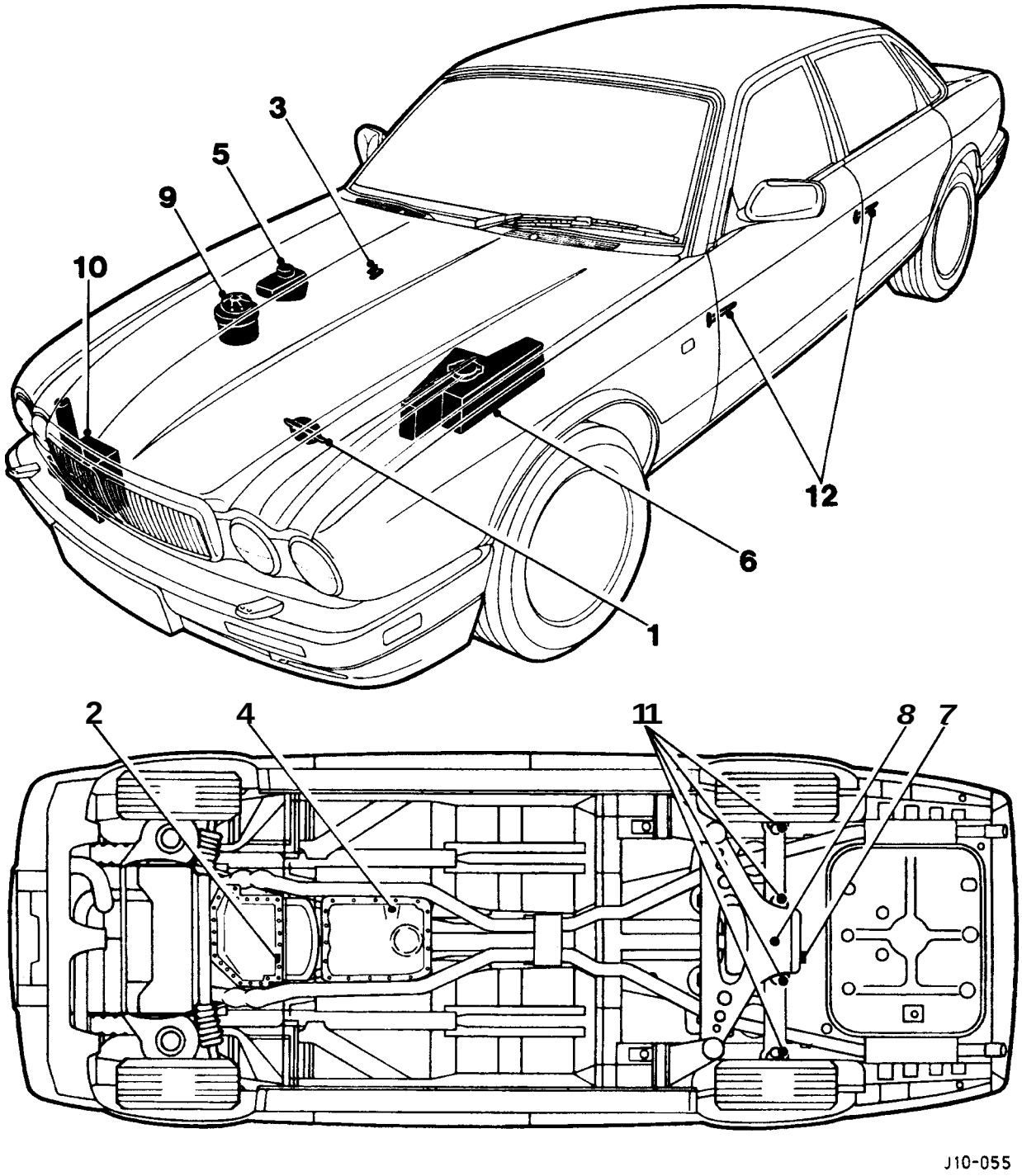
Title **Page**



1. Engine oil – refill
2. Engine oil – drain
3. Transmission fluid – refill
4. Transmission fluid – drain
5. Brake fluid – refill
6. Engine coolant – refill
7. Clutch fluid – refill
8. Final drive oil – refill
9. Final drive oil – drain
10. PAS fluid – refill
11. Windshield wash reservoir – refill
12. Axle shaft UJs – grease
13. Door check–arm – grease

Fig. 1 Fluids and Lubricants Service Points – 6 Cylinder Vehicles

A2



1. Engine oil − refill
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8. Final drive oil − drain
9. PAS fluid − refill
10. Windshield wash reservoir − refill
11. Axle shaft UJs − grease
12. Door check–arm − grease

Fig. 1 Fluids and Lubricants Service Points − 12 Cylinder Vehicles

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SERVICE SCHEDULE – UK, EUROPE, ROW

3.2 Liter, 4.0 Liter, 4.0 Liter SC and 6.0 Liter

Item	Service intervals	Miles (X1000)					
		10	20	30	40	50	60
1	Renew engine oil and filter	X	X	X	X	X	X
2	Renew transmission fluid and filter			X			X
3	Renew manual transmission oil			X			X
4	Renew brake fluid (two years)			X			X
5	Renew coolant and check specific gravity						X
6	Renew air cleaner element / s		X		X		X
7	Renew air cleaner element (supercharged)	X	X	X	X	X	X
8	Renew fuel filter						X
9	Renew spark plugs (see note)		X		X		X
10	Renew spark plugs (Sweden only) (see note)			X			X
11	Renew drive belts						X
12	Check / adjust drive belt tensions			X			
13	Renew wiper blade and clean windshield with Jaguar Screen Clean Paste	X	X	X	X	X	X
14	Check / adjust parking brake shoes						X
15	Inspect brake pads for wear (rotor condition on pad change)	X	X	X	X	X	X
16	Grease axle shaft universal joints	X	X	X	X	X	X
17	Check front hub end–float			X			X
18	Clean and adjust front hub bearings						X
19	Check tire pressures, tread depth, general condition, signs of uneven wear and suitability (including spare)	X	X	X	X	X	X
20	Check / top up automatic transmission fluid	X	X		X	X	
21	Check / top up brake fluid reservoir	X	X	X	X	X	X
22	Check / top up clutch fluid reservoir	X	X	X	X	X	X
23	Check / top up cooling system and check specific gravity	X	X	X	X	X	X
24	Check / top up windshield / power wash reservoir	X	X	X	X	X	X
25	Check / top up manual transmission oil	X	X		X	X	
26	Check / top up final drive oil	X	X	X	X	X	X
27	Check / top up PAS fluid	X	X	X	X	X	X
28	Check exhaust system for leakage and security	X	X	X	X	X	X
29	Check for oil leaks – engine	X	X	X	X	X	X
30	Check for oil leaks – automatic transmission	X	X	X	X	X	X
31	Check for oil leaks – manual transmission	X	X	X	X	X	X
32	Check for oil leaks – final drive	X	X	X	X	X	X
33	Check for fuel leaks	X	X	X	X	X	X
34	Check all suspension dampers for fluid leaks	X	X	X	X	X	X

Note: **This note only applies to V12 engines.**

When renewing spark plugs, apply silicon grease (TBA) to the spark plug and coil terminals of the ignition cable. This will ensure that the terminal covers remain supple throughout their service life, thus maintaining a good contact and preventing HT leakage.

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Item	Service intervals	Miles (X1000)					
		10	20	30	40	50	60
35	Check power steering system for leaks and hydraulic pipes / unions for chafing / corrosion	X	X	X	X	X	X
36	Check Cooling / heating system for leaks / security	X	X	X	X	X	X
37	Check visually hydraulic hoses / pipes / unions for leaks / chafing / cracks / corrosion	X	X	X	X	X	X
38	Check condition of steering rack joint covers	X	X	X	X	X	X
39	Check speed control vacuum hoses for security and general condition	X	X	X	X	X	X
40	Grease door check–arm side edges		X		X		X
41	Check parking brake cable adjustment	X	X	X	X	X	X
42	Clean out radiator matrix and condenser (where fitted) to remove dirt accumulation		X		X		X
43	Clean antenna mast	X	X	X	X	X	X
44	Carry out road / roller test	X	X	X	X	X	X

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SERVICE SCHEDULE, USA / CANADA

4.0 Liter, 4.0 Liter SC and 6.0 Liter

Item	Service intervals	Miles (X 1000)							
		7.5	15	22.5	30	37.5	45	52.5	60
1	Renew engine oil and filter	X	X	X	X	X	X	X	X
2	Renew transmission fluid and filter				X				X
3	Renew brake fluid (two years)				X				X
4	Renew coolant (four years) and check specific gravity								X
5	Renew air cleaner element / s				X				X
6	Renew air cleaner element / s (SC only)		X		X		X		X
7	Renew SC unit drive belt (SC only)				X				X
8	Check Adjust SC unit drive belt tension (SC only)	X	X	X		X	X	X	
9	Renew drive belts (not SC)								X
10	Check / adjust drive belt tensions (not SC)				X				
11	Renew fuel filter								X
12	Renew spark plugs (see note)				X				X
13	Renew wiper blade and clean windshield with Jaguar Screen Clean Paste	X	X	X	X	X	X	X	X
14	Check / adjust parking brake shoes								X
15	Inspect brake pads for wear (rotor condition on pad change)	X	X	X	X	X	X	X	X
16	Grease axle shaft universal joints	X	X	X	X	X	X	X	X
17	Check front hub end float				X				
18	Clean and adjust front hub bearings								X
19	Check tire pressures, tread depth, general condition, signs of uneven wear and suitability (including spare)	X	X	X	X	X	X	X	X
20	Check / top up automatic transmission fluid	X	X	X		X	X	X	
21	Check / top up brake fluid reservoir	X	X	X	X	X	X	X	X
22	Check / top up cooling system and check specific gravity	X	X	X	X	X	X	X	
23	Check / top up windshield / power wash reservoir	X	X	X	X	X	X	X	X
24	Check / top up final drive oil	X	X	X	X	X	X	X	X
25	Check / top up PAS fluid	X	X	X	X	X	X	X	X
26	Check exhaust system for leakage and security	X	X	X	X	X	X	X	X
27	Check for oil leaks – engine	X	X	X	X	X	X	X	X
28	Check for oil leaks – automatic transmission	X	X	X	X	X	X	X	X
29	Check for oil leaks – final drive	X	X	X	X	X	X	X	X
30	Check for fuel leaks	X	X	X	X	X	X	X	X
31	Check all suspension dampers for fluid leaks	X	X	X	X	X	X	X	X

Note: This note only applies to V12 engines.

When renewing spark plugs, apply silicon grease (TBA) to the spark plug and coil terminals of the ignition cable. This will ensure that the terminal covers remain supple throughout their service life, thus maintaining a good contact and preventing HT leakage.

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Item	Service intervals	Miles (X 1000)							
		7.5	15	22.5	30	37.5	45	52.5	60
32	Check power steering system for leaks and hydraulic pipes/ unions for chafing/corrosion	X	X	X	X	X	X	X	X
33	Check Cooling/ heating system for leaks/ security	X	X	X	X	X	X	X	X
34	Check visually hydraulic hoses/ pipes/ unions for leaks/ chafing/ cracks/ corrosion	X	X	X	X	X	X	X	X
35	Check condition of steering rack joint covers	X	X	X	X	X	X	X	X
36	Check speed control vacuum hoses for security and general condition	X	X	X	X	X	X	X	X
37	Grease door check-arm side edges		X		X		X		X
38	Check parking brake cable adjustment	X	X	X	X	X	X	X	X
39	Clean out radiator [illegible] to remove dirt accumulation		X		X		X		X
40	Clean [illegible]	X	X	X	X	X	X	X	X
41	[illegible] out road [illegible]	X	X	X	X	X	X	X	X

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SECTION CONTENTS

A3.1 SAFETY PRECAUTIONS

Whenever possible, use a ramp or pit whilst working beneath a car, in preference to jacking. Position chocks at the wheels as well as applying the handbrake. Never rely on a jack alone to support a car. Use axle stands, or blocks carefully placed at the jacking points, to provide a rigid location. Check that any lifting equipment used has adequate capacity and is fully serviceable. Ensure that a suitable form of fire extinguisher is conveniently located. When using electrical tools and equipment, inspect the power lead for damage and check that it is properly earthed. Disconnect the earth (grounded) terminal of the car battery. Do not disconnect any pipes of the air conditioning refrigeration system unless you are trained and instructed to do so. A refrigerant is used which can cause blindness if allowed to come into contact with the eyes. Ensure that adequate ventilation is provided when volatile degreasing agents are being used.

WARNING: FUME EXTRACTION EQUIPMENT MUST BE IN OPERATION WHEN SOLVENTS ARE USED E.G. TRICHLOROETHANE, WHITE SPIRIT, SBP3, METHYLENE CHLORIDE, PERCHLORETHYLENE. DO NOT SMOKE IN THE VICINITY OF VOLATILE DEGREASING AGENTS.

Adhere strictly to handling and safety instructions given on containers and labels. Keep oils and solvents away from naked flames and other sources of ignition. Do not apply heat in an attempt to free seized nuts or fittings; as well as causing damage to protective coatings, there is a risk of damage from stray heat to electronic equipment and brake lines. Do not leave tools, equipment, spilt oil etc. around or on work area. Wear protective overalls and use barrier cream when necessary.

A3.1.1 Used Engine Oils

Prolonged and repeated contact with mineral oil will result in the removal of natural oils from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer. Washing facilities and adequate means of skin protection should be provided.

A3.1.2 Health Protection Precautions

- Avoid prolonged and repeated contact with oil; particularly used engine oils.
- Wear protective clothing, including impervious gloves where practicable
- Do not put oily rags in pockets.
- Avoid contaminating clothes, particularly underwear, with oil.
- Overalls must be cleaned regularly. Discard unwashable clothing and footwear which is oil impregnated.
- First Aid treatment should be obtained immediately for open cuts or wounds.
- Use barrier creams, applying before each work period, to enable easier removal of dirty oil / grease from the skin.
- Wash with soap and water to ensure that all oil is removed (skin cleaner and a nail brush will help). The use of preparations containing lanolin will help to replace the natural skin oils which have been removed.
- Do not use petrol, kerosene, gas oil, thinners or solvents for washing skin.
- If skin disorders develop, obtain medical advice immediately.
- Where practicable, degrease components prior to handling.
- Where there is a risk of fluids coming into contact with the eyes, eye protection should be worn, for example, goggles or a face shield. An eye wash facility should be provided.

A3.1.3 Environmental Protection Precautions

It is illegal to pour used oil on to the ground, down sewers or drains, or into water courses. The burning of used engine oil in small space heaters or boilers is not recommended unless emission control equipment is fitted. Dispose of used oil through authorized waste disposal contractors, to licensed waste disposal sites or to the waste oil reclamation trade. If in doubt, contact the Local Authority for advice on disposal facilities.

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A3.2 GENERAL FITTING INSTRUCTIONS

A3.2.1 Precautions Against Damage To The Vehicle

Always fit covers to protect the wings before commencing work in the engine compartment. Cover the seats and carpets, wear clean overalls and wash hands or wear gloves before working inside the car. Avoid spilling hydraulic fluid, anti-freeze or battery acid on the paintwork. In the event of spillage, wash off with water immediately. Use polythene sheets in the boot to protect carpets. Always use the recommended service tool, or a satisfactory equivalent, where specified. Protect temporarily exposed screw threads by replacing nuts or fitting caps.

A3.2.2 Preparation

Before disassembly, clean the surrounding area as thoroughly as possible. When components have been removed, blank off any exposed openings using greaseproof paper and masking tape. Immediately seal fuel, oil and hydraulic lines when separated, using plastic caps or plugs, to prevent loss of fluid and the entry of dirt. Close the open ends of oilways, exposed by component removal, with tapered hardwood plugs or readily visible plastic plugs. Immediately a component is removed, place it in a suitable container; use a separate container for each component and its associated parts. Before dismantling a component, clean it thoroughly with a recommended cleaning agent: check that the agent will not damage any of the materials within the component. Clean the bench and obtain marking materials, labels, containers and locking wire before dismantling a component.

A3.2.3 Dismantling

Observe scrupulous cleanliness when dismantling components, particularly when parts of the brake, fuel or hydraulic system are being worked on. A particle of dirt or a fragment of cloth could cause a dangerous malfunction if trapped in these systems. Clean all tapped holes, crevices, oilways and fluid passages with compressed air.

WARNING: DO NOT PERMIT COMPRESSED AIR TO ENTER AN OPEN WOUND. ALWAYS USE EVE PROTECTION WHEN USING COMPRESSED AIR.

Ensure that any 'O'-rings used for sealing are correctly refitted or renewed if disturbed. Mark mating parts to ensure that they are replaced as dismantled. Whenever possible use marking materials which avoid the possibilities of causing distortion or the initiation of cracks, which could occur if a center punch or scriber were used. Wire together mating parts where necessary to prevent accidental interchange (e.g roller bearing components). Tie labels on to all parts to be renewed and to parts requiring further inspection before being passed for reassembly.

Place labelled parts and other parts for rebuild in separate containers.

Do not discard a part which is due for renewal until it has been compared with the new part, to ensure that the correct part has been obtained.

A3.2.4 Inspection

Before inspecting a component for wear or performing a dimensional check, ensure that it is absolutely clean; a slight smear of grease can conceal an incipient failure. When a component is to be checked dimensionally against figures quoted for it, use the correct equipment (surface plates, micrometers, dial gauges etc.) in serviceable condition. The use of makeshift equipment can be dangerous. Reject a component if its dimensions are outside the limits quoted, or if damage is apparent. A part may be refitted if its critical dimension is exactly to the limit size and it is otherwise satisfactory. Use Plastigauge 12 Type PG-1 for checking bearing surface clearance e.g. big end bearing shell to crank journal. Instructions for the use of Plastigauge and a scale giving bearing clearances in steps of 0,0025 mm (0.0001 in) are supplied with the package.

A3.2.5 Ball And Roller Bearings

CAUTION: Never replace a ball or roller bearing without first ensuring that it is in as-new condition.

Remove all traces of lubricant from the bearing by washing it in petrol or a suitable degreaser. Maintain absolute cleanliness throughout the operations. Inspect visually for markings of any form on rolling elements, bearing tracks, outer surface of outer rings or inner surface of inner rings. Reject any bearings found to be marked, since any markings in these areas indicates the onset of wear.

Hold the inner race between the fingers and thumb of one hand, spin the outer race and check that it revolves absolutely smoothly. Rotate the outer ring with a reciprocating motion, while holding the inner ring; feel for any obstruction to rotation and reject the bearing if the action is not perfectly smooth. Lubricate the bearing generously with lubricant appropriate to the installation. Inspect the shaft and bearing housing for discolouration or other marking which may suggest that movement has taken place between the bearing and bearing seat. If markings are found, use Loctite when installing the replacement bearing.

Ensure that the shaft and housing are clean and free from burrs before fitting the bearing. If one bearing of a pair shows an imperfection, it is generally advisable to renew both bearings: an exception could be made only if the bearings had covered a low mileage and it could be established that damage was confined to the one bearing.

In the case of bearings which are lubricated with grease (e.g. hub bearings) the space between the bearings should be smeared with a recommended grade of grease, and the bearings and seal should be re-packed. When fitting the bearing to the shaft, apply force only to the inner ring of bearing (Fig. 1A). When fitting the bearing to the housing, apply force only to outer ring (Fig. 1B).

Always mark components of separable bearings (e.g taper roller bearings) when dismantling, to ensure correct reassembly. Never fit a new inner roller assembly to a used outer track.

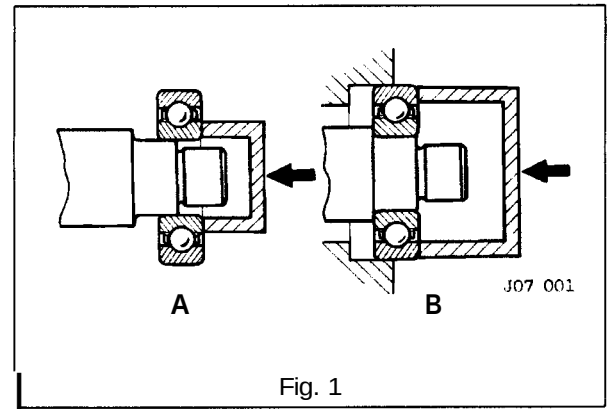

Fig. 1

A3.2.6 Oil Seals

Always fit new oil seals when rebuilding an assembly. Examine the seal before fitting to ensure that it is clean and undamaged. Smear sealing lips with clean grease, pack dust excluder seals with grease and pack grease into the cavity between the sealing lips of duplex seals. Ensure that the seal spring, if provided, is correctly fitted.

Place the lip of the seal towards the fluid to be sealed and slide it into position on the shaft, using a fitting sleeve (Fig. 2) when possible to protect the sealing lip from damage by threads, splines or sharp edges on the end of the shaft. If a fitting sleeve is not available, use plastic tube or adhesive tape to prevent damage to the sealing lip.

Grease the outside diameter of the seal, place it square to the housing recess and press it into position, using great care and, where available, a seal installer (Fig. 3) to ensure that the seal does not tilt. In some cases it may be preferable to fit the seal to the housing before fitting it to the shaft. Never let the weight of an unsupported shaft rest in a seal. If the correct service tool is not available, use a piece of tube which is approximately 0,4 mm (0.015 in) smaller than the outside diameter of the seal. Use a press to install the seal or use a hammer VERY GENTLY on the tubular drift if a press is unsuitable or not available.

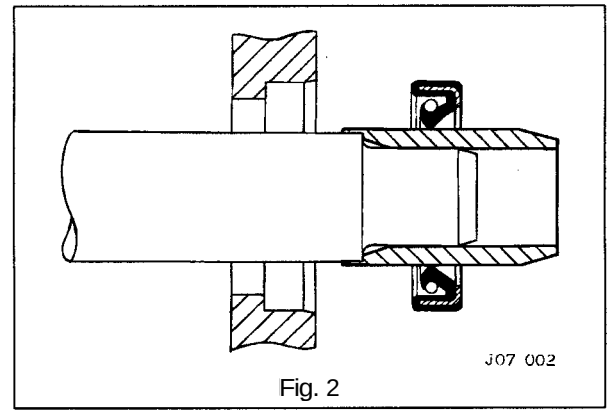

Fig. 2

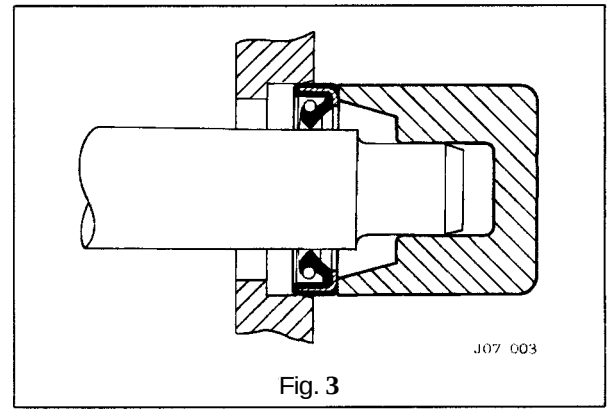

Fig. 3

Press or drift the seal into the full depth of the housing if the housing is shouldered, or flush with the face of the housing where no shoulder is provided.

Note: Careless fitting of oil seals, which can result in damage to the seal and sealing surfaces, accounts for most cases of failure of seals. Care in fitting is essential if good results are to be obtained.

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A3.2.7 joints And joint Faces

Remove all traces of old jointing materials prior to reassembly. Inspect joint faces for scratches or burrs and remove with a fine file or oilstone; do not allow swarf or dirt to enter tapped holes or enclosed parts. Blow out any pipes, channels or crevices with compressed air, refitting or renewing any 0-rings or seals which have been displaced by the compressed air.

Always use the specified gaskets. Use jointing compound only when recommended, otherwise fit joints dry. When jointing compound is used, apply in a thin film to metal surfaces; take great care to prevent it from entering oilways, pipes or blind tapped holes.

A3.2.8 Hydraulic Flexible Pipes And Hoses

Before removing a hose from the brake or power steering systems, thoroughly clean the end fittings and the area surrounding them. Obtain blanking caps before detaching hose fittings, so that ports can be covered to exclude dirt. Clean the hose externally and blow through with compressed air. Examine the hose carefully for cracks, separation of plies, security of end fittings and external damage. Reject any hose found to be faulty. When refitting the hose, ensure that no unnecessary bends are introduced and that the hose is not twisted before or during tightening of union nuts.

Do not store hydraulic fluid in an unsealed container because it will absorb water. Fluid in this condition would be dangerous to use due to a lowering of its boiling point. Do not allow hydraulic fluid to be contaminated with mineral oil, or use a container which has previously contained mineral oil.

Do not re-use fluid bled from the system. Always use clean brake fluid, or a recommended alternative, to clean the hydraulic components. Fit a blanking cap to the hydraulic union and a plug to its mating socket, after removal from the vehicle, to prevent ingress of dirt. Absolute cleanliness must be observed with hydraulic components at all times. After any work has been performed on hydraulic systems, inspect carefully for leaks underneath the car while a second operator applies maximum pressure to the brakes (with the engine running) and operates the steering.

A3.2.9 Metric Bolt Identification

An ISO metric bolt or screw, made of steel and larger than 6mm in diameter can be identified by the symbols ISOM or M embossed on top of the head (Fig. 1). In addition to marks to identify the manufacturer, the head is also marked with symbols to indicate the strength grade eg 8.8, **10.9, 12.9** or **14.9.** The first figure gives the minimum strength of the bolt material in tens of kgf / mm^2. Zinc plated ISO metric bolts and nuts are chromate passivated and coloured greenish-khaki to gold-bronze.

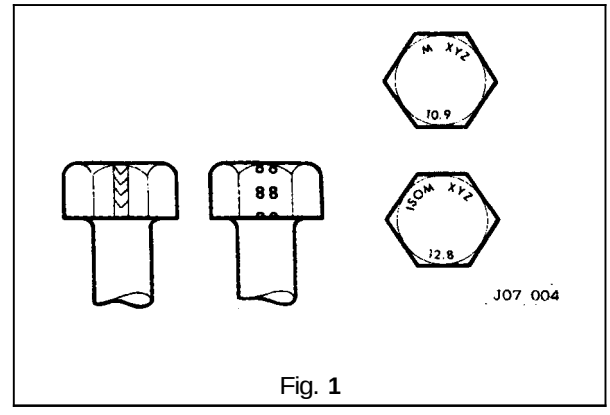


Fig. 1

A3.2.10 Metric Nut Identification

A nut with an ISO metric thread is marked on one face (1 Fig. 2) or on one of the flats (2 Fig. 2) of the hexagon with the strength grade symbol 8, 12 or 14. Some nuts with a strength 4,5 or 6 are also marked and some have the metric symbol M on the flat which is opposite to the strength grade marking.

A clock face system is used as an alternative method of indicating the strength grade (3 Fig. 2). The external chamfers or a face of the nut is marked in a position relative to the appropriate hour mark on a clock face to indicate the strength grade. A dot is used to locate the 12 o'clock position and a dash to indicate the strength grade. If the grade is above 12, two dots identify the 12 o'clock position.

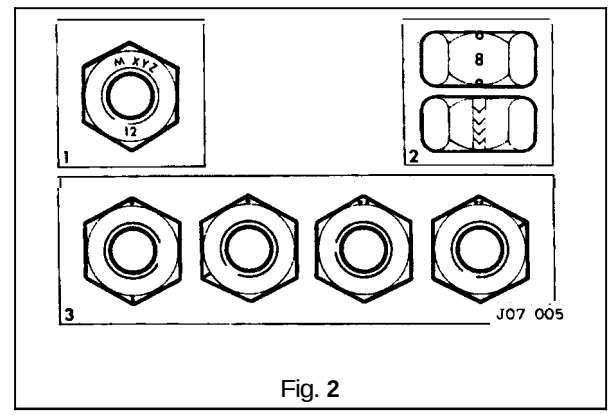


Fig. 2

A3.2.11 Hydraulic Fittings – Metrification

Metric fastenings are being used increasingly in motor vehicle manufacture, but the use of some UNF threaded parts must be expected. Technicians must take note of warnings that dangers exist while UNF and metric threaded hydraulic parts continue to be used together.

UNF pipe nuts should not be fitted into metric parts, nor vice–versa. Experience indicates that it is not safe to rely upon the difference in thread size. Providing permanent identification of metric parts is not easy, but recognition has been assisted by the following means:

All metric pipe nuts, hose ends, unions and bleed screws are coloured black. The hexagon area of pipe nuts is indented with the letter 'M'. Metric and UNF pipe nuts are slightly different in shape.

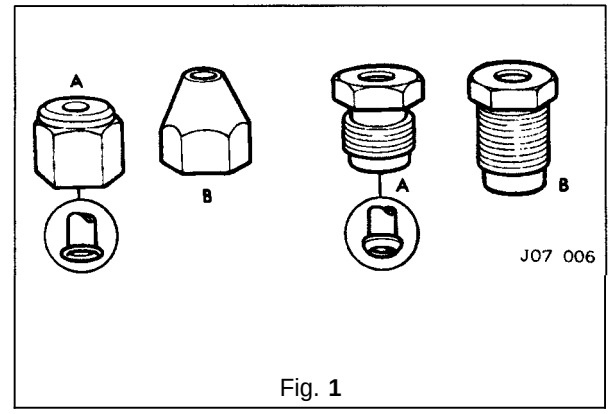


Fig. **1**

Note: In the illustrations on this page, 'A' indicates the metric type and 'B' the UNF type. The metric female nut is always used with a trumpet flared pipe and the metric male nut is always used with a convex flared pipe (Fig. **1).**

Metric ports in brake cylinders and calipers have no counterbores; however, a few cylinders with UNF threads also have no counterbore. Therefore, all ports with counterbores are UNF, but ports not counterbored are most likely to be metric (Fig. **2).**

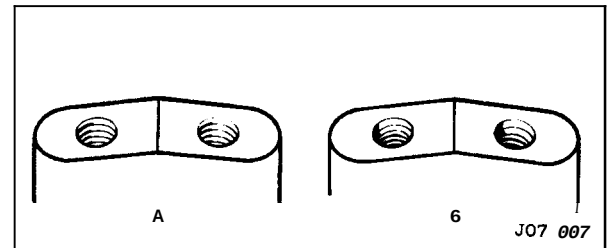


Fig. **2**

The colour of the protective plugs fitted to cylinder ports indicate the size and the type of the threads, but the primary function of the plugs is to protect the cylinder from contamination and is not intended as a positive means of identification. As an indication, the plug colours and thread sizes are:

Colour	Size	Colour	Size
Red	**3/8** in. x **24** UNF	Black	**10** x **1,0 mm**
Green	**7/16** in. x **20** UNF	Grey	**12** x 1,0 **mm**
Yellow	**1/2** in. x **20** UNF	Brown	**14** x **1,5 mm**
Pink	**5/8** in. x **18** UNF		

Note: In Fig. 1 and Fig. 2, this page, 'A' indicates the metric type and 'B' the UNF type.

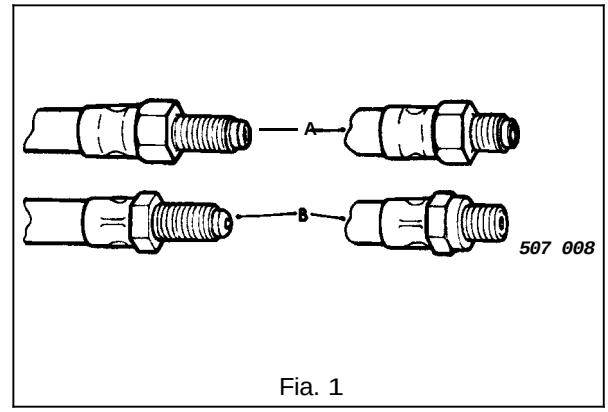
A3

Hose ends differ slightly between metric and UNF (Fig. 1). Gaskets are not used with metric hoses; the metric hose fitting seals against the bottom of the port and consequently there is a gap between the hexagonal face of the hose fitting and the cylinder (Fig. 2A). The UNF hose fitting is sealed on the brake cylinder or caliper face by a copper gasket (Fig. 2B).

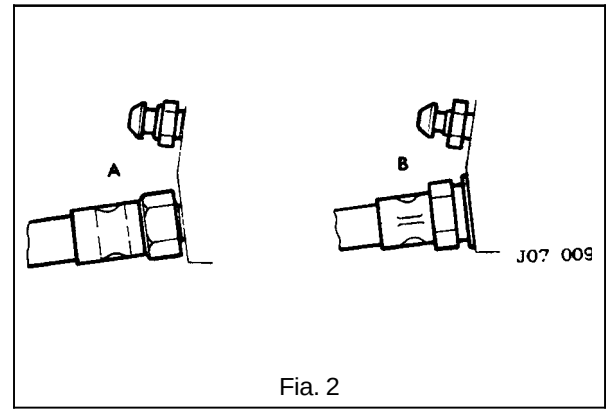
Pipe sizes (outside diameter) for UNF are 3/16 in., 1/4 in. and 5/16 in. Metric pipe sizes are 4,75 mm, 6 mm and 8 mm. The 4,75 mm pipe is exactly the same diameter as 3/16 in. pipe. The 6 mm pipe is 0.014 in. smaller than 1/4 in. pipe. The 8 mm pipe is 0.002 in. larger than 5/16 in. pipe.

Convex flares for metric brake pipes have a different form than those on UNF brake pipes. When making pipes for metric equipment, metric pipe flaring tools must be used.

The greatest danger lies with the confusion of 10 mm and 3/8 in. UNF pipe nuts used for 3/16 in. (or 4,75 mm) pipe. The 3/8 in. UNF pipe nut or hose can be screwed into a 10 mm port, but is very slack and easily stripped. The thread engagement is very weak and cannot provide an adequate seal. The opposite condition, a 10 mm nut in a 3/8 in. port, will cause difficulty during fitting. The 10 mm nut will screw in for one or two turns and then seize. It has a crossed thread 'feel' and it is impossible to force the nut far enough to seal the pipe. With female pipe nuts the position is reversed. The other combinations are so different that there is no danger of confusion.



Fia. 1



Fia. 2

A3.2.12 Keys And Keyways

Remove burrs from the edges of keyways with a fine file and clean thoroughly before attempting to refit the key. Clean and inspect the key closely. Keys are suitable for refitting only if no indentations exist (which would indicate the onset of wear).

A3.2.13 Split Pins

Fit new split pins throughout when replacing any unit. Always fit split pins where split pins were originally used. Do not substitute spring washers for split pins. All split pins should be fitted as shown (Fig. 3) unless otherwise stated.

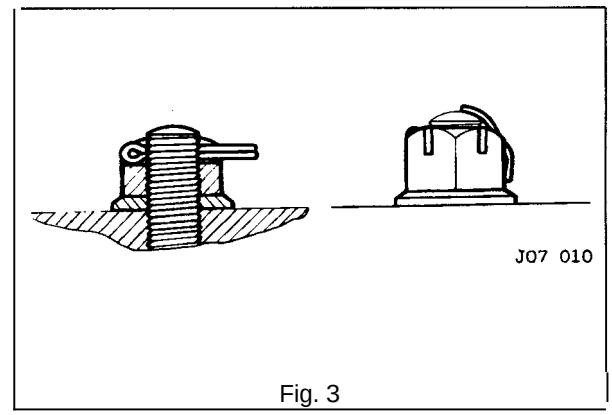


Fig. 3

A3.2.14 Tab Washers

Fit new tab washers in all places where they where used originally. Never refit a used tab washer. Ensure that the new tab washer is of the same design as that which was removed.

A3.2.15 Special Fixings

Bolts with a blue coating applied to the thread are used in various areas of the vehicle. Should any of these bolts be removed, they MUST be replaced with **NEW** bolts of the same type. Nyloc nuts are used in various areas of the vehicle. If removed these MUST be replaced with **NEW** nuts of the same type.

A3.2.16 Nuts

When tightening a slotted or castellated nut, never slacken it in order to insert the split pin or locking wire, but tighten it to align the next slot. The exception is in those recommended cases where slackening the nut forms part of an adjustment e.g. bearing endfloat or preload adjustment. If difficulty is experienced, alternative washers or nuts should be selected, or a washer of a different thickness used. Where self-locking nuts have been removed, replace them with new ones.

A3.2.17 Locking Wire

Fit new locking wire of the correct type to the assemblies incorporating it. Arrange the wire so that its tension tends to tighten the bolt heads, or nuts, to which it is fitted.

A3.2.18 Screw Threads

Metric threads to ISO standards and UNF threads are used. See below for thread identification. Fixings with damaged threads must always be discarded. Cleaning the threads with a die or tap impairs the strength and closeness of fit and is not recommended. Always ensure that replacement bolts are of equal strength to those removed. Do not allow oil, grease or jointing compound to enter blind threaded holes because the hydraulic action which would be generated when screwing in the bolt or stud could split the housing. Oil the thread lightly before tightening to ensure a free running thread, except in the case of self locking nuts. Always tighten a nut or bolt to the recommended torque figure. Damaged or corroded threads will affect the torque reading. To check or retighten a bolt or screw to a specified torque figure, first slacken by a quarter of a turn, then retighten to the correct figure.

A3.2.19 Unified Thread Identification – Bolts

A circular recess is stamped in the upper surface of the bolt head (1 Fig. 1).

A3.2.20 Unified Thread Identification – Nuts

A continuous line of circles is stamped on one of the flats of the hexagon, parallel to the axis of the nut (2 Fig. 1).

A3.2.2 1 Unified Thread Identification – Studs, Brake Rods, etc.

The component is reduced to the core diameter for a short length at its extremity (3 Fig. 1).

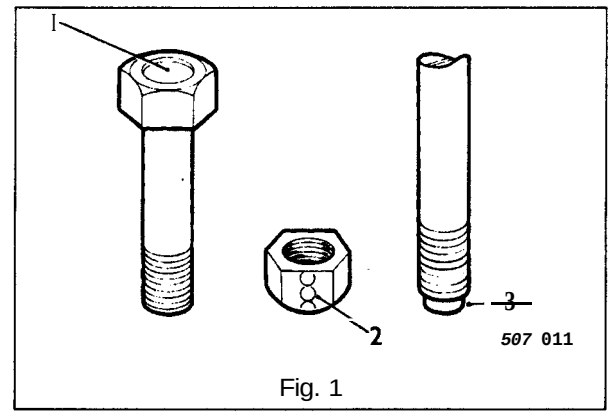


Fig. 1

A3.3 TAPER ROLLER BEARINGS, FAULT DIAGNOSIS

A3

Fault

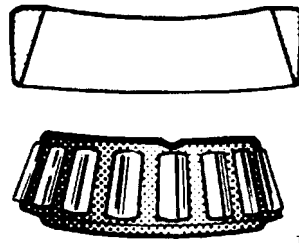
Bent cage.

Cause

Improper handling or use of tool.

Remedy

Renew the bearing.



J51 050

Fault

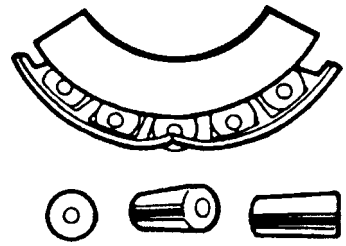
Bent cage.

Cause

Improper handling or use of tool.

Remedy

Renew the bearing.



J51 051

Fault

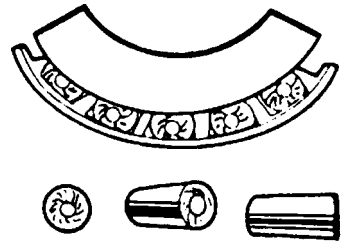
Galling.

Cause

Marks on roller ends due to overheating, lubricant failure or overloading.

Remedy

Renew the bearing. Check the seals and ensure that the bearing is properly lubricated.



J51 052

Fault

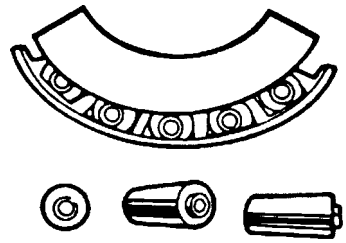
Step wear.

Cause

Wear on the roller ends caused by fine abrasives.

Remedy

Clean all components and housings. Check the seals and bearings, and renew if leaking, rough or noisy.



J51 053

Fault

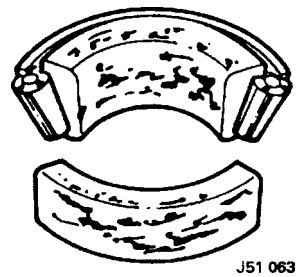
Fretting.

Cause

Corrosion caused by small movement of components with no lubrication.

Remedy

Renew the bearing. Check the seals for leakage and ensure that there is adequate lubrication.



J51 063

Fault

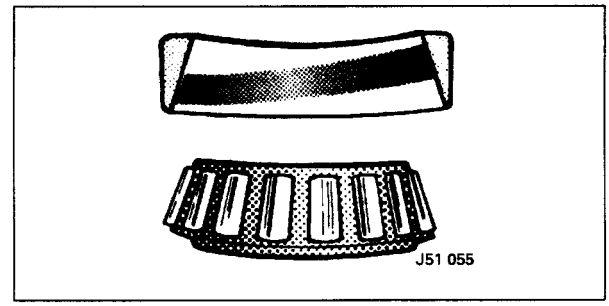
Misalignment.

Cause

Outer track misalignment usually due to a foreign body under the track.

Remedy

Clean all components and replace or renew the bearing and ensure that the new track is correctly seated.



Fault

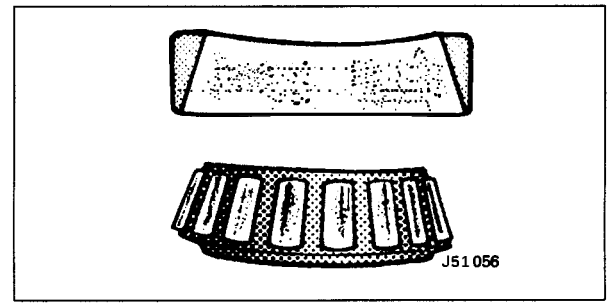
Indentations.

Cause

Surfaces are depressed on the race and the track caused by hard particles of foreign material.

Remedy

Clean all components and housings. Check the seals and bearings, and renew if leaking, rough or noisy.



Fault

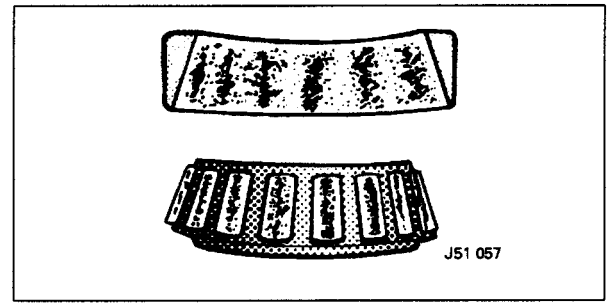
Flaking.

Cause

Flaking of the surface material due to fatigue.

Remedy

Renew the bearing and clean all related components.



Fault

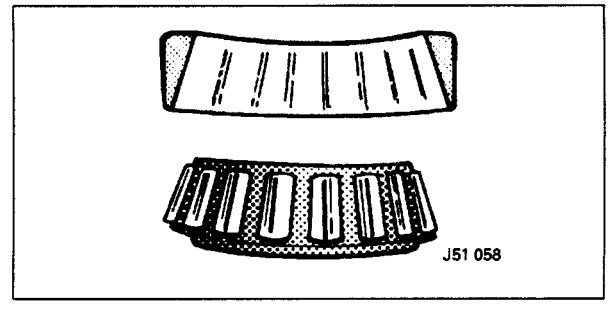
Indentations.

Cause

Surface indentations in the track caused by rollers either vibrating or impact loading while the bearing is not rotating.

Remedy

Renew the bearing if rough or noisy.



Fault

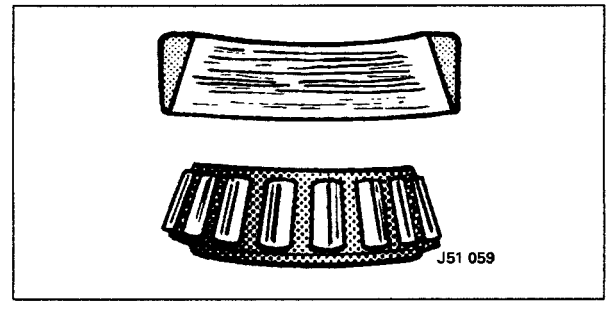
Cage wear.

Cause

Wear around the outside diameter of the cage and roller pockets caused by poor lubrication and abrasive material.

Remedy

Renew the bearings and check the condition of the seals.



A3

Fault

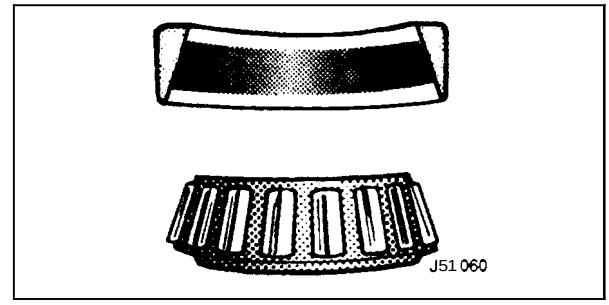
Roller wear.

Cause

Marks on track and rollers caused by fine abrasives.

Remedy

Clean all components and housings. Check the seals and bearings, and renew if leaking, rough or noisy.



Fault

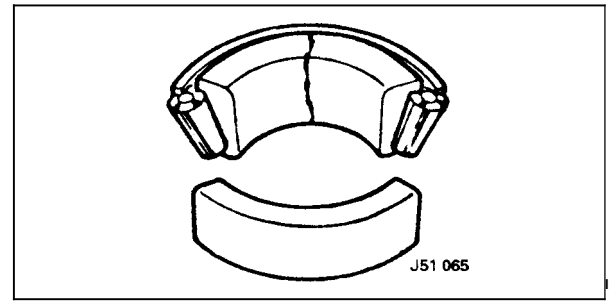
Cracked race.

Cause

Race cracked due to incorrect fitting to shaft, tipping or poor seating.

Remedy

Renew the bearing and check the condition of the seals.



Fault

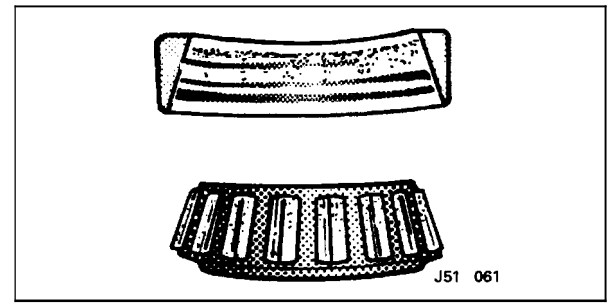
Discolouration.

Cause

Discolouration ranging from black to light brown caused by moisture or incorrect use of lubricants.

Remedy

Re-use bearings if stains can be removed by light polishing or if no evidence of overheating is apparent. Check the seals and other component part condition. Renew as necessary.



Fault

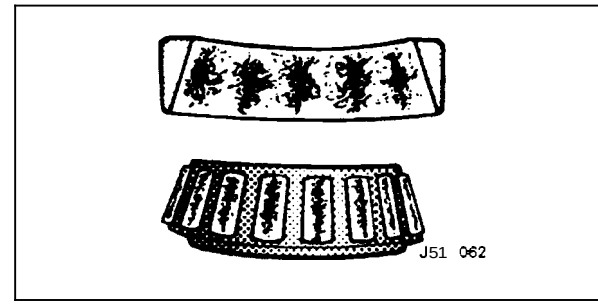
Discolouration.

Cause

Heat discolouration ranging from blue to faint yellow, resulting from overload or incorrect lubricant. As excessive heat can cause softening of tracks and rollers, check by drawing a fine file over a softened area. If faulty, the file will grab and cut metal. If still hard, the file will skid over the surface without removing any material.

Remedy

Renew the bearings and seals if any heat damage is evident.



Fault

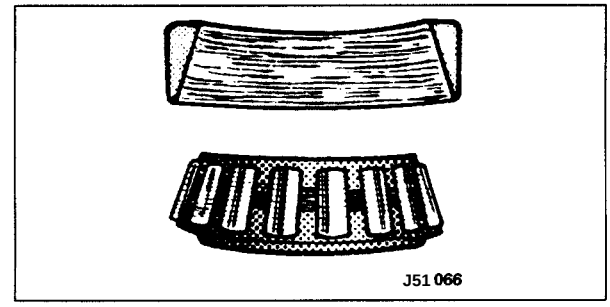
Seizure.

Cause

Seizure caused by lack of lubrication, excessive loads or the ingress of foreign matter.

Remedy

Renew the bearings. Check the seals for wear and ensure that there is adequate lubrication.



Fault

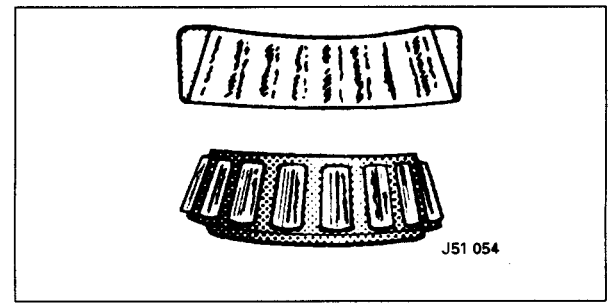
Etching.

Cause

The bearing surfaces are grey or greyish black, with the rollers and track material being etched away. This is usually related to uneven spacing of the rollers.

Remedy

Renew the bearings. Check the seals for wear and ensure that there is adequate lubrication.



Fault

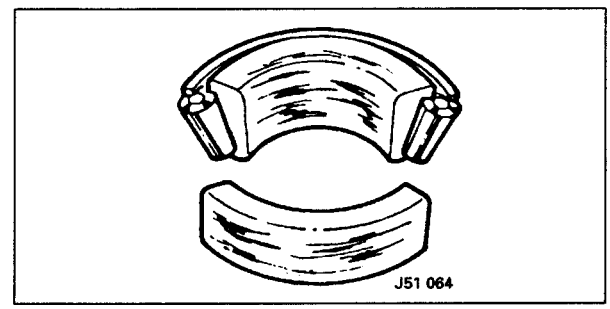
Rotating track and inner race material removal.

Cause

Removal of material due to slippage. This can be caused by poor fit, incorrect lubrication, overheating, overloading and poor assembly.

Remedy

Renew the bearings and clean all related parts. Check the fit and ensure the replacement bearings are the correct type. Renew the shaft or housing if damaged.



A4

SECTION CONTENTS

A4

I. SERVICE TOOLS & EQUIPMENT

Illustration	Jaguar Number	Description	Notes
see text	N/A	Support jig, bumper cover	Locally made
not illustrated	N/A	Rear strut height setting tool	Locally made
not illustrated	N/A	Guide block to fender setting tool	Locally made
not illustrated	N/A	Heated extrusion gun for glazing adhesive	Manufactured by Gurit Essex
not illustrated	N/A	Heated cabinet for glazing adhesive	Manufactured by Gurit Essex

II. TORQUE TIGHTENING SPECIFICATIONS

Fixing	Tightening Torque (Nm)
Bumper – Beam to mounting strut height adjuster	39 – 50
Bumper – Guide block to fender	16 – 20
Bumper – Mounting brkt or strut to body	22 – 28
Door check arm to 'A' / 'C' pillar	8.5
Door hinge locking screw	15
Sliding roof frame to body	3.5 – 5
Sliding roof outer panel to frame	3.5 – 5

III. SERVICE MATERIALS

Description	Uses	Notes
3M 5900 FPRM	Bumper substrate repair	See section A4.6
Kent Industries Urepatch	Bumper substrate repair	See section A4.6
Gurit Essex Betaseal 1855	Glazing adhesive	See section A4.5
Grease	Door check arm	See section A4.7

IV. SERVICE DATA

Application	Specification
Wheelbase	2870 mm
Front track (centre of tread to centre of tread)	1500 mm
Rear track (centre of tread to centre of tread)	1498 mm

A4.1 BODY REPAIR

Introduction

This section contains information, specifications and procedures for body repair and rectification of the Jaguar sedan range (with standard wheelbase).

All repairs, whether structural or cosmetic, must ensure the continuance of the Paint Surface and Corrosion warranty, where applicable.

Following repair or rectification, the vehicle must be returned to the original manufactured condition with regard to occupant safety, dimensional accuracy, finish and corrosion protection.

Similarly, repaired vehicles must be fully checked, and where appropriate reset, with regard to steering, suspension, restraint and braking systems.

A4.1.1 Health and Safety
(Please Read The Following Notes Carefully)

Where legislation governing working conditions and practises is applicable, you should observe it. **Do** not forget that you have a duty, to yourself and those around you, to act in a responsible manner in the workplace.

In the United Kingdom the Health and Safety at Work Act (1974) places a duty on employers and employees to ensure, whenever possible, safe working conditions and practices. Wherever a potential hazard is notified to, or identified by the operator, he must employ the correct safety procedures and equipment.

Should a personal injury occur as a result of any workshop activity, seek medical help as soon as possible and do not attempt self-treatment other than by the application of first aid.

With the constant introduction of new materials in the manufacture of vehicles, it is important that potential risks are identified and precautions made known.

WARNING: READ AND UNDERSTAND WORKING PRACTICES CLIMATE CONTROL SYSTEMS, SECTION 14, WITH SPECIAL REFERENCE T O
DO NOT VENT REFRIGERANT DIRECTLY TO ATMOSPHERE, ALWAYS USE JAGUAR APPROVED RECOVERY / RECYCLE / RECHARGE EQUIPMENT.
WEAR SUITABLE EYE AND SKIN PROTECTION.
OBSERVE ALL APPLICABLE SAFETY REQUIREMENTS.

A4.1.2 ***Notification*** Of Hazards

Symbols, which convey important information, will be positioned at the beginning of any specific operation or text.

Standard symbols will be used where repairs or service procedures are detailed.

All symbols will conform to standard ANSI 2535.3 (American National Standards Institute).

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- The surround shape of the symbol will indicate the basis of the message to be conveyed (see top three elements of Fig. 1)
- The icon depicting the message will be within the surrounding shape.
- Once nominated the icon will retain its meaning.

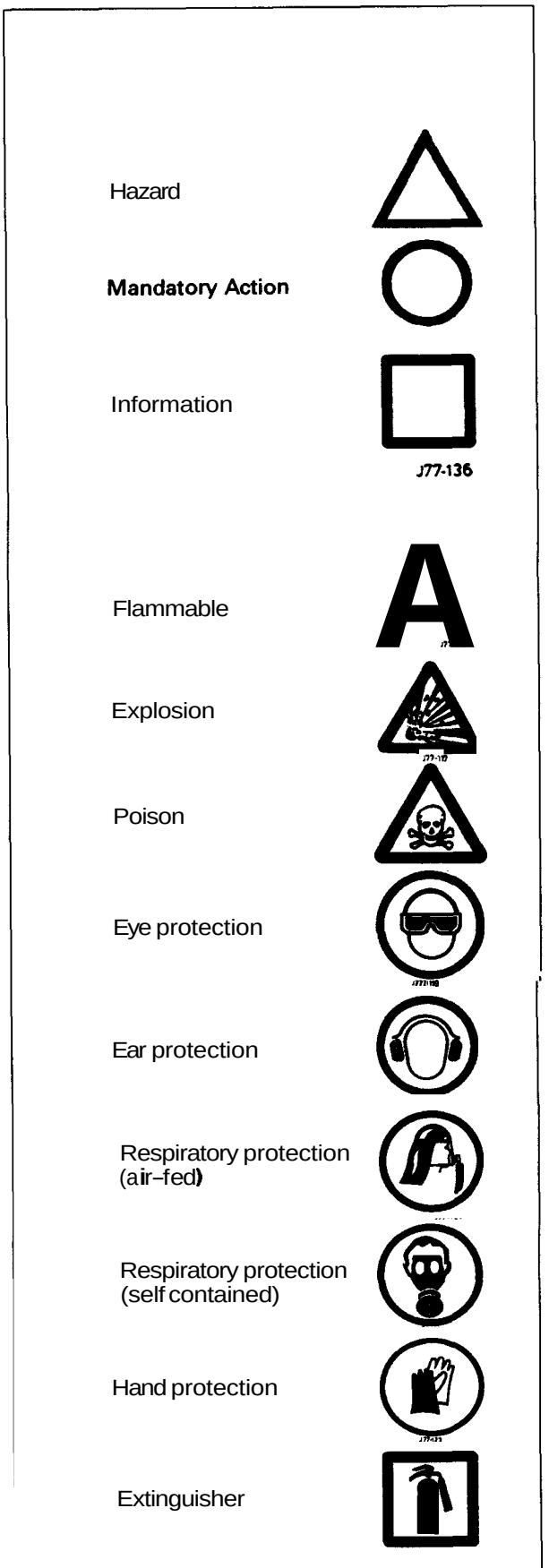


Fig. 1 Symbols

A4.1.3. POTENTIAL RISKS

A4.1.3.1 Paint

Organic solvents, found in paints, may cause damage or severe irritation to liver, kidneys, digestive tracts and respiratory system if inhaled over long periods of time.
Prolonged exposure to isocyanates may cause lung sensitization. Asthma–like symptoms may develop with subsequent exposure to very low concentrations of isocyanates.
Solvent inhalation can cause dizziness or loss of consciousness.

Inhalation of spray dust and sanding debris may cause lung damage.

Splashes of solvents, paint activators and additives can cause damage to the eyes and may cause dermatitis. Peroxide and acid catalysts may cause burns.

A4.1.3.2 Applied Heat (Welding)

There is considerable risk of damage to eyes and skin when welding or flame cutting.
Fire is a serious danger and many materials or fluids within the vehicle are highly flammable.
Toxic and dangerous fumes may be liberated when any of the following are subjected to heat:

- Expanded foam
- Corrosion protection
- Trim and seat materials
- Paints which contain isocyanates
- Adhesive and sealing compounds

When heated to a temperature of 300°C, polyurethane based compounds may liberate small quantities of isocyanate. Many types of nitrogen containing chemicals may be liberated as breakdown products; these chemicals can contain isocyanates, oxides of nitrogen and hydrogen cyanide.

Potentially toxic or asphyxiant fumes and gases are produced by welding, for example; zinc oxide with zinc coated panels, and ozone gas from the MIG process.

A4.1.3.3 Metal Repair

There is considerable risk of damage to eyes, ears and skin when metal cutting, forming, or dressing is being carried out.
Soldering may be hazardous because of heat generated fumes and skin contact with the materials.

A4.1.4. PRECAUTIONS

A4.1.4.1 Paint

The inhalation of sprays, fumes, or dust during paint application or sanding processes should always be avoided. Ensure that there is efficient ventilation / extraction at all times. Paint spraying should be confined as far as possible to spray booths. Personnel with a history of asthma should not be engaged in any process which involves the use of isocyanates. Any operator working inside a spray booth where isocyanate material is present must use air–fed breathing equipment. Supplied air to the visor should be fed at the recommended pressure and filtered to remove oil, water, and fumes. Operators involved in handling mixing or spraying should wear protective clothing – gloves and goggles, to avoid skin and eye contact.

A particle mask or canister type respirator should be worn when sanding.

A4.1.4.2 Applied Heat

When welding, flame cutting, brazing etc, the operator should use as appropriate, goggles, mask / fume extractor and flameproof protective clothing. It is especially important when working with polyurethane compounds to use air–fed breathing equipment.

Ensure that at all times the appropriate fire fighting equipment is available and that personnel are trained in its use.

A4.1.4.3 Metal Repair

Appropriate eye and hand protection should be worn when sanding, drilling, cutting, chiselling, flatting or welding.

Operators should wear a face mask or air–fed visor when sanding or flatting either body solder or fillers.

When a soldering operation has been completed, swarf must be removed from the work area and the operator must wash his hands thoroughly.

A4.1.5 GENERAL REPAIR NOTES

The following advice should be noted before **ANY** repair work is carried out.

- Disconnect the vehicle battery ground lead (disconnect the alternator where electric welding is used) and take note of the reconnection procedures as detailed in Section **15.**
- Where structural parts are straightened or renewed, a body alignment / straightening jig must be used.
- Where appropriate, structural sections should be straightened by cold processes. Heat, especially excessive heat, will reduce the strength of steels.
- Repairs may only be carried out successfully, and any warranties protected, if genuine Jaguar replacement parts and Jaguar approved materials are used.
- Tools, procedures and facilities must be right for the job. Do not compromise the quality of the work by using inappropriate methods.
- **All** trim and electrical components in the locality of the repair must be removed or disconnected prior to panel removal / replacement; this is especially important where hollow sections may contain harnesses, tubes or foam, see section **A4.3.5.**
- The welding and gas processes detailed in the following sections are the only ones recommended by Jaguar Cars Ltd.
- Ensure that you have read and understood the safety related procedures in this and other relevant sections.

WARNING: DO NOT WORK IN THE VICINITY OF A LIVE AIR BAG, REMOVE IT COMPLETELY. READ WORKING PRACTICES AIR BAG, SECTION 15.
ANY SEAT BELT WHICH HAS BEEN WORN IN AN ACCIDENT MUST BE RENEWED. PLEASE SEE SECTION 13 FOR IMPORTANT INFORMATION REGARDING 'TEAR LOOP' SEAT BELTS / BUCKLES AND ANCHORAGE LOCATIONS.

CAUTION: Electric arc welding should not be used on Jaguar vehicles. The high voltages produced by this process will cause irreparable damage to the electrical control and microprocessor systems.

A4.1.5.1 Welding and Gas Processes Special Notes

Resistance spot welding, MIG welding and all gas processes may only be carried out on bare, unpainted or unplated, metal.

The flanges of panels which are to be welded together must be clean, corrosion free and treated as appropriate, with either weld-through primer or inter-weld sealer; use only materials and processes in accordance with the 'Body Sealing and Preservation Manual' and relevant application areas in section **A4.3.1.1.**

Note: See 'Zinc Coated Panels' section **A4.2.**

Generally, the resistance spot welding equipment used in the motor vehicle repair industry does not produce a weld of equivalent strength to that of the manufacturer. Therefore, the expression 'single row of resistance spot welds' means that the spots should be spaced on a pitch of 19mm to 25mm. This will usually result in more spot welds than found in the original factory joint.

To remove resistance spot welds, a resistance spot weld cutter should be used.

If the new joint is to be MIG plug welded, the old resistance spot welds should be cut from the panel which is to be retained and those holes used for plug welding.

Suitable holes may also be drilled or punched; 8,0 mm dia for sections up to 1,6 mm, and 10,0 mm dia for thicker sections.

A4.1.6 PLASTICS – EXPLANATORY NOTES

A#.1.6.1 Plastic component and trim materials.

This table, in conjunction with the illustrations on the following pages will enable rapid identification of the particular material of any major plastic part.

Term	Material Name
ABS	Acrylonitrile Butadiene Styrene
ABS / PA	Acrylonitrile Butadiene Styrene & Polyamide (nylon) blend
ABS / PC	Acrylonitrile Butadiene Styrene & Polycarbonate blend
ABS / PBT	Acrylonitrile Styrene Acrylate & Polybutylene Terephthalate
PA	Polyamide (nylon)
PC	Polycarbonate
PE	Polyethylene
PMMA	Polymethyl Methacrylate
POM	Polyoxymethylene (acetal)
PP	Polypropylene
PPO	Modified Polyphenylene Oxide
PUR	Polyurethane
PVC	Polyvinylchloride
SMA	Styrene Maleic Anhydride

Note: Not all plastic components are nominated, only those suitable for economic reclamation.

A#.1.6.2 Plastics – Handling Notes

Note: With reference to the following conditions, consider the properties of those plastic components which may be affected by a repair or rectification procedure.

- As mentioned elsewhere, the exterior panel temperature of the vehicle must not exceed 95°C at any time and may only be held at this upper limit for a maximum of 2 (two) hours.
- Interior vehicle temperature must not exceed 86°C, the time limit being 2 (two) hours.
- Temperatures above those specified in 1 and 2, may result in distorted or permanently damaged components. If there is any doubt whatsoever, remove those components which may be affected by the application of heat.
- Certain items may be manufactured from 'blended' materials; these must NOT be recycled with pure materials. For example do not mix PC/ABS (wheel trim) with ABS ('B' pillar upper trim).
- Should plastic components become greasy, they may be cleaned with an 'SBP 3' spirit wipe, or equivalent.

A4.1.6.3 Recycled Materials

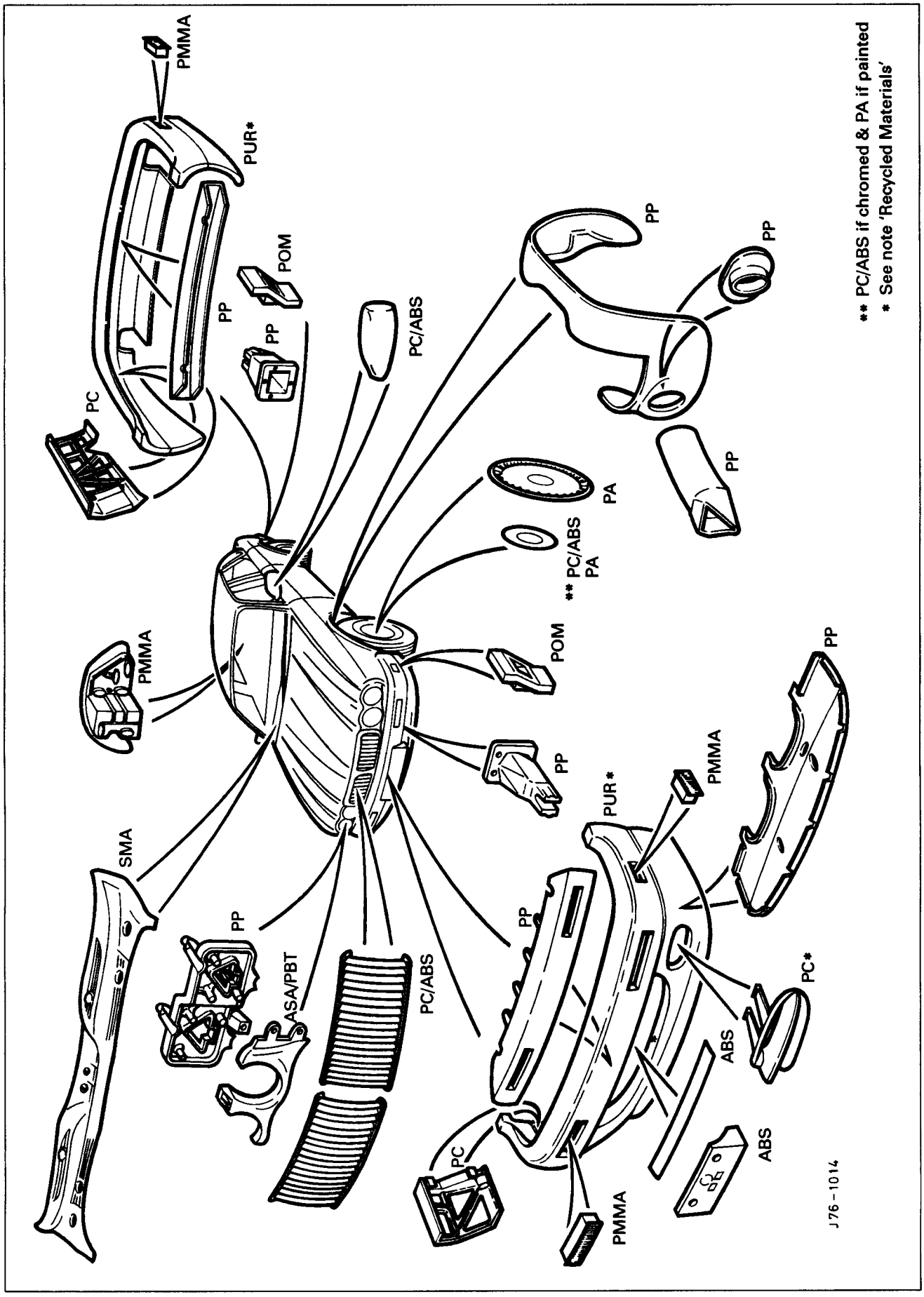
Any of the materials listed in A4.1.6.1 may be recycled provided that they are not contaminated by other incompatible plastics or metals. For instance, the air conditioning unit case, manufactured from PP (polypropylene), must be separated from the heater matrix, evaporator, control devices (electronic and mechanical) and all fixings before it can be considered for recycling.

After disassembly, the case must be placed for disposal only with materials of the same generic type.

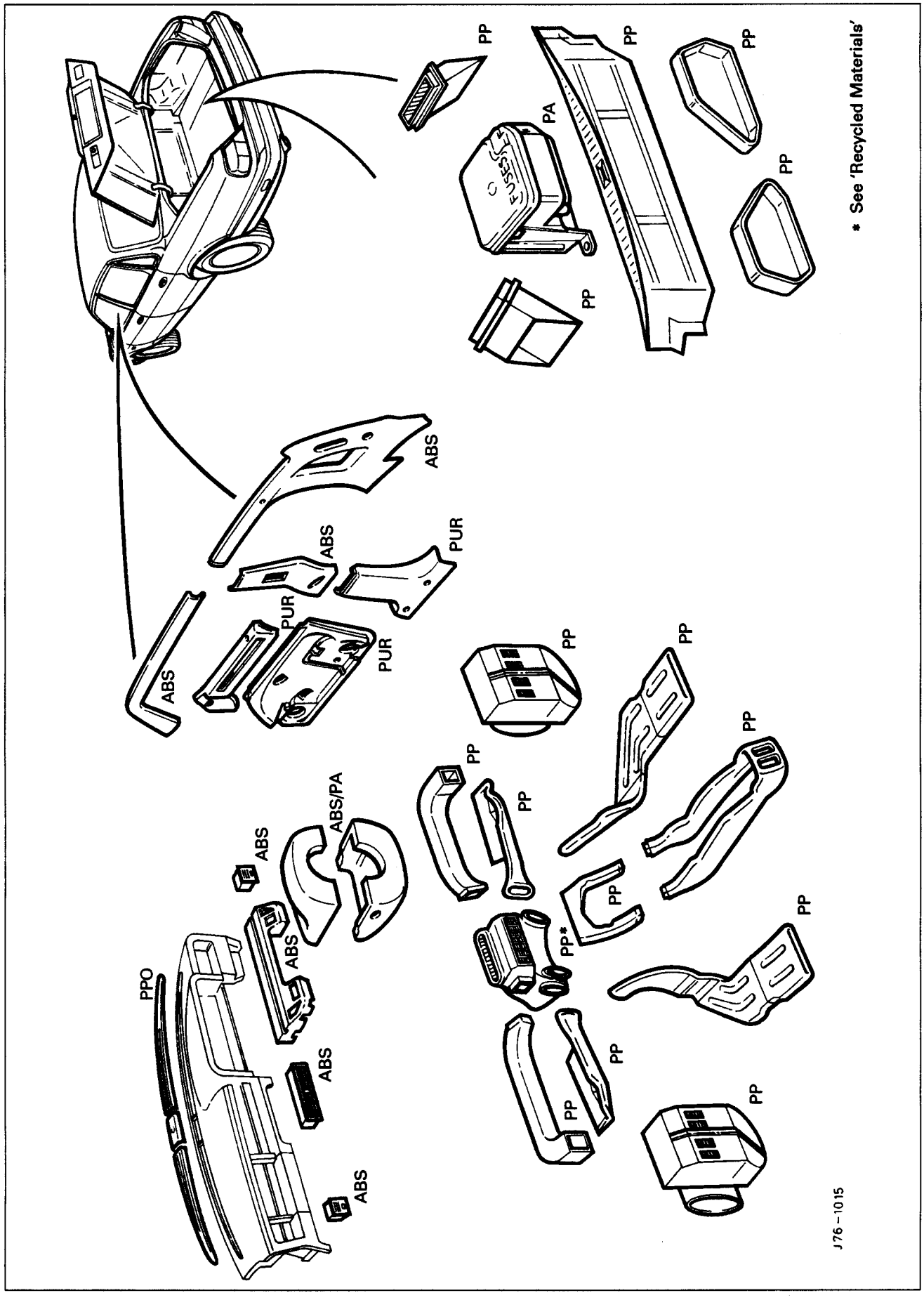
Note: The bumper cover assemblies have side armatures (non-serviceable items) rivetted to them; because they are dissimilar materials the armatures and fixings must be removed prior to recycling.
In the bumper cover intake aperture there is a cosmetic 'black-out' piece; a similar component may be found on the fog lamp blanks (where fitted). These items should be separated from the major component for recycling.

A4

A4.1.6.4 Plastics, Component Location & Type – External



A4.1.6.5 Plastics, Component location & Type – Internal



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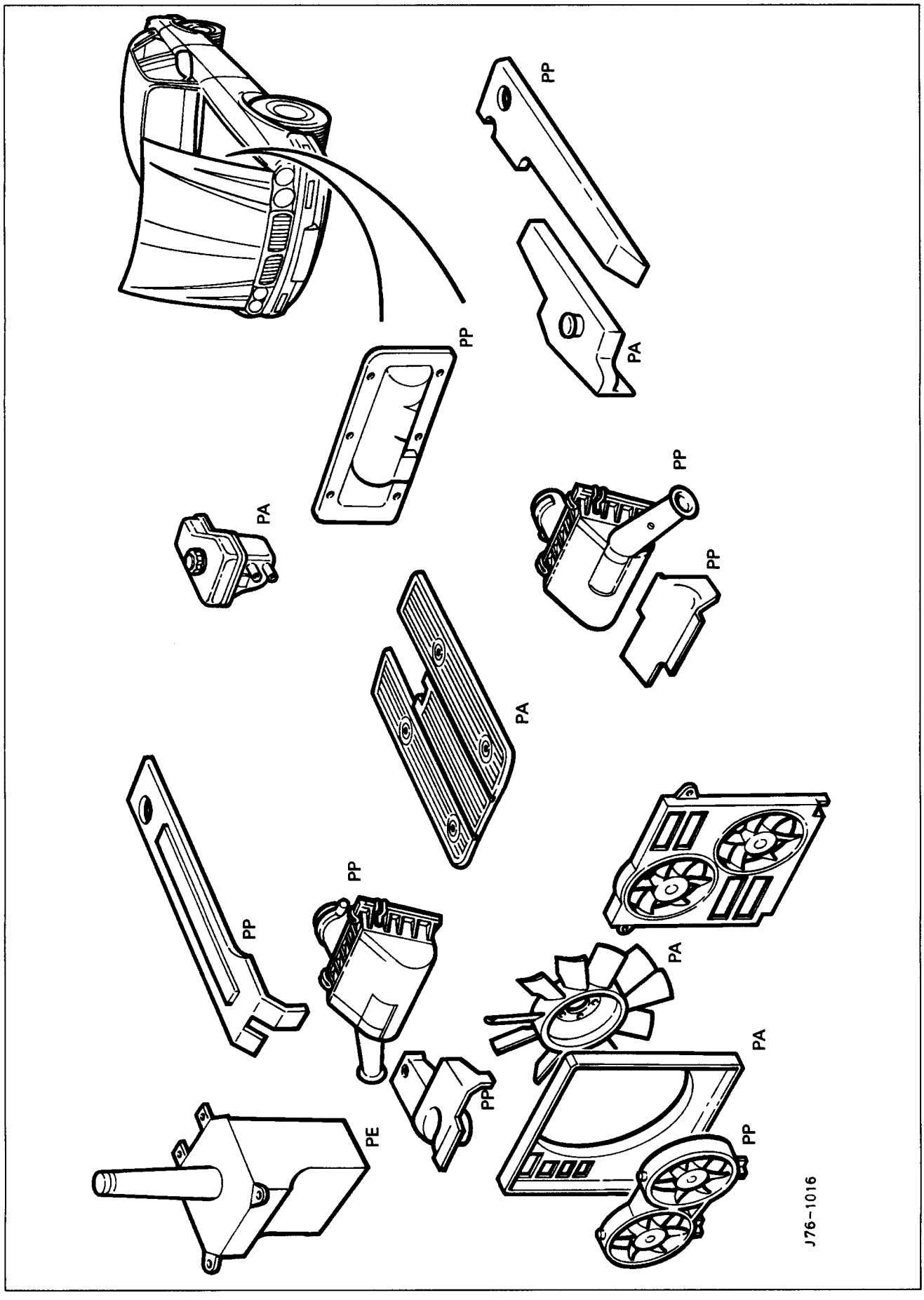
A4.1.6.6 Plastics, Component Location & Type – Under-hood



A4.2 BODY STRUCTURE

A4.2.1 Introduction

The Jaguar sedan range (with standard wheelbase) has a unit construction monocoque body structure with bolt-on front fenders and welded rear fenders. The doors feature 'lift-off' hinges and welded drop-glass frames.

A4.2.1.1 Constructional Steel Classification

Material	Application
High strength low alloy (HLSA).	Impact prone areas, ie. seat frame and bumper mountings.
Double sided zinc plated mild steel.	Exterior body panels subject to severe conditions such as stone chipping and weather exposure (excluding roof panel).
Boron steel	Door intrusion beams
Mild steel.	Internal brackets, fillets and strengtheners.

A4.2.2 BODY ALIGNMENT

The illustrations on pages 11- Body Dimensions PLAN, and 13-Body Dimensions SIDE VIEW, provide specifications for damage assessment and location of replacement parts.

These dimensions must be strictly applied whether they are used for damage assessment, component location or post repair verification.

The plan view MASTER datums are nominated on the right-hand side of the body with the left-hand datums dimensioned from them. Therefore, the right-hand datums must be known to be correct before any other cross—ar dimensions are checked.

Note: The right-hand side is always looking towards the front, from the rear of the vehicle.

All dimensions are derived from a single (ZERO) datum point for all three axes; X for length, Z for height and V cross-car.

A4.2.2.1 Datum location, Example

The FRONT MASTER DATUM (front crossmember rear mounting at the inner face of the main floor RH longitudinal) is nominally 359,5mm to the right–hand side of the body center line. The LH side front datum is measured 717,0 / 721,0mm from the RH. Please refer to the illustration on the following page.

Expressed as a true position in three planes, the front master datum is:

Datum	Location	Position
Front Master Datum Plan	Centre line of the front crossmember rear mounting, at the main floor RH longitudinal	**X** 300,0 **Y** 359.5 **Z** –50.0

A4

A4.2.2.2 Key, Plan View

Please refer to the illustration on the opposite page.

Key	Location
1	Front face body – bumper strut / mounting point
2	Rearmost hole, Vee–mount to crush tube
3	Front Master Datum Plan, centre line of the front crossmember rear mounting at the main floor RH longitudinal
4	Rearmost hole, transmission mounting at the main floor RH longitudinal
5	Driveshaft centre bearing fixings
6	Rear Master Datum Plan, rear longitudinal
7	Tapped boss, rear suspension 'A' frame mounting bush
8	Rear suspension spring-pan damper mounting
9	Rear suspension differential strut mounting
10	Rear face body – bumper strut / mounting point

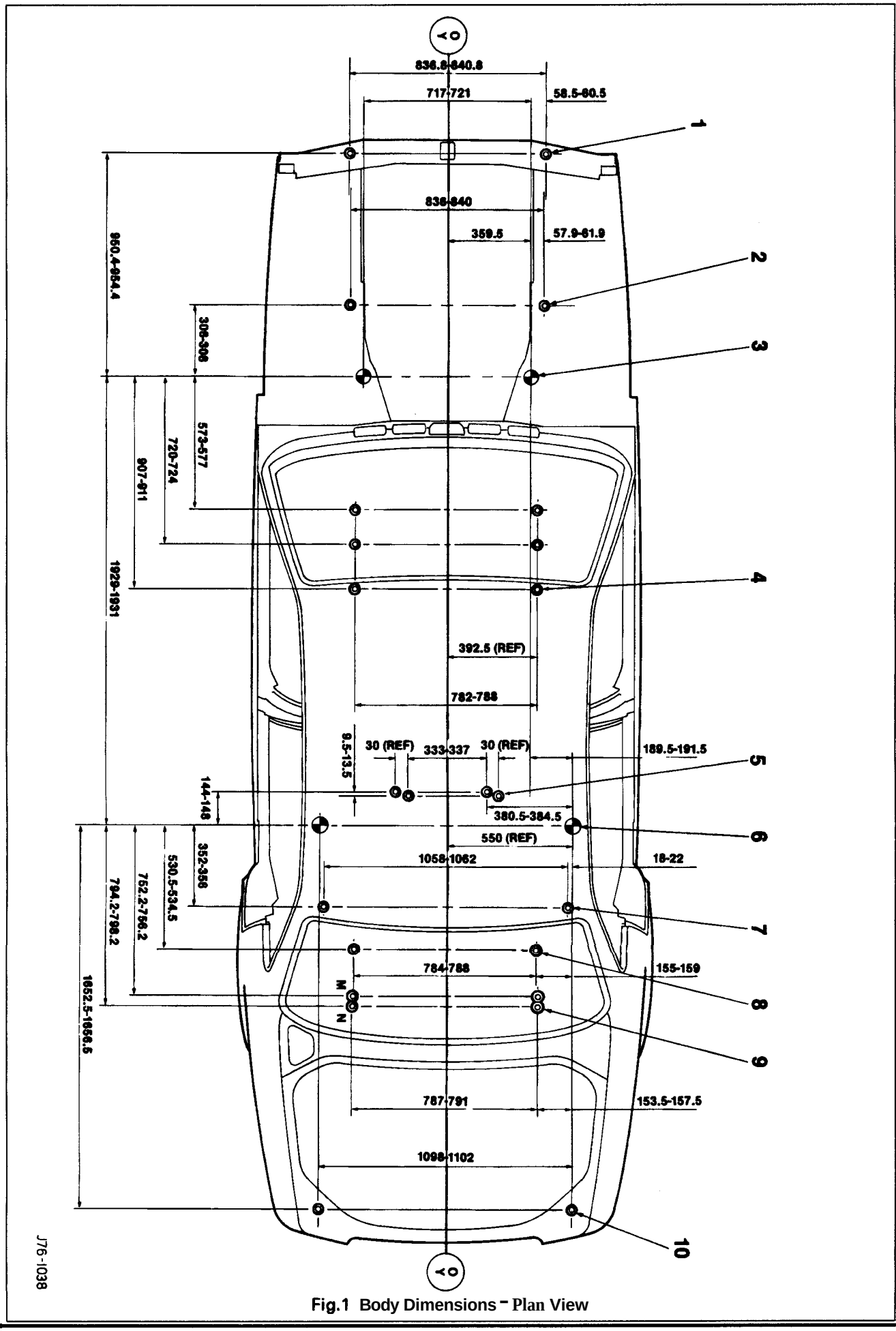


Fig.1 Body Dimensions - Plan View

*A4.2.2.3 Key, **Side View***

Please refer to the illustration on the opposite page.

Key	Location
1	Front face body - bumper strut / mounting point
2	Front Master Datum Vertical, centre line of the front crossmember rear mounting
3	Transmission mountings at the main floor longitudinal
4	Driveshaft centre bearing fixings
5	Rear Master Datum Vertical, rear longitudinal
6	Tapped boss, rear suspension 'A' frame mounting bush
7	Rear suspension spring-pan damper mounting
8	Rear suspension differential strut mounting
9	Rear face body - bumper strut / mounting point
10	Wheel centre to bumper cover face
11	Wheelbase
12	Wheel centre to bumper cover face

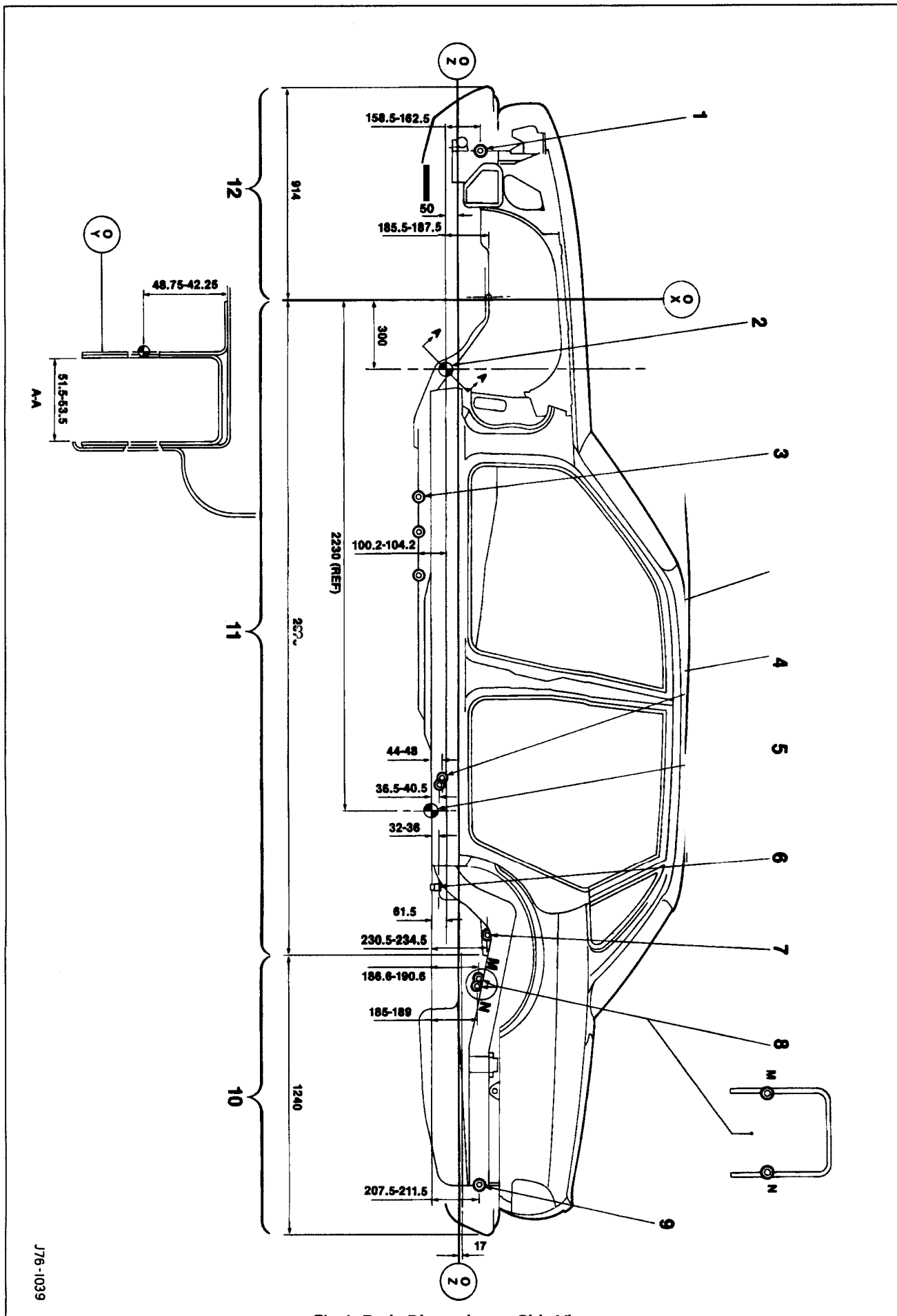


Fig.1 Body Dimensions - Side View

A4.2.3 ZINC COATED PANELS

A4.2.3.1 Description

Approximately ***65%*** of the 'body in white' (BIW) mass is made up of zinc coated panels.

All exterior skin panels, with the exception of the roof, are double side zinc plated and this coating (nominally 7,5 microns) provides corrosion protection in two ways.

1. Should the outer layer of paint become chipped but the zinc coating remain intact, the zinc will oxidize on contact with air. This coat of oxidation is impermeable and will prevent corrosion damage to the base metal.
2. If both the outer layer of paint and the zinc coating become damaged, the zinc will react with the air and 'sacrifice' itself to corrosion, rather than the base metal. In this process the zinc is known as a 'sacrificial anode'.

Note: To maintain the protective qualities of the zinc treatment, repairs to any damaged coated area MUST be made as soon as possible after the damage has occurred.

A4.2.3.2 Welding Preparation

Where 'resistance spot welding' is employed, the zinc coating should be lightly abraded away on the mating surfaces and those in contact with the electrode tips. Do not remove more of the zinc coating than is absolutely necessary.

Before welding, a weld–through primer or inter–weld sealer should be applied, as detailed in the Body Sealing and Preservation manual.

Contamination of the weld will occur if the plating is not removed, thus making the joint less strong; another side effect of this will be a greater need for electrode tip dressing and increased tool down time.

In exceptional cases where the plating must remain intact, increase the tip pressure and welding current by 10 to 20%.

Where MIG welding is used as an alternative to resistance spot welding for plug, butt welds, or limited access, the problems caused by the presence of zinc coating are much the same as those previously mentioned. There may also be the added problems of increased weld spatter and nozzle contamination.

A4.2.3.3 Body Fillers

Conventional polyester fillers do not adhere satisfactorily to zinc plated panels. Therefore, it is important to use only those products specifically designed for this application and follow the manufacturers recommendations.

A4.2.3.4 Refinishing

Use only those products approved by Jaguar Cars Ltd and take special care with zinc coated panels.

Replacement panels are supplied ready primed so there should be no need for bare metal to be exposed, other than those areas prepared for welding etc (see 'Welding Preparation' sub section 4.2.3.2).

Where any part of a panel is dressed back to a bare surface, it should be treated with a zinc rich primer compatible with the chosen paint application system, please refer to section A4.4.1.1.

A4.2.4 PANELS — ASSOCIATED, RENEW

SRO 77.10.02

Note: Where other components must be removed to gain access, please refer to the relevant manual section for guidance. This is critically important with regard to steering, braking, suspension, electrical and safety systems.

- Expose the resistance spot welds, for those spot welds which are not obviously visible, use a rotary wire brush fitted to an air drill or a hand held wire brush (A Fig. 1).

WARNING: DO NOT BURN UNDERSEAL OFF. USE A 'HOT KNIFE' OR SUITABLE SOLVENT.

A4

- Cut out the spot welds using a Zipcutter or Roto-Bor (B Fig. 1).
  At this point it may be necessary to cut out the bulk of the panel using a pneumatic saw (C Fig. 1).

Note: On some panels, before removing the bulk of panel with the pneumatic saw, brazed areas and MIG welded seams should be removed.

- Separate the spot welded joints and remove the panel remnants.

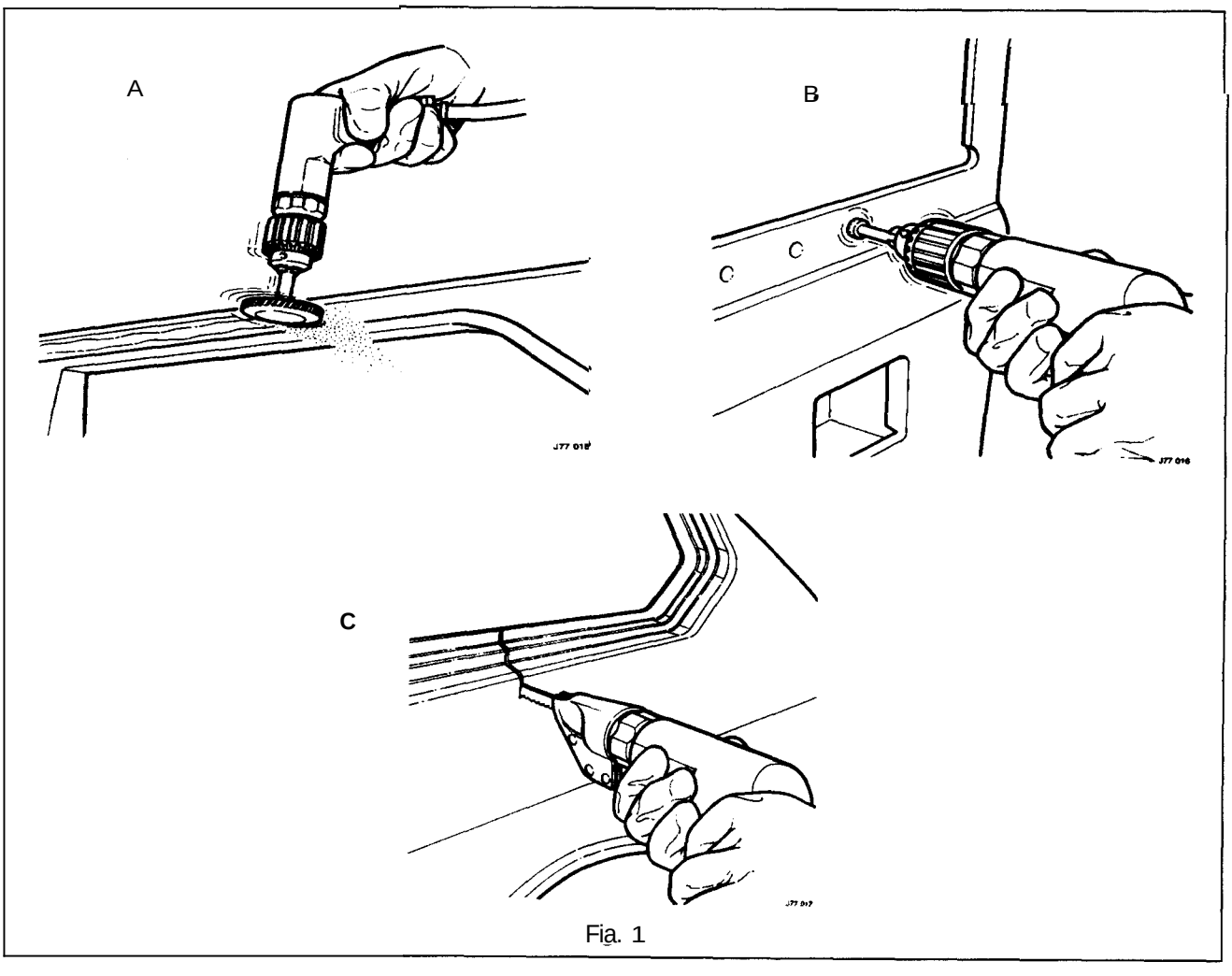


Fig. 1

A4.2.5 SURFACES (OLD), PREPARE

SRO 77.10.03

- Observe all appropriate safety procedures.

WARNING: DO NOT BURN UNDERSEAL OFF. USE A 'HOT KNIFE' OR SUITABLE SOLVENT

- Remove the weld nuggets with a sander and **36** grit disc.
- Clean all flanges to a bright smooth finish. (A Fig. 1).
- Straighten existing panel joint edges as required.

A4.2.5.1 SURFACES (NEW), PREPARE

SRO 77.10.04

- Observe all appropriate safety procedures.
- Mark off the area of new panel and cut to size leaving approximately two inches overlap on the existing panel. Offer up new panel or section, and align with associated parts, i.e. new rear fender aligned with door / luggage compartment lid / backlight aperture.
- Clamp the panel into position.
- Where necessary, cut the new and original panels to form a butt joint.
- Remove all clamps and the new panel.
- If required, apply inner panel protection and or sound insulation.
- Prepare the new panel joint edges for welding by cleaning to bright metal (A Fig. 1); this includes all interior and exterior edges.
- Apply weld-through primer or interweld sealer (B Fig. 1) to all surfaces to be resistance spot welded.
- Where appropriate, apply metal-to-metal adhesive or sealer (C Fig 1) in accordance with the manufacturer's instructions.

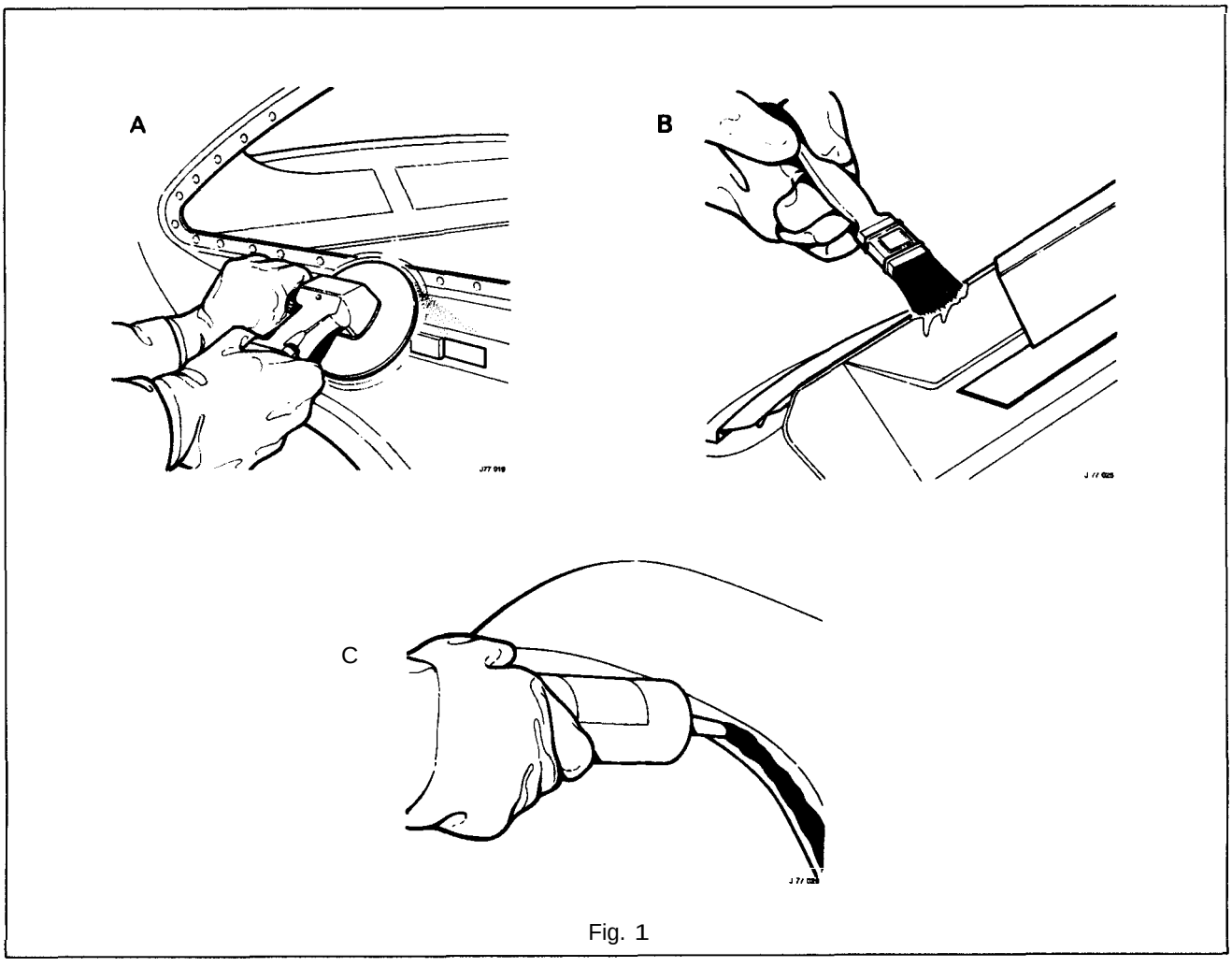


Fig. 1

A4.2.5.2 PANELS, ALIGN AND WELD

SRO 77.10.05 & 77.10.06

- Observe all appropriate safety procedures.
- Apply appropriate sealer or joint preparation.
- Align the replacement panel with associated panels and clamp in position; with certain panels it may be necessary to MIG tack weld (A Fig. 1) or use 'PK screws.
- Recheck alignment and panel contours and re-adjust as necessary.
- Select the correct 'arms' for resistance spot welding and ensure that tips are correctly trimmed.

Note: It is recommended that 'arms' of not more than *300* mm (12 in.) long are used and test the equipment for satisfactory operation by producing test coupons (B Fig. 1). In the absence of test equipment, a satisfactory weld can be verified by pulling the test coupons apart and viewing the welded condition.

- Resistance spot weld where required (C Fig. 1).
- Note the presence of zinc coated panels and treat as detailed in the previous sections.
- Dress back all MIG tack welds.
- MIG seam weld the butt joints (D Fig. 1).
- As required, dress all welds.
- Final braze and fill as necessary prior to paint preparation.

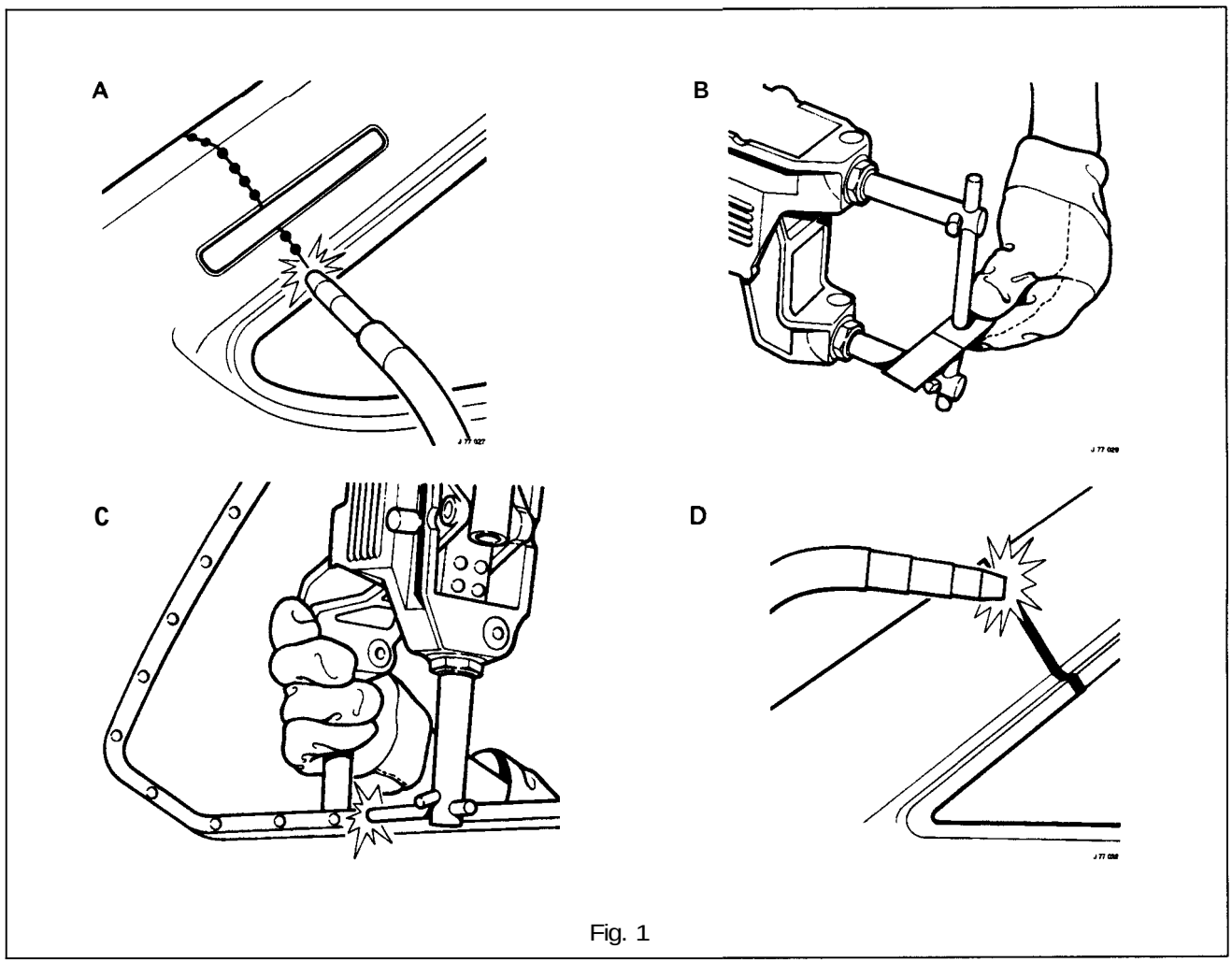


Fig. 1

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A4.2.6 CUTTING AND WELDING SYMBOLS

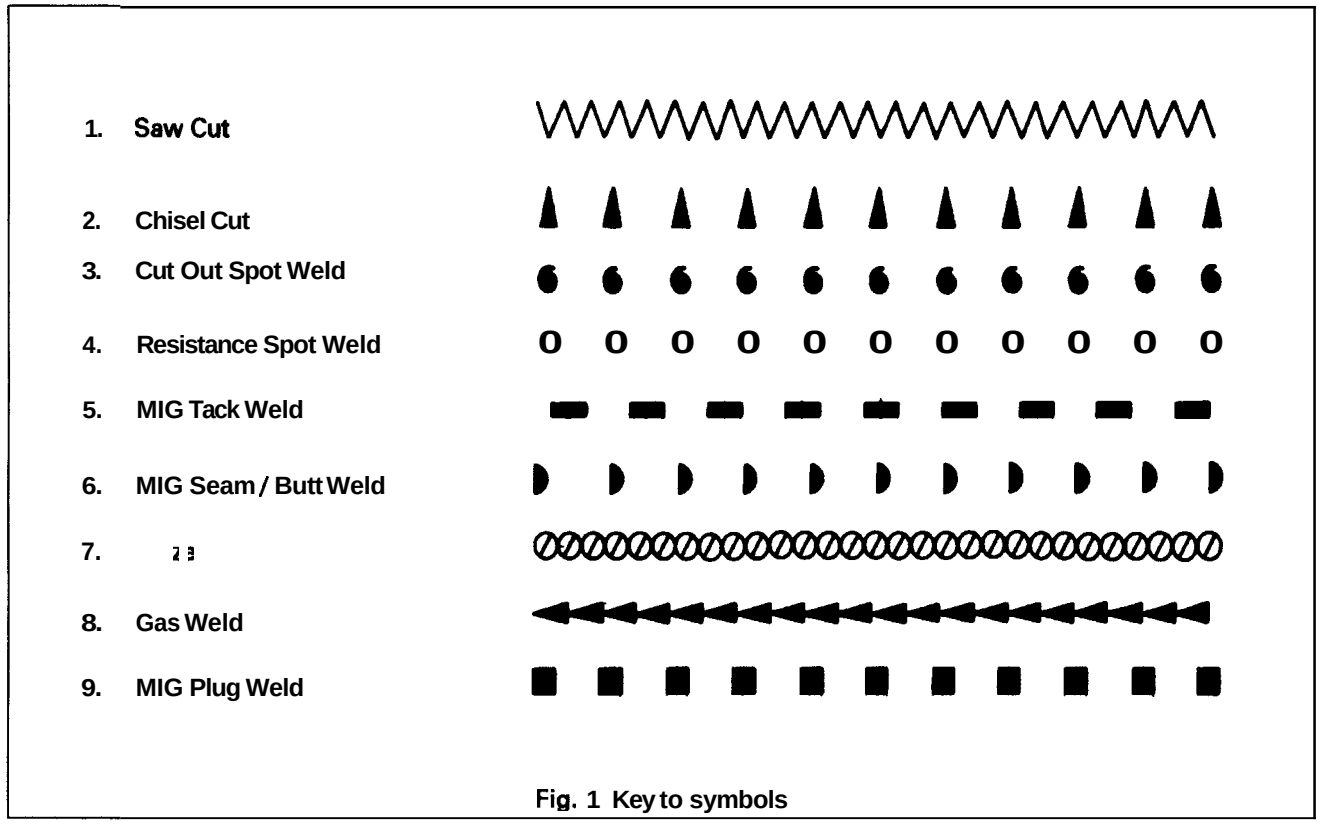

Fig. 1 Key to symbols

CAUTION: **Reference** should always be made to the welding tables and illustrations in the relevant procedures. **Observe** all *safety* precautions with **respect** to yourself, other **people,** your equipment and the **workplace.**

A4.3.1 ADHESIVES, SEALERS AND BODY PROTECTION – APPROVED SYSTEMS

Specifications and recommendations may be found in the 'Body Sealing and Preservation Manual' which is available in the following languages:

Language	Reference
Dutch	**AKM 9165**
English	**AKM 9137**
Italian	**AKM 9164**
French	**AKM 9162**
German	**AKM 9163**
Japanese	**AKM 9178**
Spanish	**AKM 9166**

Section	Relevance
Cavity wax injection points	Not applicable, see **A4.3.2** for specific injection points
Underbody & underhood wax	Not applicable
Approved paint refinish processes	Not applicable, see section **A4.4.1.1**
Health and Safety	Legislation applicable **U.K.** only; general precautions and advice applicable to all

A4.3.2 CAVITY WAX INJECTION

Protective wax should be applied in the locations as specified in the following illustrations. Please refer to the 'Body Sealing and Preservation Manual' for processes, materials and equipment.

Note: Cavity wax processes should only be applied after **ALL** other refinishing and protection procedures are complete.

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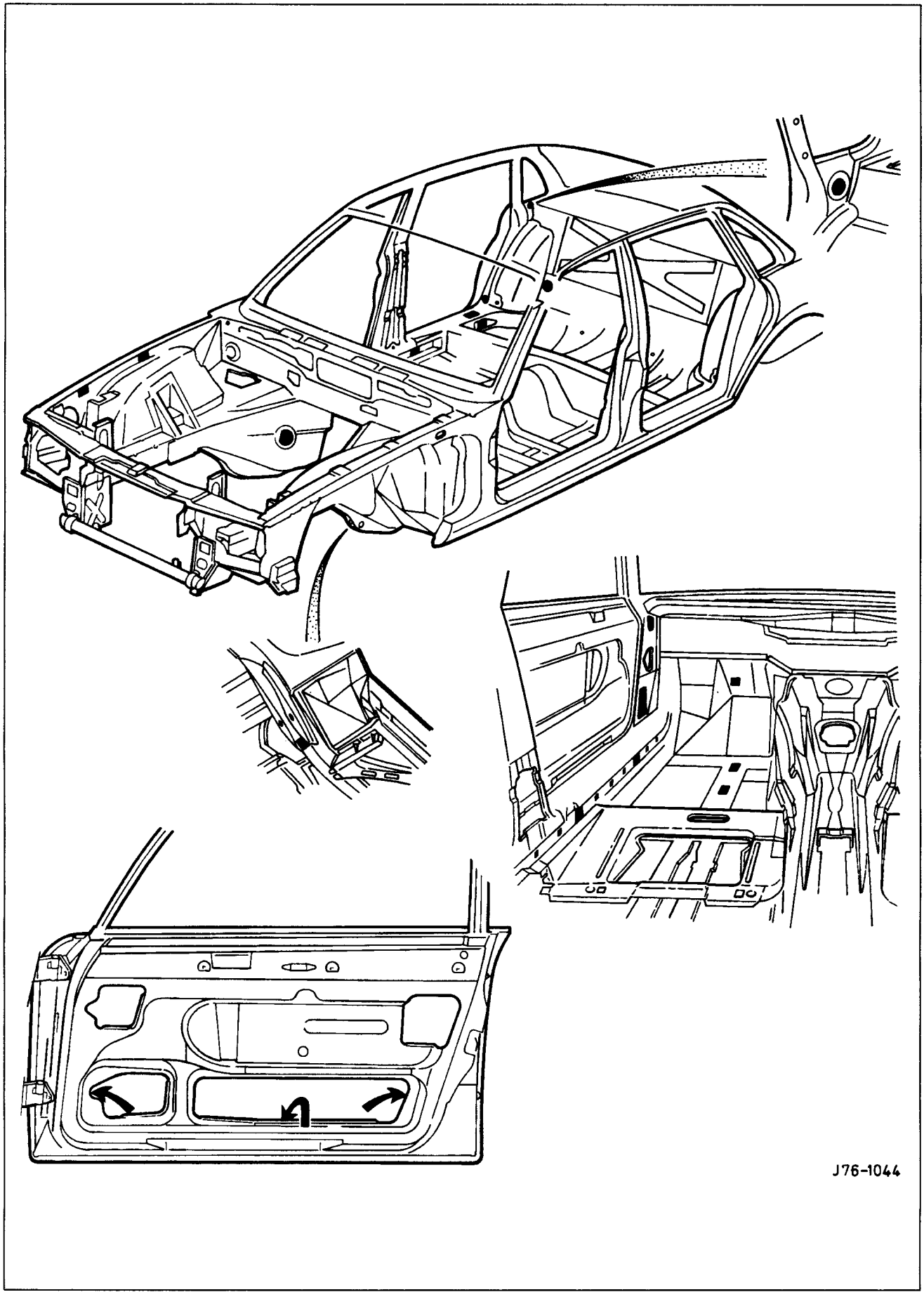
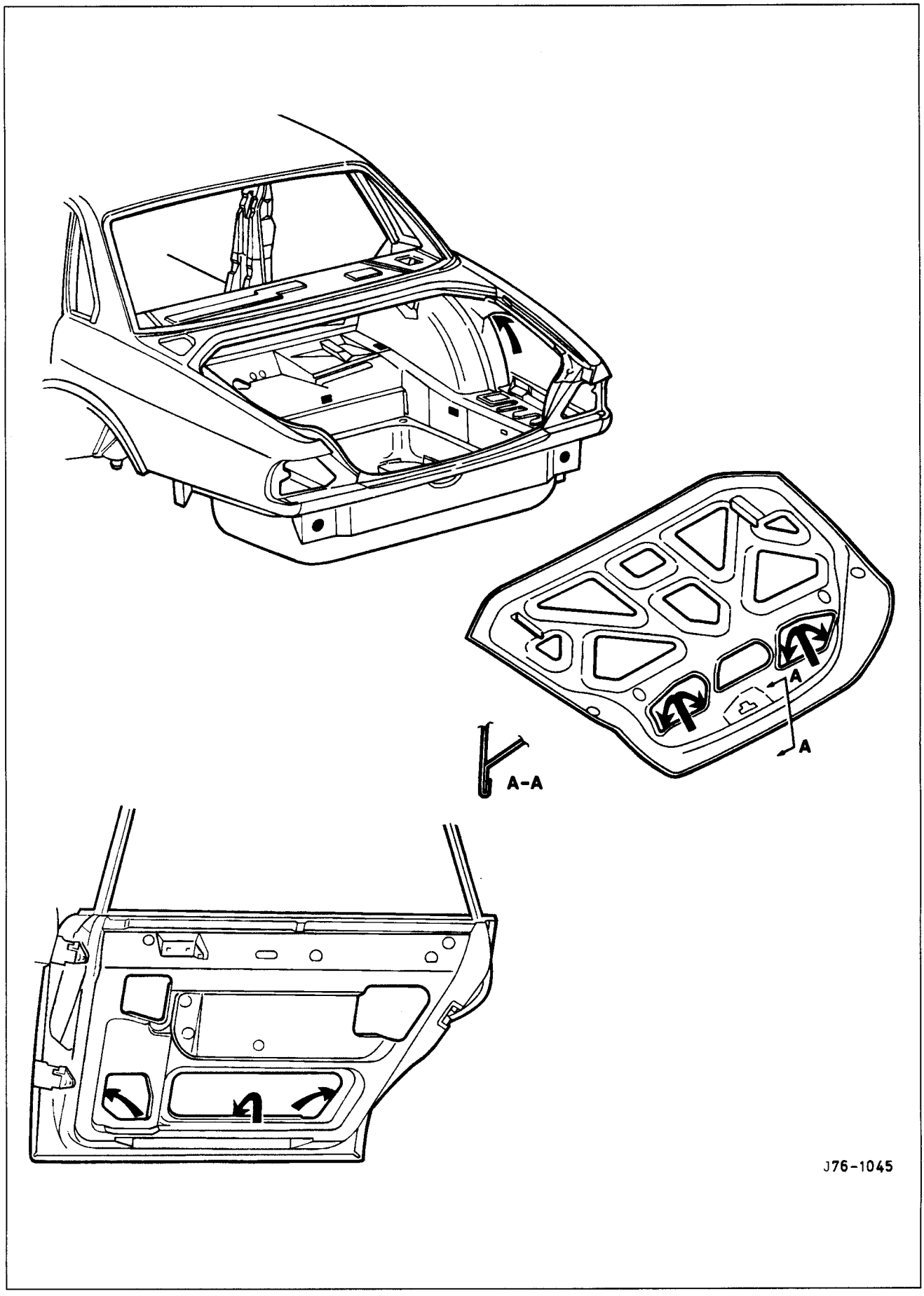
A4.3.2.1 Cavity wax injection points – Front



A4.3.2.2 Cavity wax injection points – Rear



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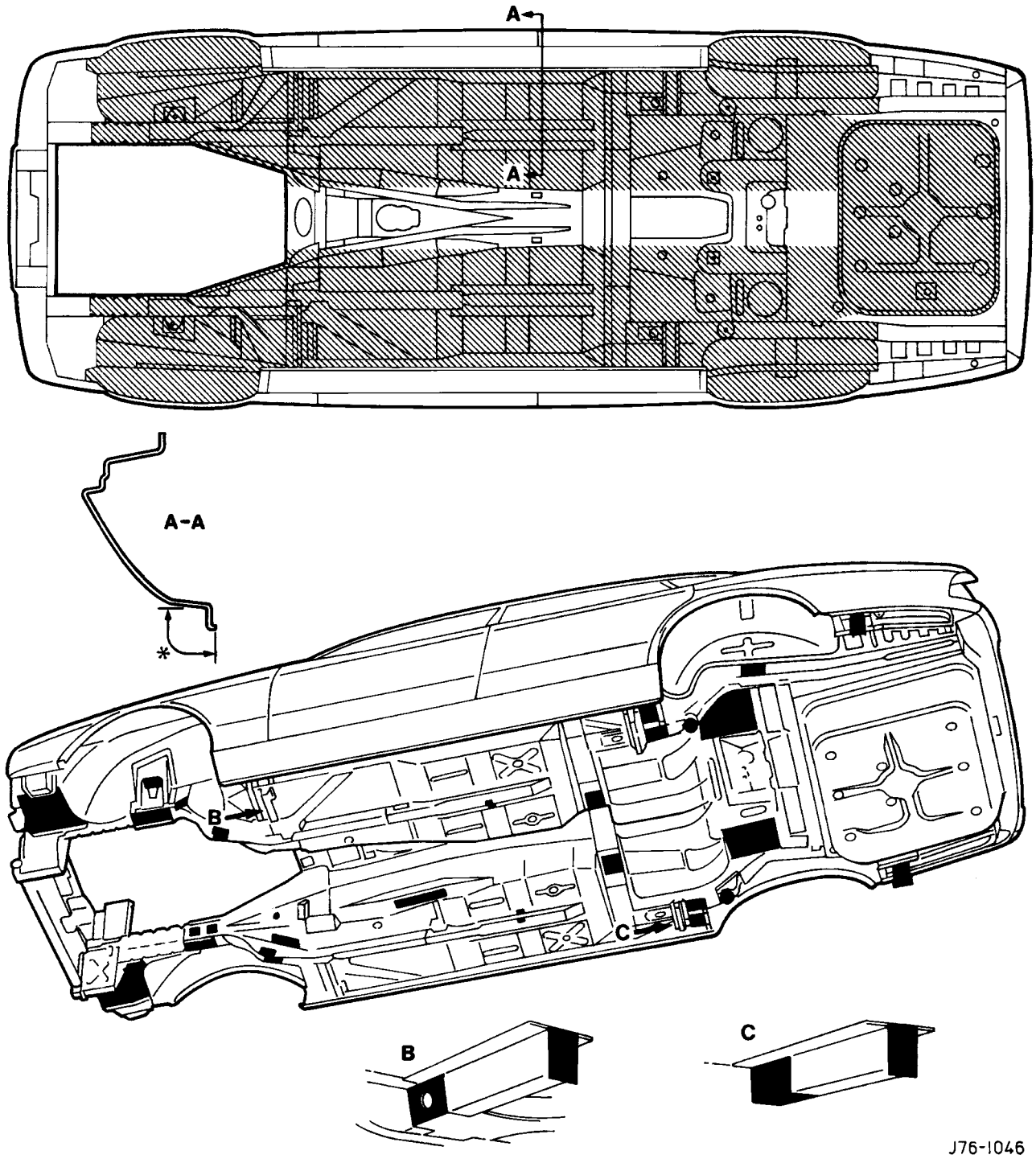
A4.3.3 UNDERSEAL, APPLICATION

Inderseal should be applied as indicated by the 'hatching' and omitted from areas indicated in solid black.



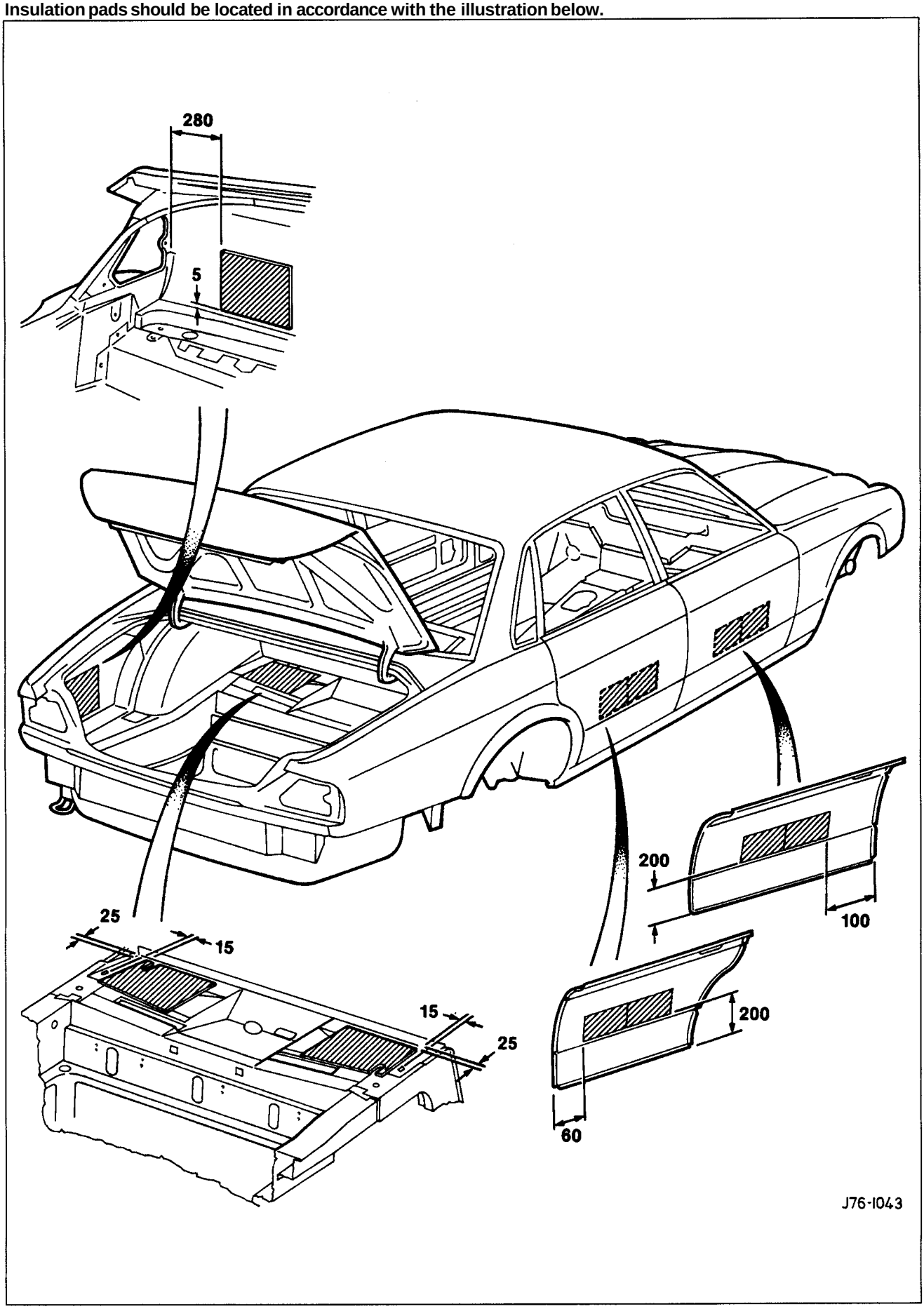
■ = Areas to be left clear

Fig. 1

CAUTION: Do not apply underseal to rotating or hot components.

A4.3.4 INSULATION PADS

Insulation pads should be located in accordance with the illustration below.



A4.3.5 FOAM INJECTION

Where any of the sections shown in the following illustration are renewed, then expanded foam must be introduced into the area after all other repair / refinishing / protective processes.

- Tape should be applied to the areas defined by arrows to ensure the travel of the foam along the hollow section.
- Expanded foam should be introduced into points circled in Fig. 1.
- Items such as sliding roof drain tubes and the harness from the rear left-hand bulkhead through to the luggage compartment, must be in position BEFORE the introduction of the foam.

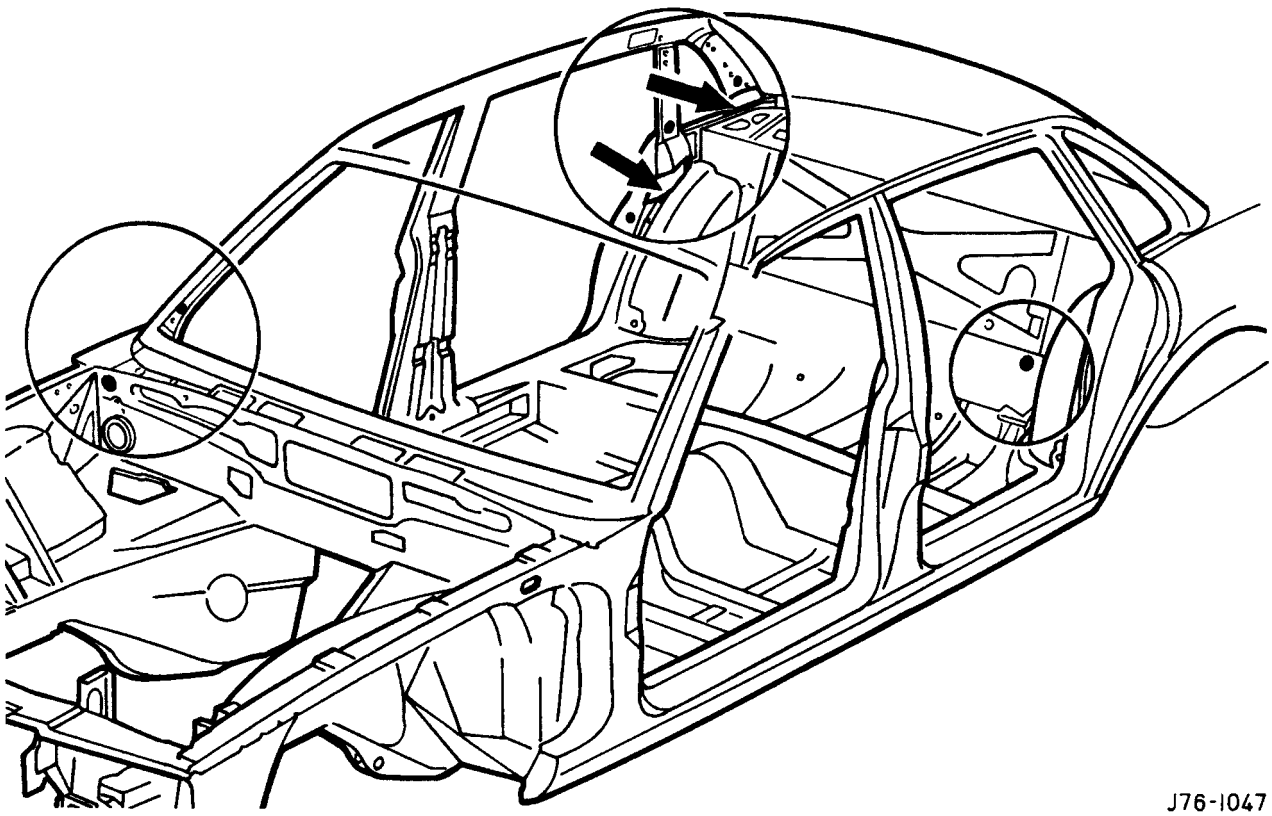


Fig. 1

A4.4.1 PAINT SYSTEMS - APPROVED

The manufacturer's paint systems listed below are currently approved for refinishing Jaguar vehicles.

Manufacturer	Bare metal etch primer	Primer surfacer	Base color coat	Clear lacquer
Akzo Sikkens	Washprimer	Autocryl / Autonova	Autobase	Autoclear 1000 - 3000 Automat
Dupont			Centari 600*	Centari 600*
Glasurit	Wash Etch+		System 54 (solid/metallic) System 56 (micatallic) System 59 & 69 (pearl)	Clear lacquer 923-85
Herberts	Metal pre-treatment & rust remover 301.2595		Standox Basislak	Standox Clearlak
ICI				Autocolor
PPG	Galvaprep D840	Wash primer D831 Hi-build primer D855 Epoxy surfacer DP40 Deltron / non Iso-cyanate Primer D828	Deltron HS 2	Deltron Concept 2001 HS clear D880
R - M	Eurofill	R-M Prof / Maxfill	Diamont Basecoat	Diamont Clearcoat

Note: * Not available North America

In markets which do not support any of the nominated systems, alternatives may be used, provided that they comply with the following company standards.

Product type	Applicable standard
Bare metal etch primer	JMS 20.29.06
Primer surfacer	JMS 20.29.11
Base color and clear lacquer	JMS 20.29.09

CAUTION: To avoid damage to the vehicle interior, trim and plastic items, effective panel temperature must not exceed 95°C during paint cure process.

A4.4.1.1 General Recommendations

Recommendations and advice covering all aspects of refinishing may be found in the 'Paint Refinishing Manual' which is available in the following languages:

Language	Reference
Dutch	AKM 9187
English	AKM 9182
Italian	AKM 9185
French	AKM 9183
German	AKM 9184
Spanish	AKM 9186

A4.4.1.2 Manual Section Relevance

Section	Relevance
Defect diagnosis	Applicable
Refinish processes	Applicable less 'De-waxing' process
Refinishing system	Applicable less model references (see table above)
Color technique	Applicable
Facilities and equipment	Applicable
Safety	Legislation applicable U.K. only; general precautions and advice applicable to all

A4.4.2 'BLACK-OUT' AREAS

To avoid visibly unsightly areas between panels and through gaps, the application of matt black paint is required in certain areas. It should be noted that this process is NOT required on dark colored vehicles. The paint, which should have a heat resistance of 40° to 120°C should be applied in accordance with Fig. 1 to the areas marked with an asterisk (*).

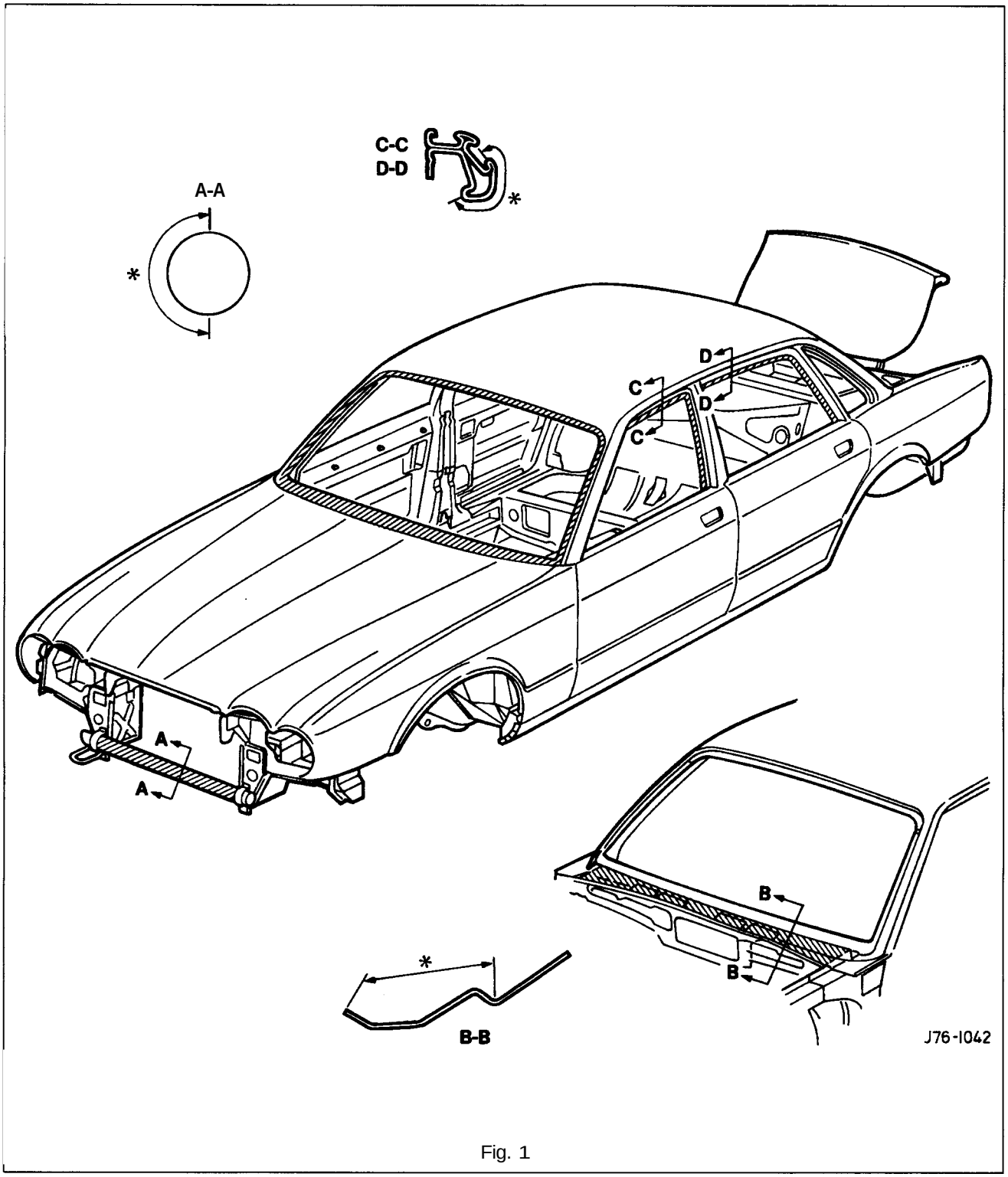


Fig. 1

A4.4.3 ANTI-THEFT LABELS, (NORTH AMERICAN MARKET ONLY)

A4.4.3.1 Original Components

North American specification vehicles have the VIN marked on all major external panels, certain structural members and power / transmission units. The labels which carry this information are known as 'Label - anti-theft VIN (USA body panel only)' or 'Label - anti-theft - engine and gearbox (U.S.A. only)' (A Fig. 1), see location illustrations.

A4.4.3.2 Replacement Components

When a vehicle suffers damage, only genuine Jaguar replacement panels / units should be used in the repair; further, if any parts originally carried a VIN label then a different type of label MUST be affixed 'Label - anti-theft replacement part (USA body panel only)' or 'Label - anti-theft replacement part - engine and gearbox (U.S.A. only)' (B Fig. 1), NOT in the same location as the previous label, see location illustrations.

A protective mask is used to prevent the replacement part label from being damaged or obscured during the refinishing / protection processes. This protective mask MUST be removed prior to customer hand-over.

Note: All service panels are supplied in electrocoat primer and where appropriate MUST have an anti-theft label in the correct location.

A4.4.3.3 Procurement

Anti-theft labels may only be ordered from Jaguar Cars through:

Product Compliance Dept.,
Jaguar Inc.,
555 MacArthur Blvd.,
Mahwah
NJ 07430

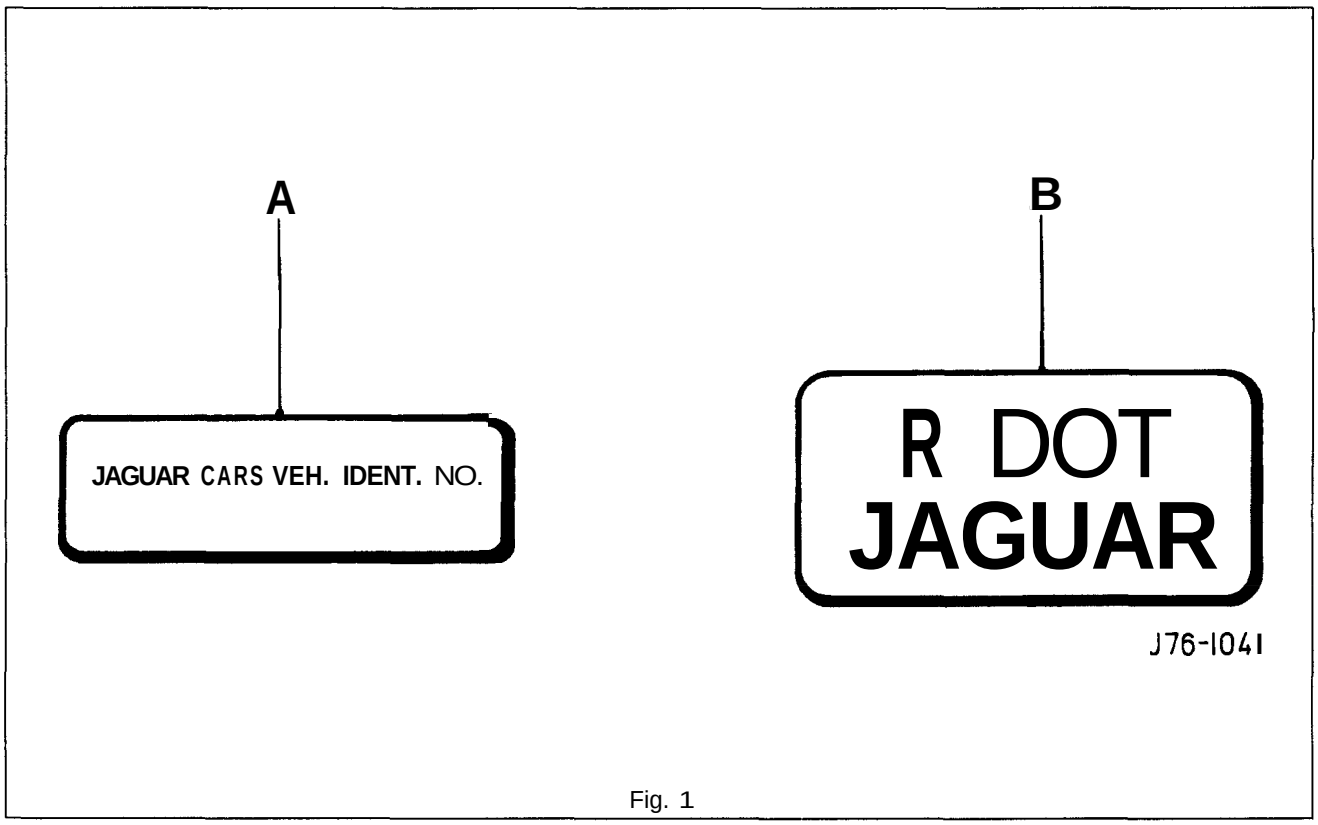
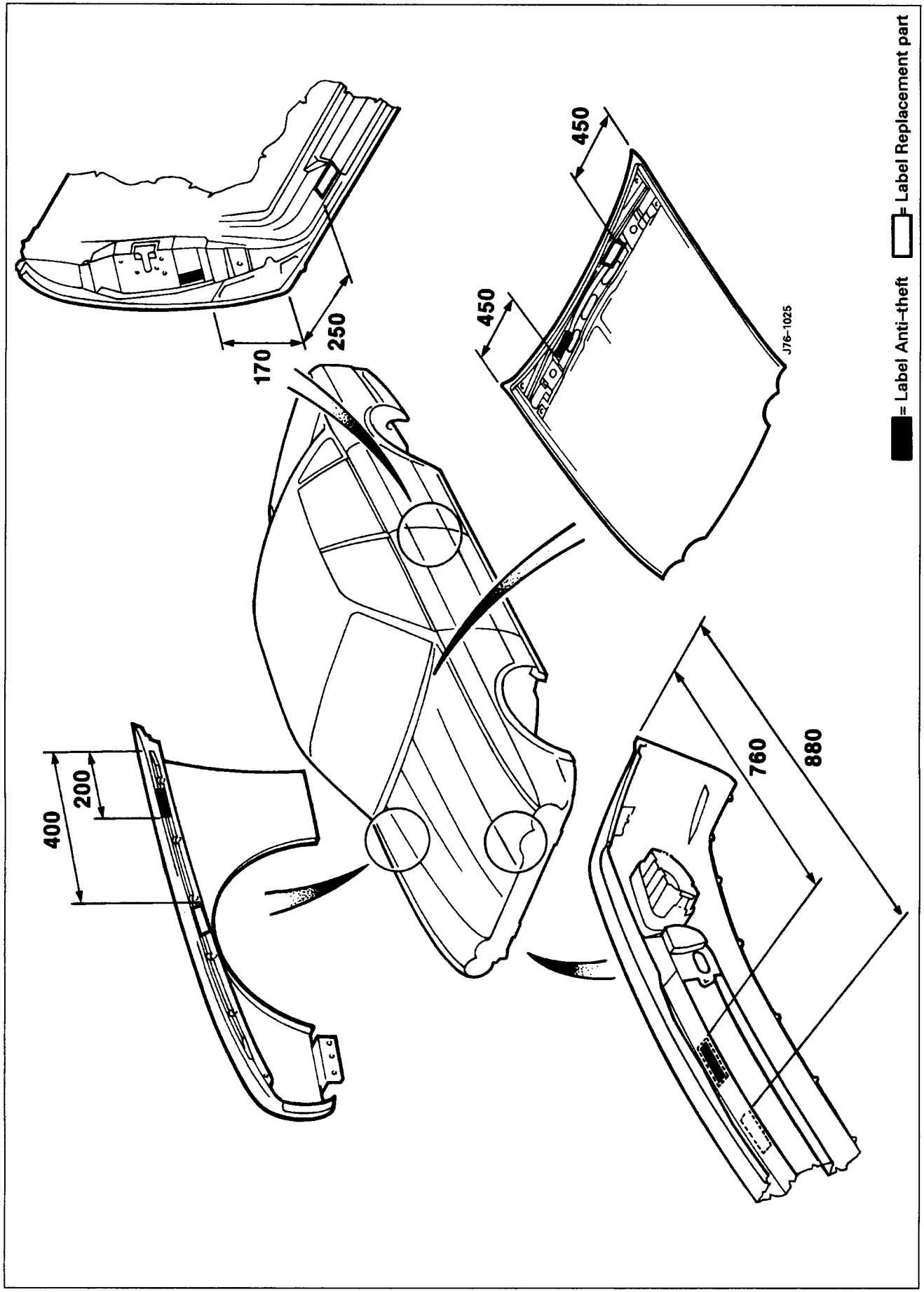
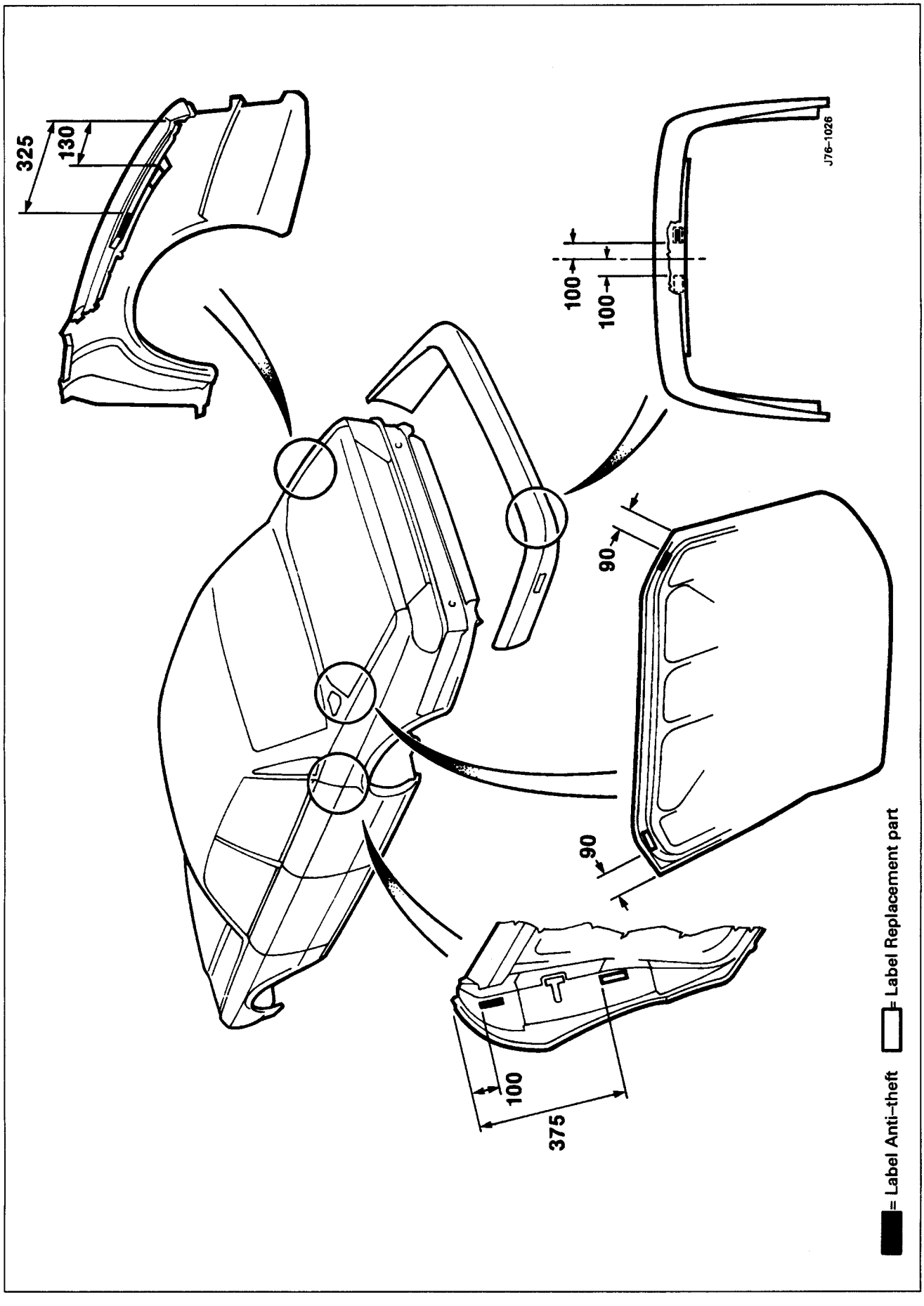


Fig. 1

A4.4.3.4 Location of Anti-theft Labels – Front



A4.4.3.5 location of Anti–theft labels – Rear



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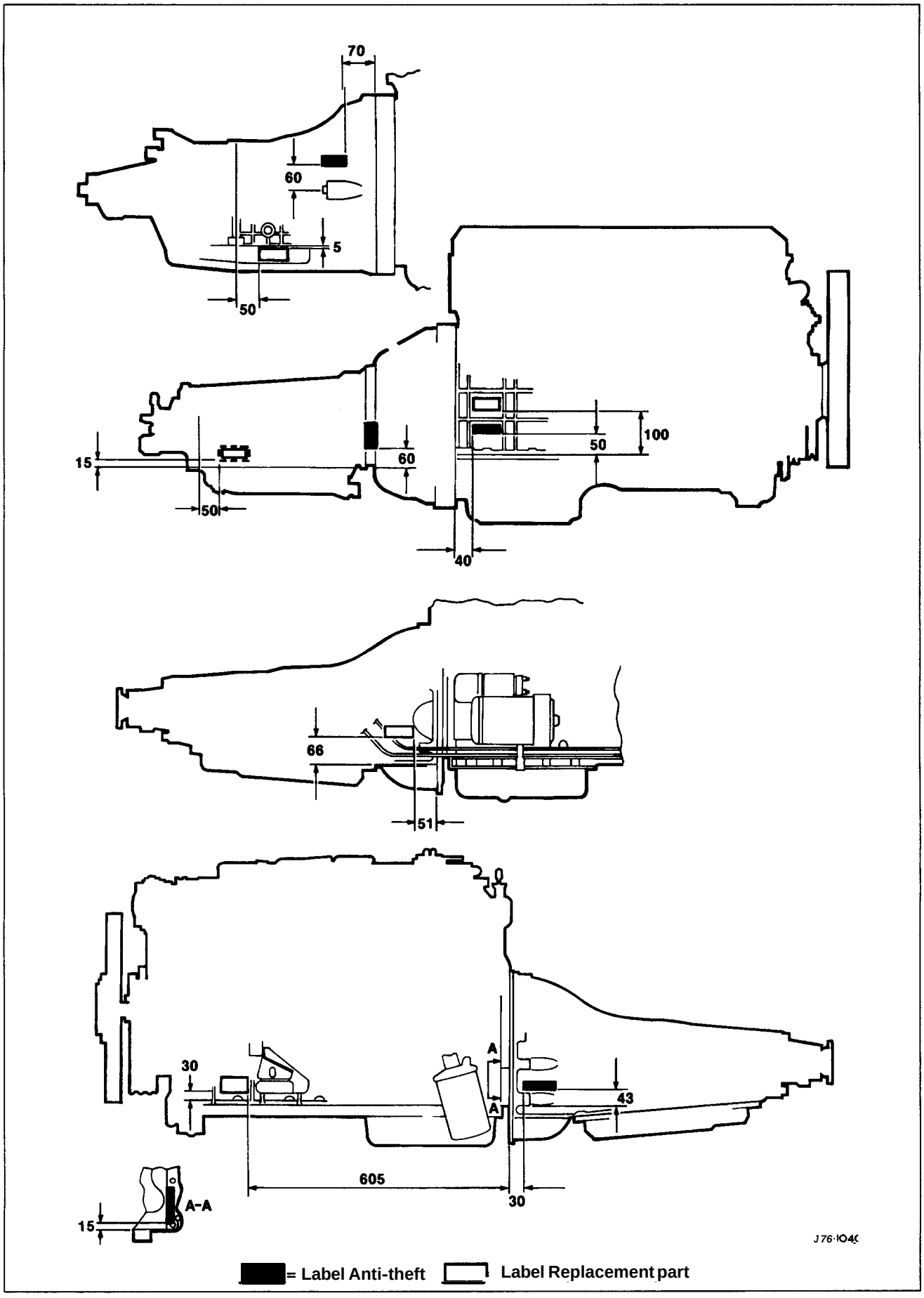
A4.4.3.6 Location of Anti-theft Labels – Power unit and Transmission



A4.4.3.7 Fitting Process

- Fit and fully secure the replacement panel(s), if appropriate.
- Using a suitable solvent clean the area where the anti-theft label should be affixed.
- Peel the backing from the label and position on the panel.
- Carry out ALL refinishing / protection processes.
- Remove the anti-theft label protective mask prior to vehicle handover to the customer.

Note: Any attempt to remove an anti-theft label will destroy that label. Please ensure correct location before affixing.

CAUTION: **It is a requirement of the United States of America federal law that the protective mask is removed from the anti-theft label after performing painting and rustproofing operations. FAILURE TO COMPLY MAY RENDER BOTH THE MANUFACTURE AND THE DEALER IN VIOLATION OF THE FOLLOWING LAWS.**

Statute	
Federal Motor Vehicle Theft:	51 FR 8831, at 8835, March 14 1986 Prevention Standard
Motor Vehicle Information:	15 U.S.C. 2027(a) (4) (B) and Cost Savings Act 2027(b), sections 607(a) (4) (B) and 607(b).

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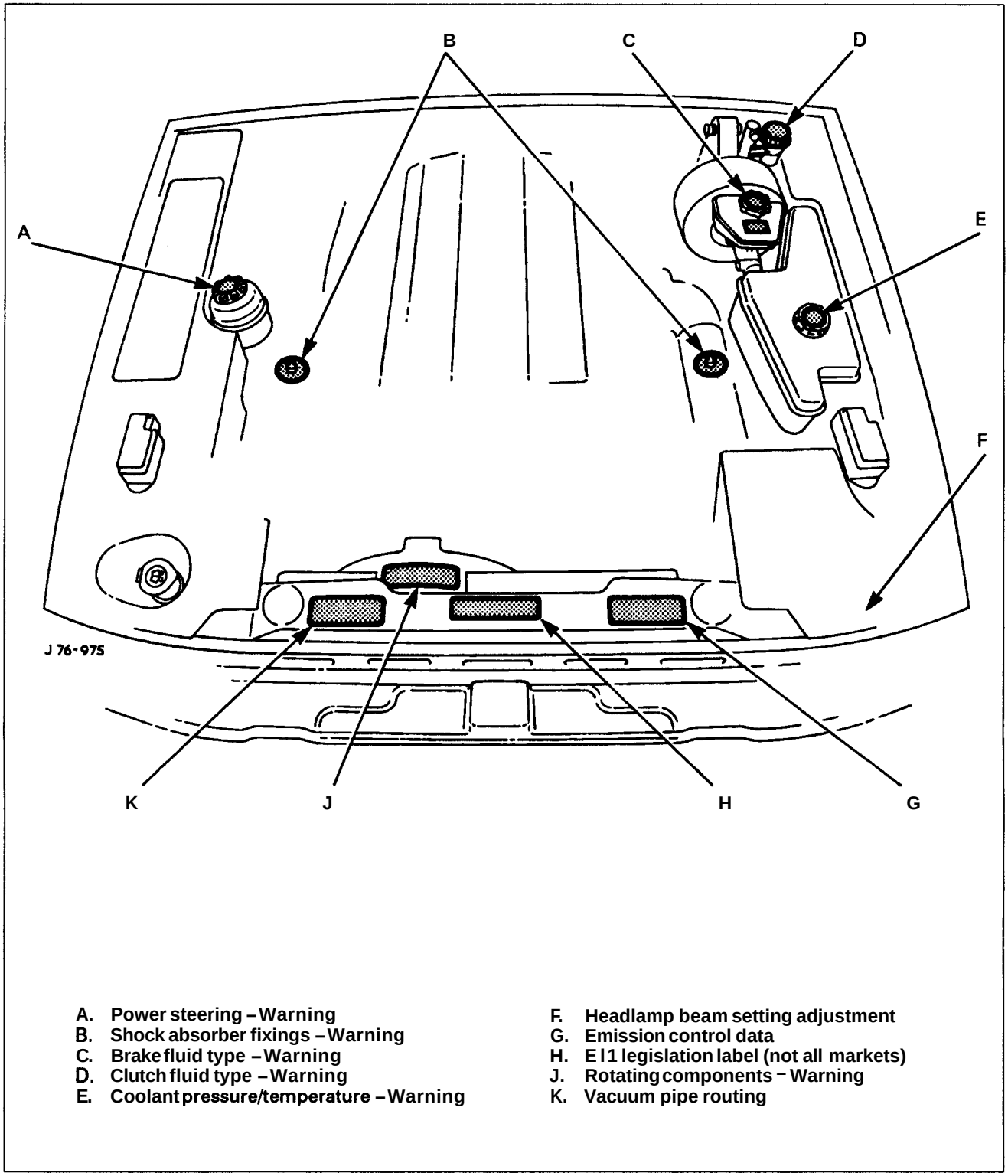
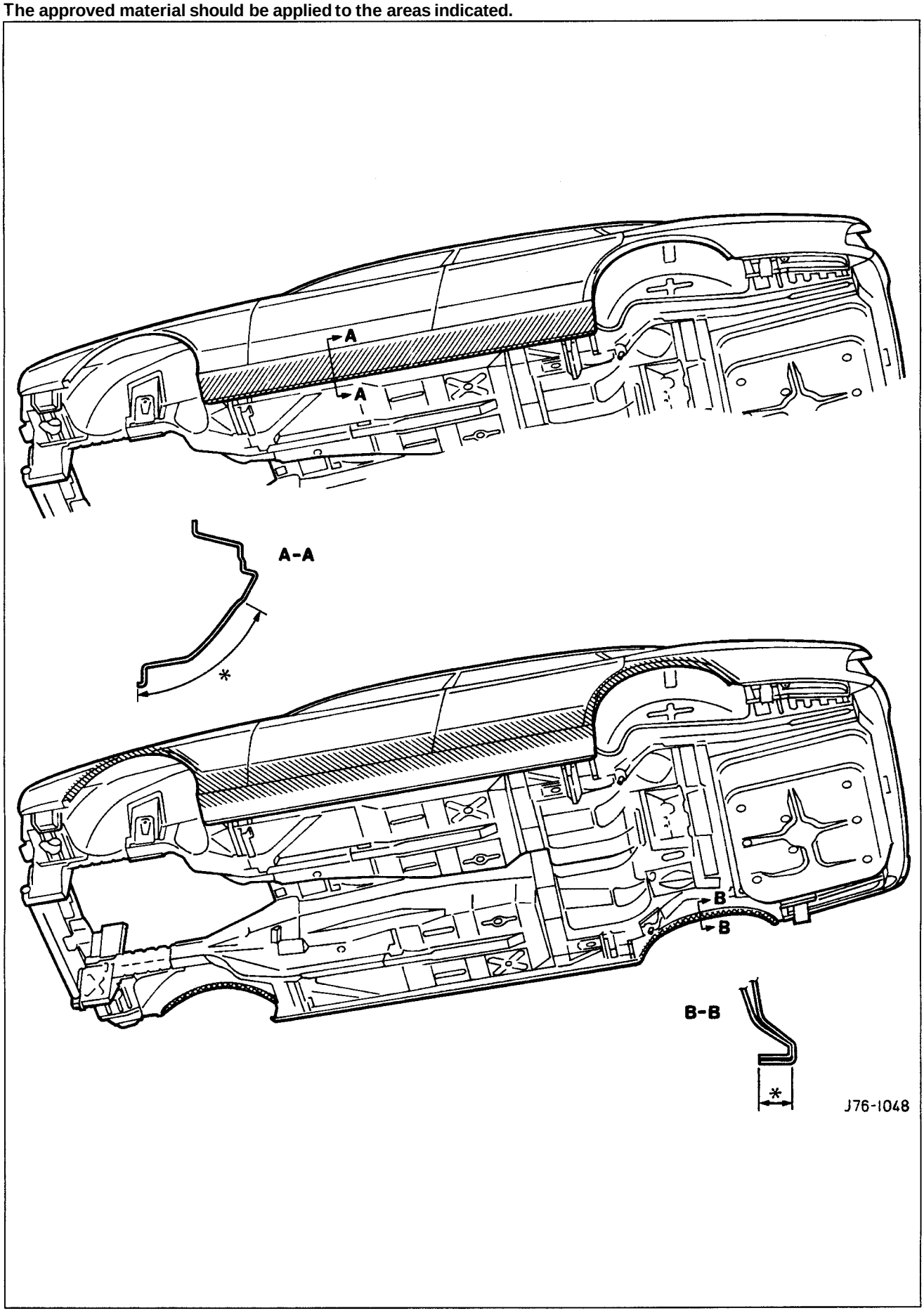
A4.4.4 UNDER-HOOD LABELS



A. Power steering – Warning
B. Shock absorber fixings – Warning
C. Brake fluid type – Warning
D. Clutch fluid type – Warning
E. Coolant pressure/temperature – Warning
F. Headlamp beam setting adjustment
G. Emission control data
H. E l 1 legislation label (not all markets)
J. Rotating components – Warning
K. Vacuum pipe routing

A4.4.5 STONE-CHIP PROTECTION, APPLICATION

The approved material should be applied to the areas indicated.



A4.5 GLAZING

A4.5.1 Special notes

In order that the design condition of the vehicle is preserved when direct glazing repairs are carried out, it is essential that both the applied materials and processes are as stipulated.

A4.5.1.1 Glass and Body Preparation

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The preparation methods and materials, as used with the Betaseal HV3 system on previous Jaguar vehicles, are fully compatible with the current sedan range.

Ease of working and extended process time may be gained by ensuring that the vehicle body and replacement glass are 'soaked at room temperature, a minimum of 20°C, prior to adhesive application and fitting.

Should damage occur to the body flange finish, rectify as appropriate with the full paint refinishing process as described in the 'Paint Refinishing Manual' see section 4.4.1.1.

A4.5.1.2 Adhesive Application Temperature

The specified adhesive has a high viscosity and is not easily applied at 'room temperature' using conventional methods. When the adhesive is applied it chills rapidly on contact with the body and reverts to the hard condition, thus providing full retention (not full strength) within minutes.

Raising the temperature of the adhesive lowers the viscosity and speeds up the flow. It is recommended therefore that the adhesive is pre-warmed in a heated cabinet for a minimum of 20 (twenty) minutes and the extrusion gun has integral heating elements, see Preliminary pages for details.

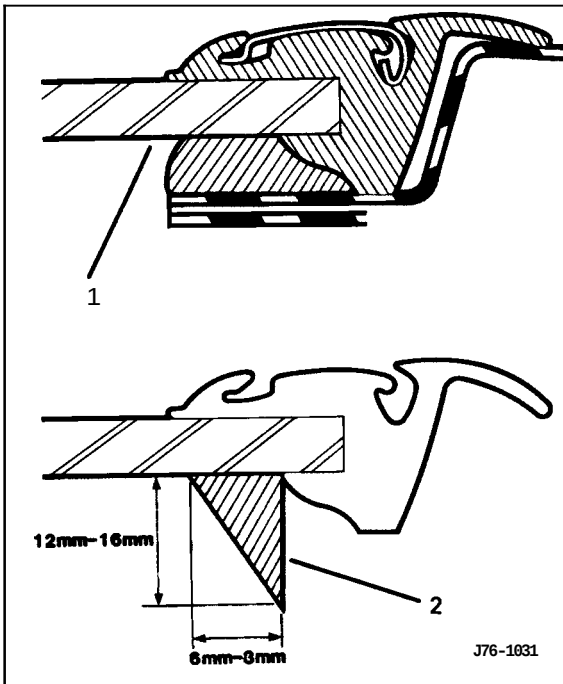
		Application time - including positioning
Optimum temperature	60°C - 70°C	4 minutes
Maximum Temperature	75oc	
Minimum temperature	35°C	Will not bond

A4.5.1.3 Adhesive Application

CAUTION: The glass will not bond to the body if the time taken to apply the adhesive AND position the glass. exceeds the stated limit.

It is recommended that the bead of adhesive conforms to the shape and dimensions as shown in Fig. 1 and is positioned along the edge of the rubber.

Note: The depth of the glass and thus the thickness of the adhesive, is controlled by the screen rubber 'bottoming' on the body flange.



1. Fitted condition
2. Bead application

Fig. 1

A4.5.1.4 Adhesive Curing

The specified polyurethane adhesive cures by exposure to moisture and NOT by heat. Cure times may vary considerably and are dependant upon ambient humidity levels, however the initial 'chill off will occur within 1 to 4 minutes, after which the screen may not be moved (this is entirely dependant upon the application temperature and rate of cooling).

A4.6.1 BUMPERS

A4.6.1.1 Major Components

The sedan range bumper system comprises of:

- Bumper cover.
- Mounting struts.
- Beam.
- Guide blocks.
- Integrated lamps.
- Chromium plated stainless steel upper trim blades.
- Brake ducts.
- Under tray.
- Grille vane

Note: See illustration, following page.

A4.6.1.2 Features

- One–piece moulded bumper / spoiler, finished in body colour (see note, sub section A4.1.6).
- All components and harnesses may be sub–assembled on the bench and the complete assembly then fitted to the vehicle.
- Fully height adjustable front and rear (strut or mounting) and side (guide block).
- Energy absorbing struts on North American market vehicles, which comply with US and Canadian legislation (FMVSS 007 and CMVSS 215).
- Fixed struts on 'rest of world' vehicles.
- Aluminium beam on North American market vehicles.
- Plastic beam on 'rest of world' vehicles.
- Indicator, fog and reflective (or illuminated) side marker lamps are removable from front and the fog lamps are adjustable from beneath.
- Blanking grilles fitted where fog lamps are not specified.

Note: The grille vane MUST be removed before the front towing eye may be used. Quick release fasteners fix the vane to the cover and are accessed from the front.

A4

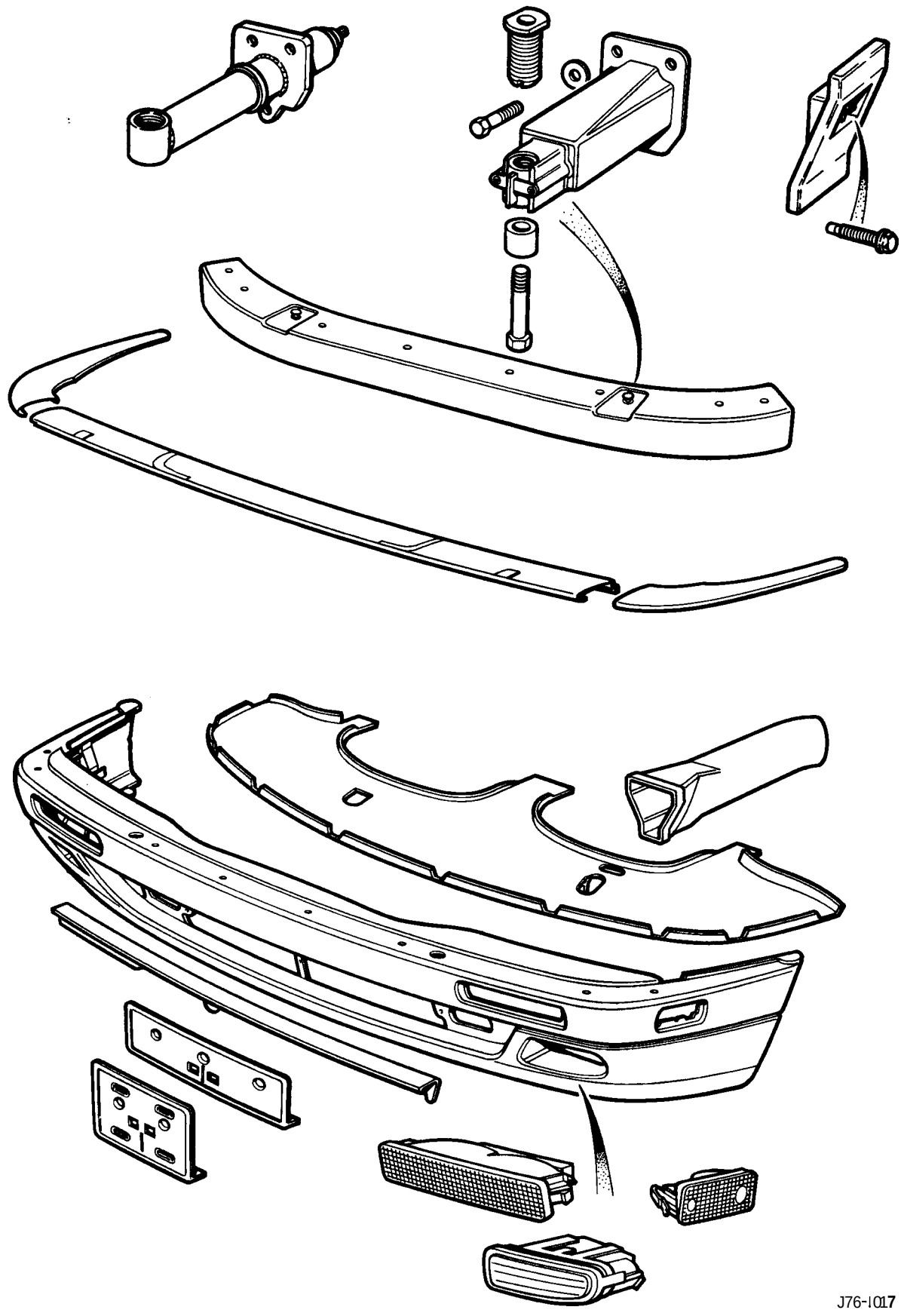


Fig. 1 Front bumper - Typical components

A4.6.1.3 SERVICE PROCEDURES

A4.6.1.4 Fitted Condition (Front)

The following procedures may apply should any part of the bumper mounting system, or cover, be renewed but should not be necessary if the cover is removed for service reasons.

- The front mountings must initially be set for 'cross car' pitch and center within the clearances around the strut to body fixings.
- In order that the bumper top face, headlamp surrounds and grille lower have the correct relationship the strut height adjusters must be finally **set** AFTER the cover is fitted.
- Set the guide blocks to the specified dimension to achieve the correct bumper to fender gap, BEFORE fitting the cover because adjustments can only be made with the cover off.
- With all fixing points **set,** the bumper cover may be fitted and adjusted as necessary to achieve the specified gap conditions.
- Tighten all fixings to specification.

A4

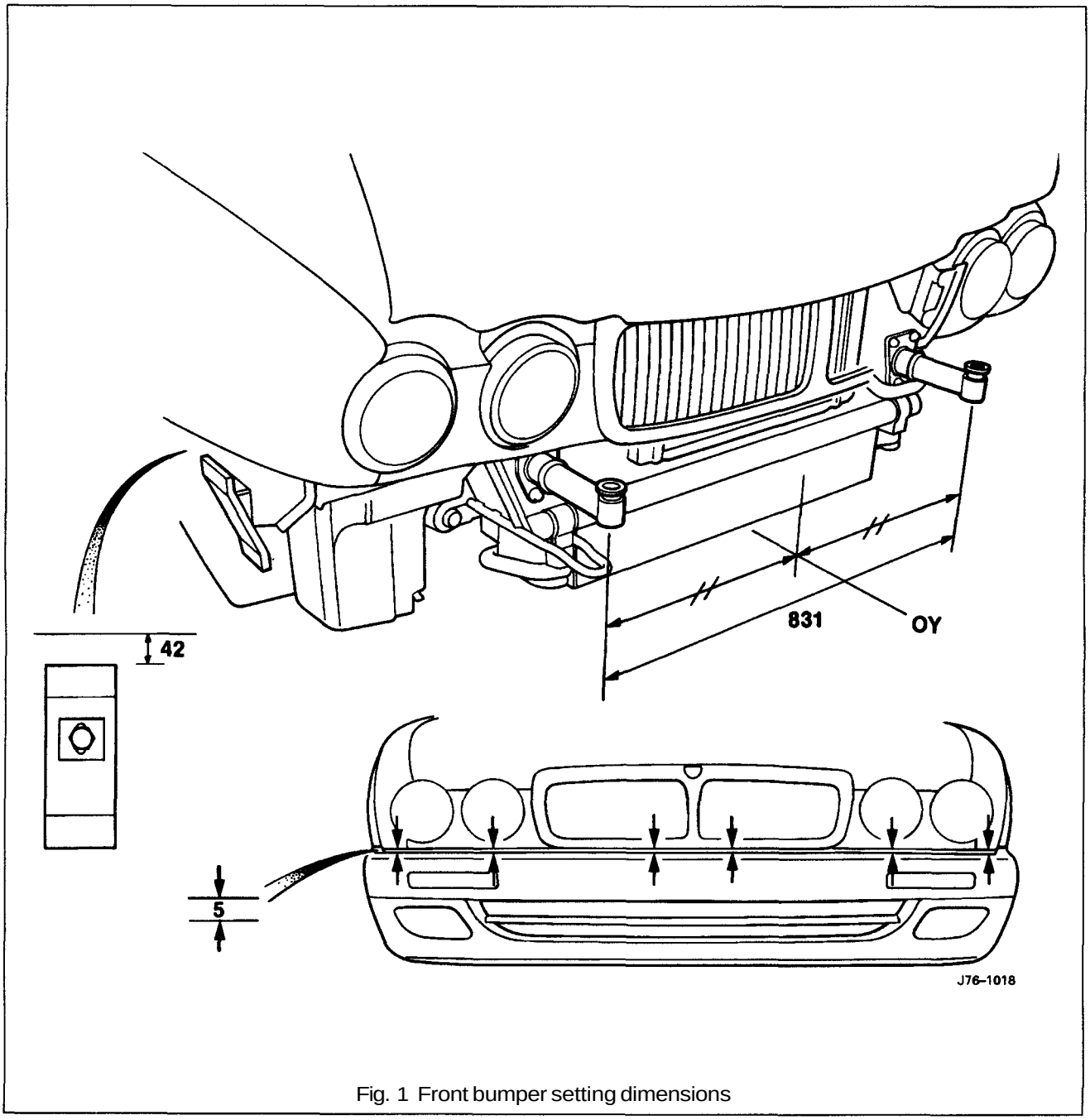


Fig. 1 Front bumper setting dimensions

A4.6.1.5 Fitted Condition (Rear)

The following procedures may apply should any part of the bumper mounting system, or cover, be renewed but should not be necessary if the cover is removed for service reasons.

- The rear mountings must initially be set for 'cross car' pitch and center within the clearances around the strut to body fixings.
- To initially achieve the relationship between the bumper top face and the rear panel, the strut height adjusters should be set to the dimension shown (Fig. 1) BEFORE the cover is fitted.
- Set the guide blocks to the specified dimension to achieve the correct bumper to fender gap, BEFORE fitting the cover, because adiustments can onlv be made with the cover off.
- With all fixing points set, the bumper cover may be fitted and adjusted as necessary to achieve the specified gap conditions.

A4

Note: Access to the beam height adjusters may be made with the cover fitted by removing the tailpipe trims.

- With the bumper correctly adjusted to the body and all fixings tightened to specification, it is important that the exhaust tailpipes are then centered within the bumper cover cut-outs. This may be achieved by slackening the rear section clamp and rotating the rear exhaust assembly. Please note that this may only be achieved before the tailpipe trims are fitted; these must also be correctly aligned for good appearance.

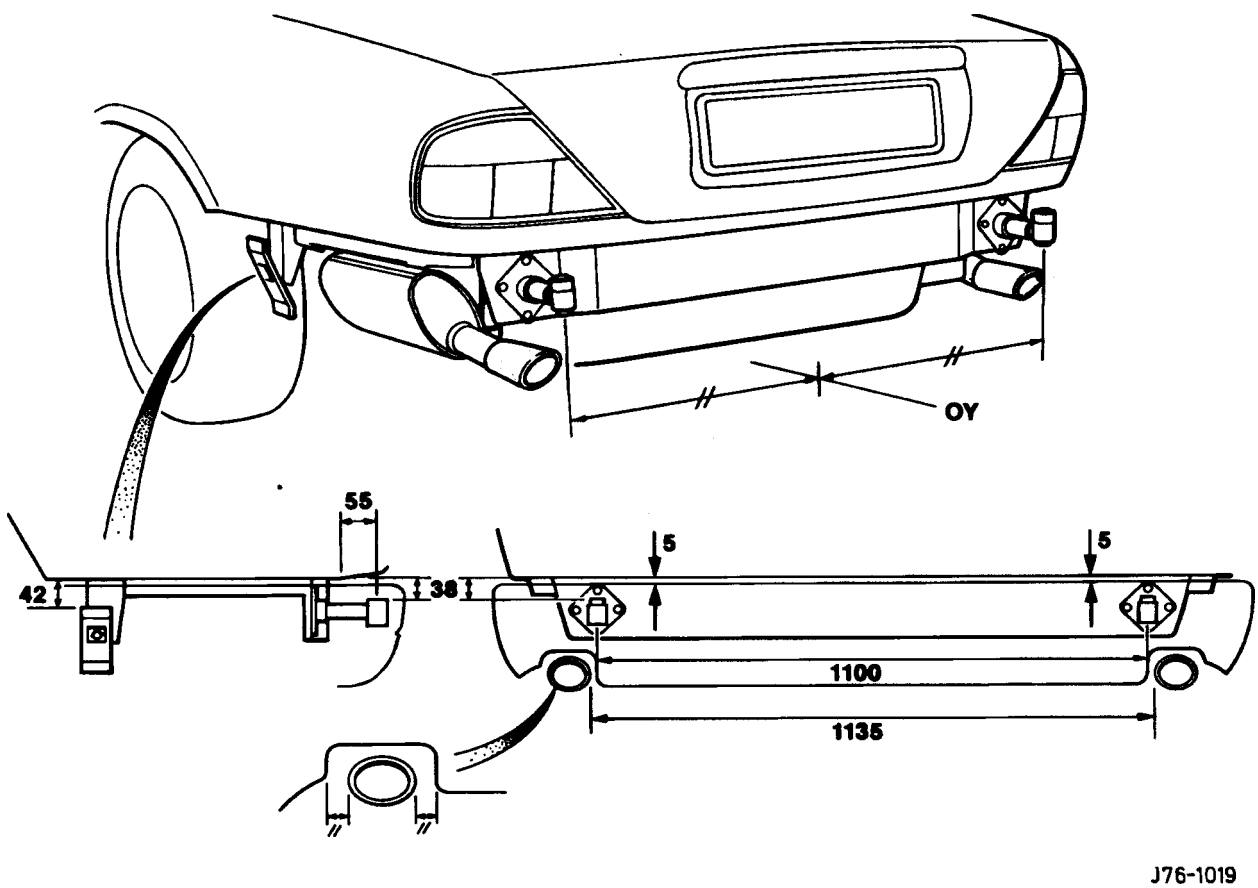


Fig. 1 Rear bumper setting dimensions

A4.6.2 COVER DAMAGE

A4.6.2.1 Damage Assessment

Prior to any action, damage should be assessed and categorized in accordance with the following, noting that if the cover has been 'holed' or torn, it should be discarded. The following categories are the only conditions which may be repaired.

Category	Damage
Cosmetic	Abrasion to surface paint finish only
Substrate surface	Deep scratches, gouges or localized radial stress cracks.
Substrate penetration	Splits not exceeding 100mm. Splits radiating from a gouge and accompanied by localized stress cracks.

CAUTION: Cosmetic appearance must not override safety.
Damage beyond category three will compromise the protective performance of the unit should repairs be effected, the cover MUST be renewed.
Due to the thermo-setting nature of the cover material, it is NOT possible to repair splits by heat or welding.

A4.6.2.2 Repair Materials

Repair of accepted damage for categories 2 and 3 may be carried out using products from;

3M '5900 FPRM' (Flexible part repair material)

Kent Industries 'Urepatch'

It is essential that the repair product manufacturer's recommendations and procedures are followed carefully.

A4.6.3 REFINISHING

The paint refinishing system must be approved by Jaguar Cars Ltd., and be appropriate for polyurethane substrate application. It is important that the finishing clear lacquer includes a plasticising ingredient (mixed to the manufacturer's recommendation) to reflect the 'semi–flex' condition of the factory finished item.

The effect of heat decreases the cover rigidity to the point that paint-cure temperatures require that the cover must be supported to prevent distortion and sagging; these comments apply to 'off-car' repairs.

A4.6.3.1 Original

On an original unit where damage has been repaired, the beam will provide sufficient support for the forward part of the unit. It is recommended that the side armatures are supported as they would be on the vehicle.

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A4.6.3.2 New

Where a new cover is required, the beam may be temporarily fitted prior to painting to provide the necessary support.

A4.6.3.3 All

A simple jig (Fig. 1) should be made to hold the unit in the correct working attitude for both damage repair and refinishing.

CAUTION: **During heat cure, the effective panel temperature must not exceed 95°C.**

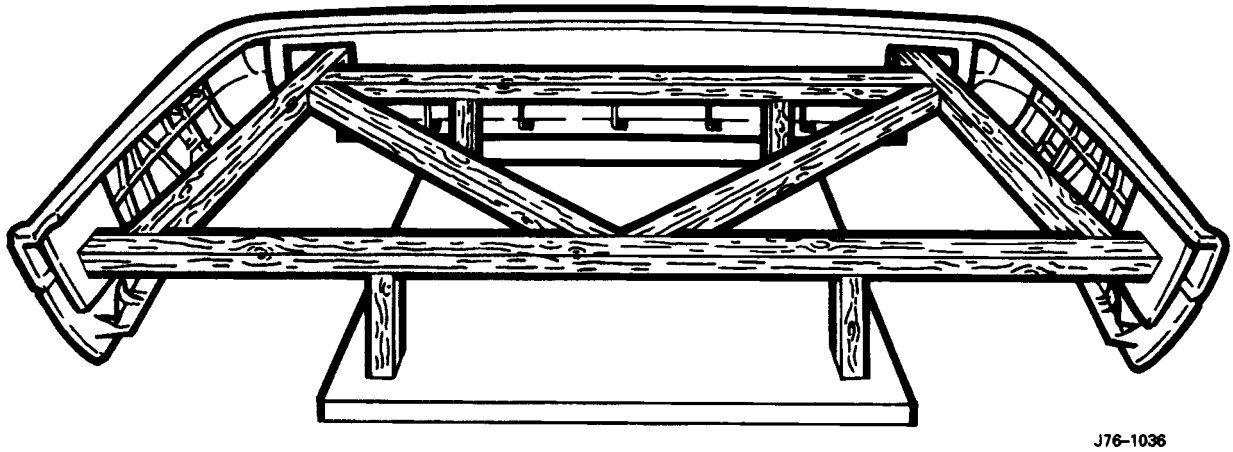


Fig. 1

A4.6.4 REPLACEMENT COVERS

Replacement covers will be supplied in a primed condition and therefore must be finished in accordance with A4.6.3, this page.

Bumper covers and replacement fixings such as bumper beam adjusters and guide blocks must be fitted and adjusted as detailed in A4.6.1.4 and A4.6.1.5, this section.

A4.6.5 RECYCLED MATERIALS – GENERAL NOTE

The aluminium bumper beam, as fitted to North American specification vehicles, should not be over–looked as a component for recycling.

Side armatures will be fully assembled in replacement bumper covers, please see 'note' Recycled materials, this section, for important information.

A4.6.6 BODY-SIDE MOULDINGS

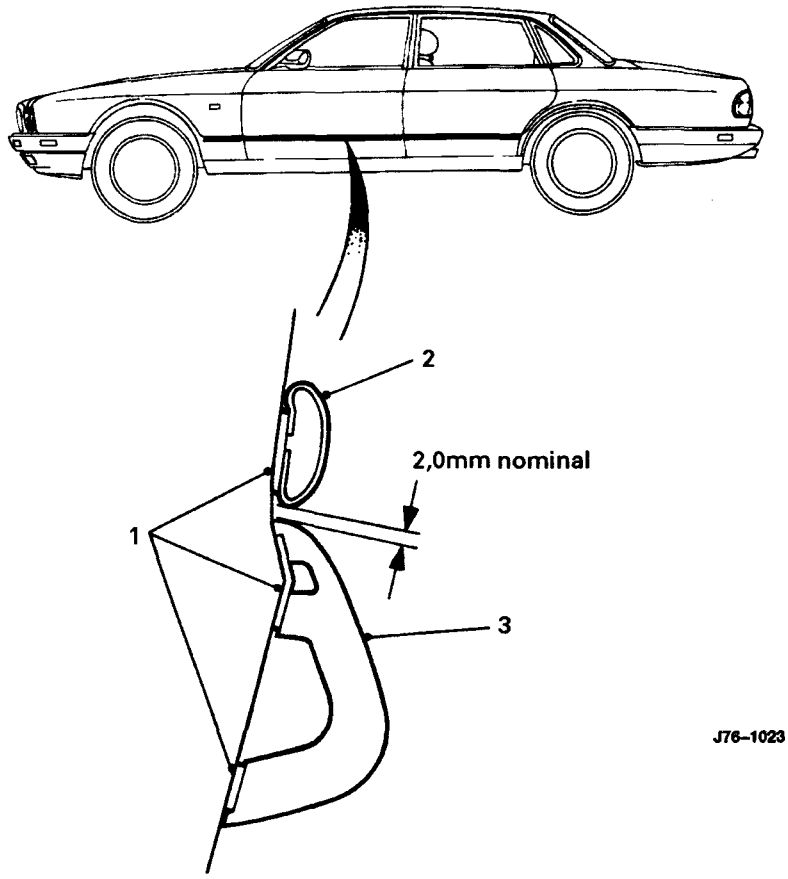
A4.6.6.1 Introduction

There are two types of moulding fitted to the standard wheelbase sedan.

The lower moulding is 'self-locating' on the body / door lower feature line and therefore provides a fixed datum for the location of the upper moulding (where fitted). Replacement lower mouldings will be supplied in a primed condition and therefore must be finished in accordance with A4.6.3, this section.

Location	Finish	Application	Fixing method
Upper	Polished stainless steel	Daimler / VDP	Adhesive tape
Lower	Body color	All models	Adhesive tape

A4.6.6.2 Body-side Moulding - Fitted Condition



1. Adhesive tape 2. Moulding, Daimler / VDP. 3. Moulding, All models

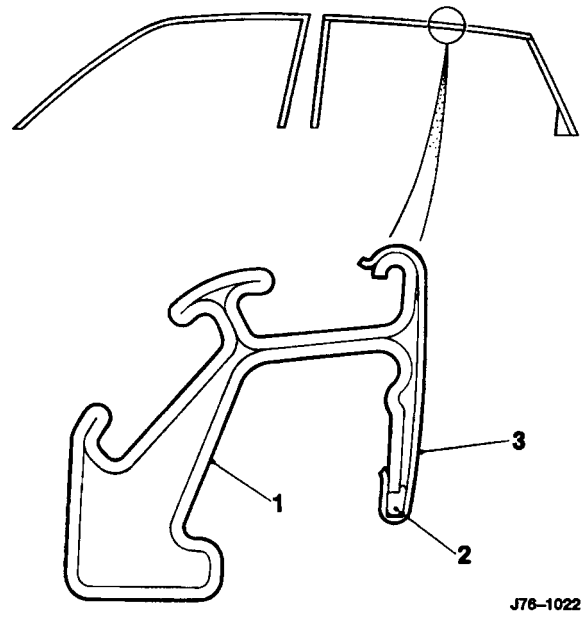
Fig. 1

A4.6.6.3 Fitting process

- 'Spirit wipe' appropriate body panel and where appropriate protect against damage.
- Gently warm body panel and moulding using infa-red lamp or similar.
- Lower moulding - align to body feature and other mouldings if appropriate, and secure into position.
- Upper moulding - align to lower moulding for distance (Fig. 1) and parallelism and other mouldings if appropriate, and secure into position.
- Apply an even pressure along the moulding to fully secure to the panel.

A4

A4.6.7 FINISHER – DOOR FRAME



1. Section, door frame
2. Compression cord
3. Frame finisher

Fig. 1

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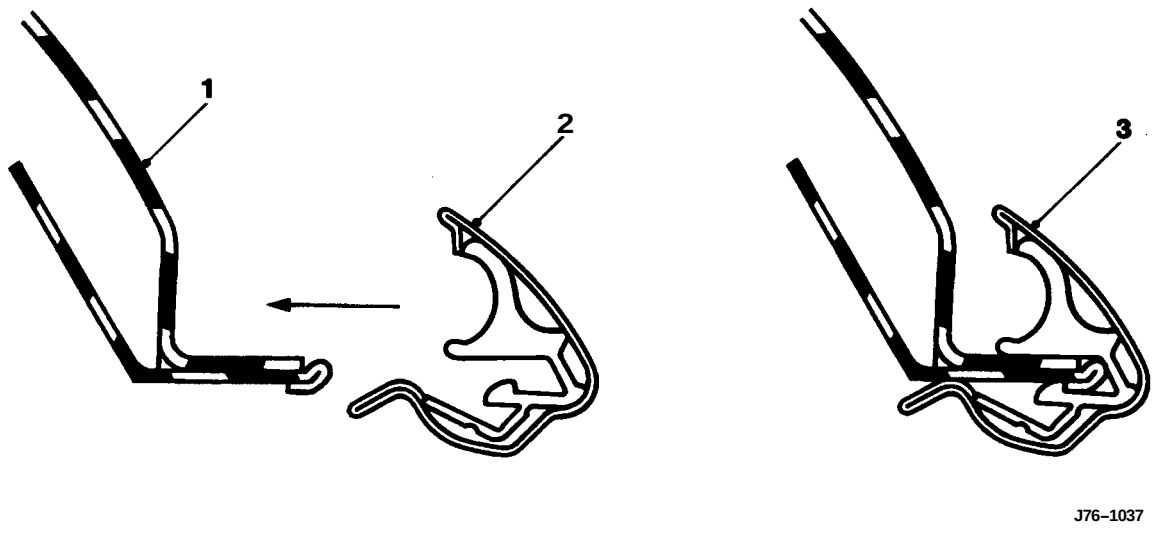
A4.6.8 FINISHER – ROOF DRIP RAIL



1. Section, roof
2. Drip rail finisher assembly
3. Assembled condition

Fig. 2

A4.7.1 BODY EXTERIOR CLEARANCES AND ALIGNMENTS

A4.7.1.1 Introduction

Wherever a panel, closure or component is renewed, refitted or reset, the factory specifications for clearance (gap) and alignment (profile) MUST be attained.

There is no distinction between the importance of visual and operational characteristics; all conditions must be satisfied so that the vehicle looks and operates to the satisfaction of both design intent and the customer.

A4

A4.7.1.2 Criteria – Clearances

- Gaps should be uniform around body panel contours.
- Gaps must be parallel to within 1mm in a 400mm linear measurement.
- Panels which are centered between 2 (two) adjacent panels must have equal gaps either side; there are exceptions to this, please refer to the appropriate specification.
- Gaps between adjacent panels or components must not expose harnesses, labels, brackets or visually poor joint or assembly conditions.

Particular areas of concern:

Fuel filler flap.

Trunk lid to fenders and saddle.

Hood to fenders, grille and headlamps.

Sliding roof panel to the main roof panel.

Door gaps at fender, 'B / C' pillar, roof drip rail and rocker panel.

Bumper cover to fender and cross car assemblies (see section A4.6.1.4 & A4.6.1.5).

Note: Please note that the sliding roof panel clearances are specified WITHOUT the edge seal, refer to the illustration on the following page.

A4.7.1.3 Criteria – Alignment

- Panels must be correctly 'profiled' to maintain cosmetic appearance, pressure on seals and control wind noise.

Particular areas of concern:

Hood to fender.

Trunk lid to fender and saddle.

Door to aperture.

Door to fender and adjacent door.

The relationship of the sliding roof panel leading and trailing edges to the main roof panel.

A4.7.1.4 Criteria – Exterior Fitments

- Bezels, trims and lamps must be centered within apertures and have equal clearances with adjacent panels.

Particular areas of concern:

Headlamp to hood, fender and trim panel.

Exhaust tailpipe trim to bumper cover cut-out.

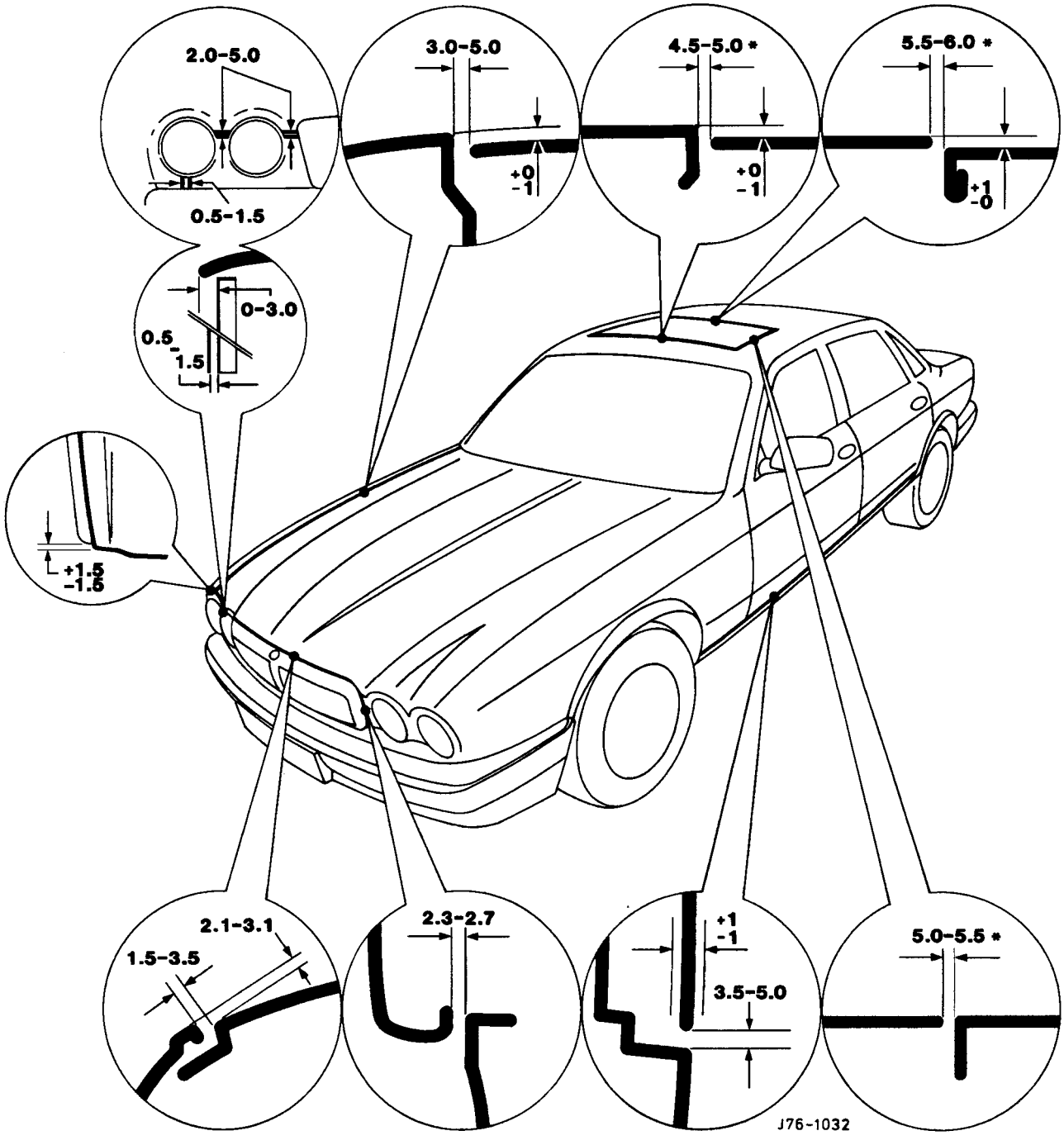
Rear lamp assembly to trunk lid, fender and bumper cover trim.

Feature lines fender to door and door to door (this includes body side mouldings).

A4.7.1.5 Exterior clearances and alignments, Illustrations

Specifications for gaps and profile may be found on the illustrations on the following three pages.

A4



• Refer to A4.7.1.2, this section

Fig. 1

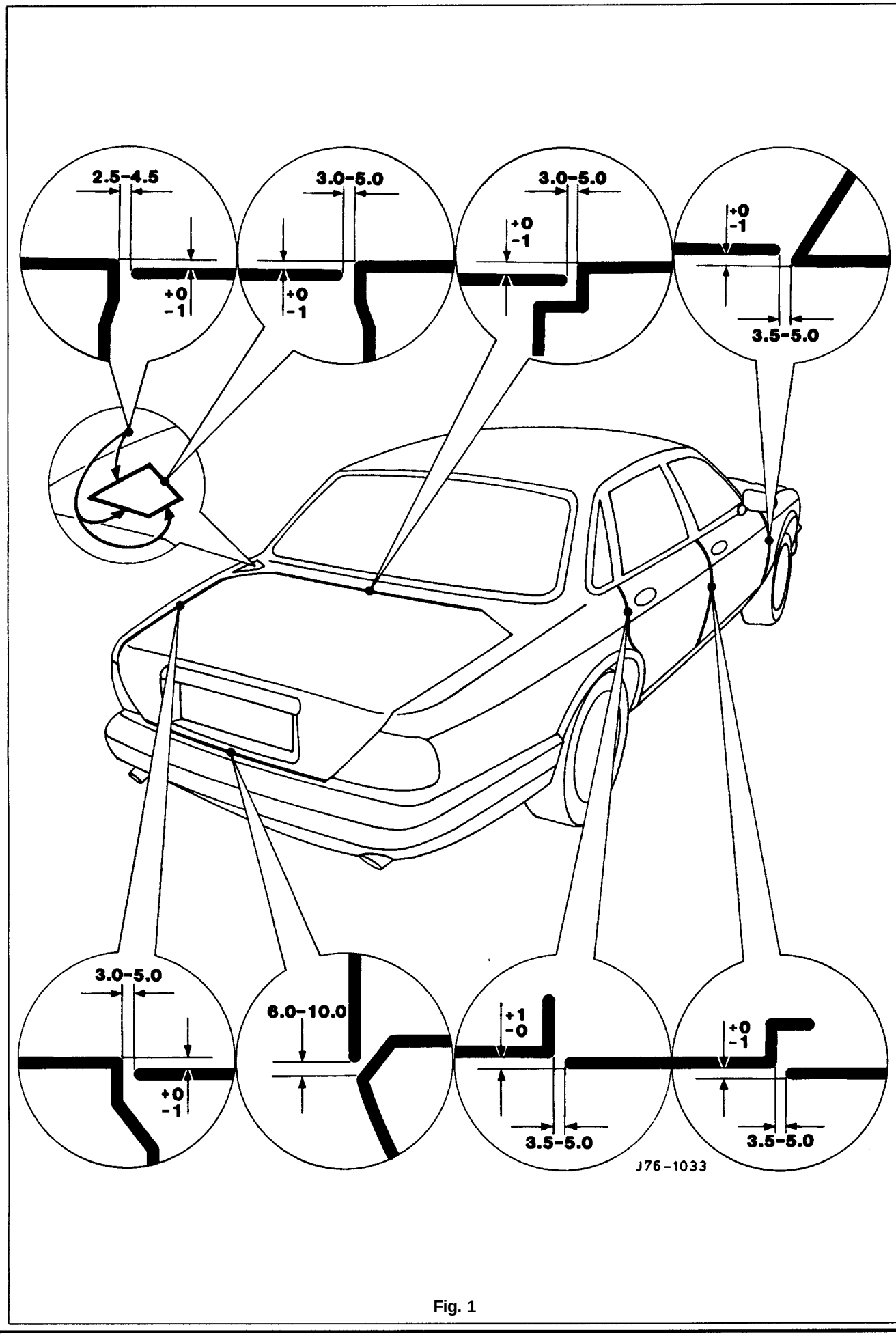

2.5-4.5
+0
-1
3.0-5.0
+0
-1
3.0-5.0
+0
-1
+0
-1
3.5-5.0
3.0-5.0
+0
-1
6.0-10.0
+1
-0
3.5-5.0
+0
-1
3.5-5.0
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Fig. 1

A4

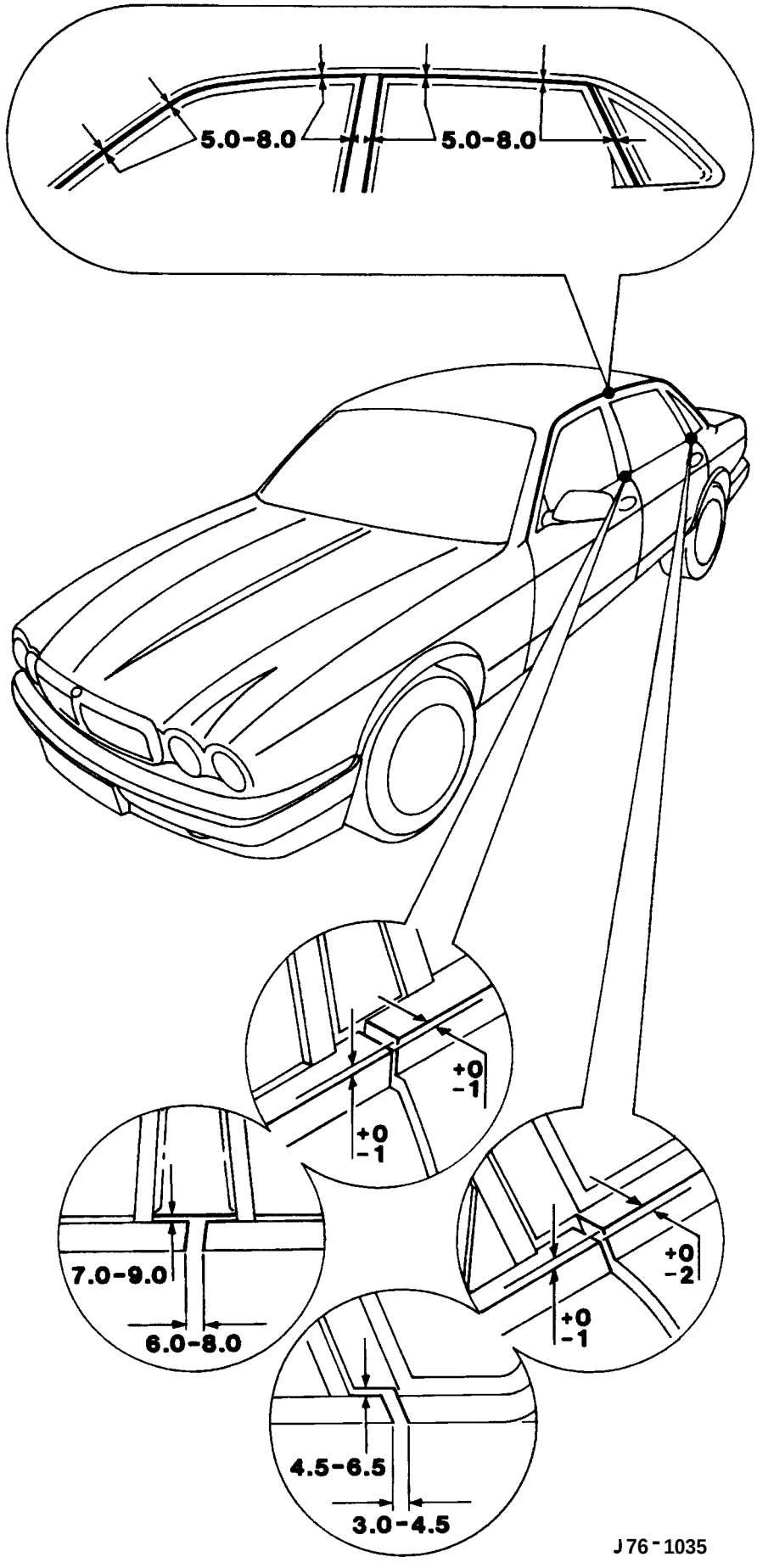


Fig.1

A4.7.2 DOORS

A4.7.2.1 Features

The doors feature:

Lubricated for life 'lift-off' hinges.

Welded drop glass frames.

Integral primary and secondary seal channels.

A4.7.2.2 Removal

- Apply tape as Fig. 1to avoid paint damage during the removal process.
- Disconnect door harness at connector.
- Remove locking screws Fig. 2.
- Disconnect check-arm fixings at the body Fig. 2.
- Open the door fully, carefully **lift** and disengage from the hinge pins,

A4.7.2.3 Fitting

- Before re-fitting the door assembly, all traces of thread locking compound must be removed from the hinge pins; careful use of a suitable thread tap is recommended.
- Refit the door assembly and secure to specification using new locking screws.

Note: There is no need to lubricate the hinge when refitting the door.

- Apply grease to the check-arm **3** Fig. 2
- Ensure correct alignment and remove the protective tape.

A4.7.2.4 Alignment

Hinges are set during the body manufacturing process and should not require adjustment during the life of the vehicle. However, where damage has been sustained at the body or door hinge location points, please refer to 'Body fits and clearances' section A4.7.1.5 for setting criteria.

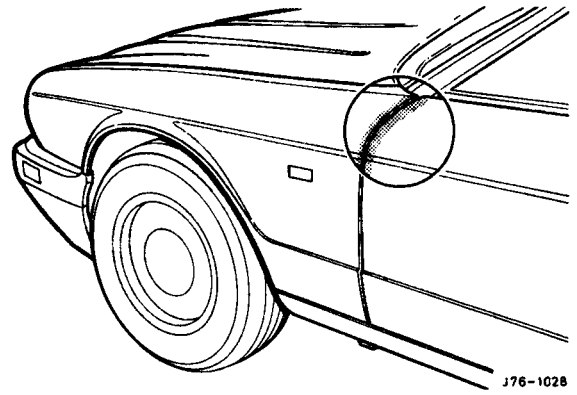
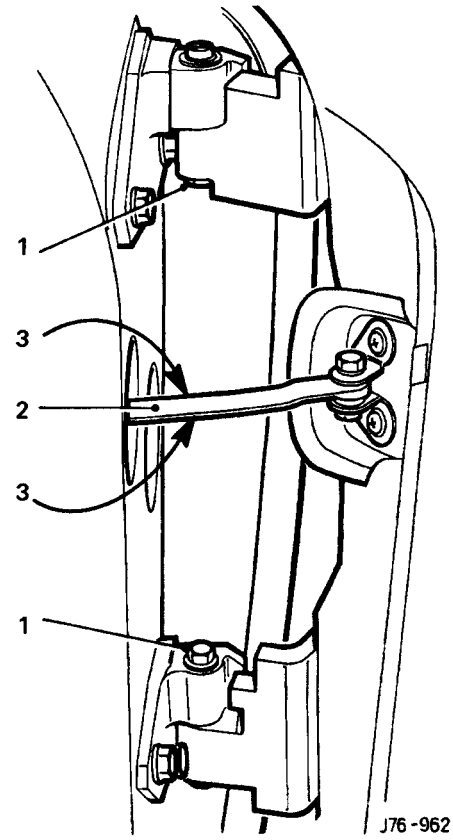


Fig. 1



1. Locking screw
2. Check arm
3. Grease

Fig. 2 Detail front door

A4.7.2.5 Seals

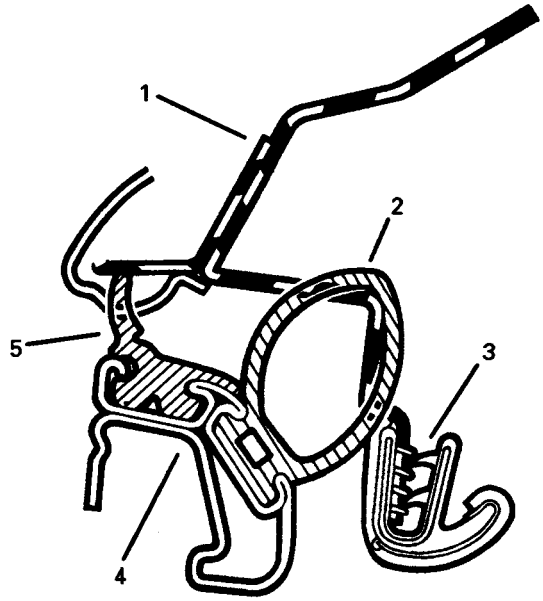
Title	Material	Location	Fixing method	Note
Primary	Sponge rubber, hollow section	Door periphery	'C' channel in upper frame and 'pegged' to door inner panel	
Secondary	Sponge rubber, solid section	Door upper frame	'C' channel in frame	Outboard of primary
Draught welt	Metal reinforced rubber extrusion, cloth covered	Door aperture periphery	Flange edge straddle	

A4

A4.7.2.6 Typical Door Seal Sections

The relationship of the seals to the door and body aperture can be seen in Fig. 1. Please note that the seals are shown in the natural state, ie not deformed by the door being in the fully closed position.

1. Section, roof / door aperture
2. Primary seal
3. Draught welt
4. Section, door frame upper
5. Secondary seal



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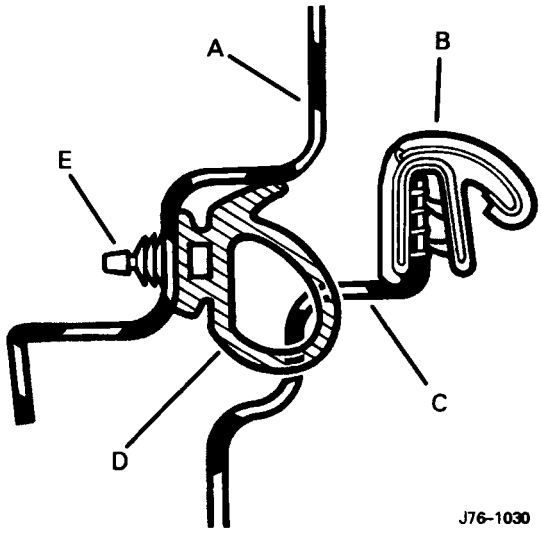

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A. Section, door lower at waist
B. Draught welt
C. Section, body aperture at waist
D. Primary seal
E. Peg, primary seal to door

Fig. 1

SECTION CONTENTS

A5

A5.1 SYSTEM DESCRIPTION

The vehicle closures switching system comprises the security and central locking features applicable to that vehicle variant, as detailed in the table below. Central locking and security systems are controlled by a common electronic module designated as the Security and Locking Control Module (SLCM). The term closures refers to items which allow access to the vehicle interior and therefore must be closed when the vehicle is fully alarmed. these components are doors, windows, trunk, hood and sliding roof.

	Method of Operation	UK / EUROPE			R O W			NORTH AMERICA		
		XJ16 / Sport	SOV / XJ12	DAIM / DD6	XJ16 / Sport	SOV / XJ12	DAIM / DD6	XJ16 / XJR	VDP	XJ12
Locking										
Central locking	Key	X	X	X	X	X	X	X	X	X
Remote central locking	Remote	X	X	X	X	X	X	X	X	X
Deadlocking	Remote/ Key	X	X	X	X#	X#	X#	–	–	–
Two stage unlock	Remote/ Key	–	–	–	–	–	–	X	X	X
Drive away locks	Auto	X / DD	X / DD	X / DD	X / DD	X / DD	X / DD	X / DD	X/ DD	X/ DD
close	Switch	X	X	X	X	X	X	X	X	X
Interior trunk lid release	Switch	X	X	X	X	X	X	X	X	X
Flush sill buttons / intrusion override		X	X	X	X#	X#	X#	–	–	–
security										
Security system (base)	Remote / Key	X	X	X	O	O	O	X	X	X
Intrusion sensing (full)	Auto	X	X	X	(X) 1/	(X) 1/	(X) 1/	–	–	–
Inclination sensing	Auto	D	D	D	D 2/	D 2/	D 2/	–	–	–
Passive arming	Remote	D	D	D	D 2/	D 2/	D 2/	–	–	–
Panic alarm	Remote	D	D	D	D 2/	D 2/	D 2/	–	–	–
Audible tones (error / deadlock)	Auto	X / DD	X / DD	X / DD	X / DD	X / DD	X / DD	X / DD	DD	DD
Engine immobilization	Auto	X	X	X	(X) 1/	(X) 1/	(X) 1/	–	–	–
Convenience										
All close	Key	X	X	X	X	X	X	X	X	X
Headlamp convenience	Remote	X	X	X	X	X	X	X	X	X
Trunk lid release	Remote	X	X	X	X	X	X	X	X	X
Trunk valet isolate	Switch	X	X	X	X	X	X	X	X	X
Driver seat memory select	Remote	(X) 3/	X	X	(X) 3/	X	X	(X) 3/	X	X
Intrusion sensing override	Switch	X	X	X	(X) 1/	(X) 1/	(X) 1/	–	–	–

Key	Notes
X = Standard	1/ Standard with security system
O = Factory option	2/ Only available with security option
D = Dealer option	3/ Standard only with power memory seats
DD = Dealer deletable	
– = Not available	
# = Except Japan (as NAS)	

A5

Component Location Diagram

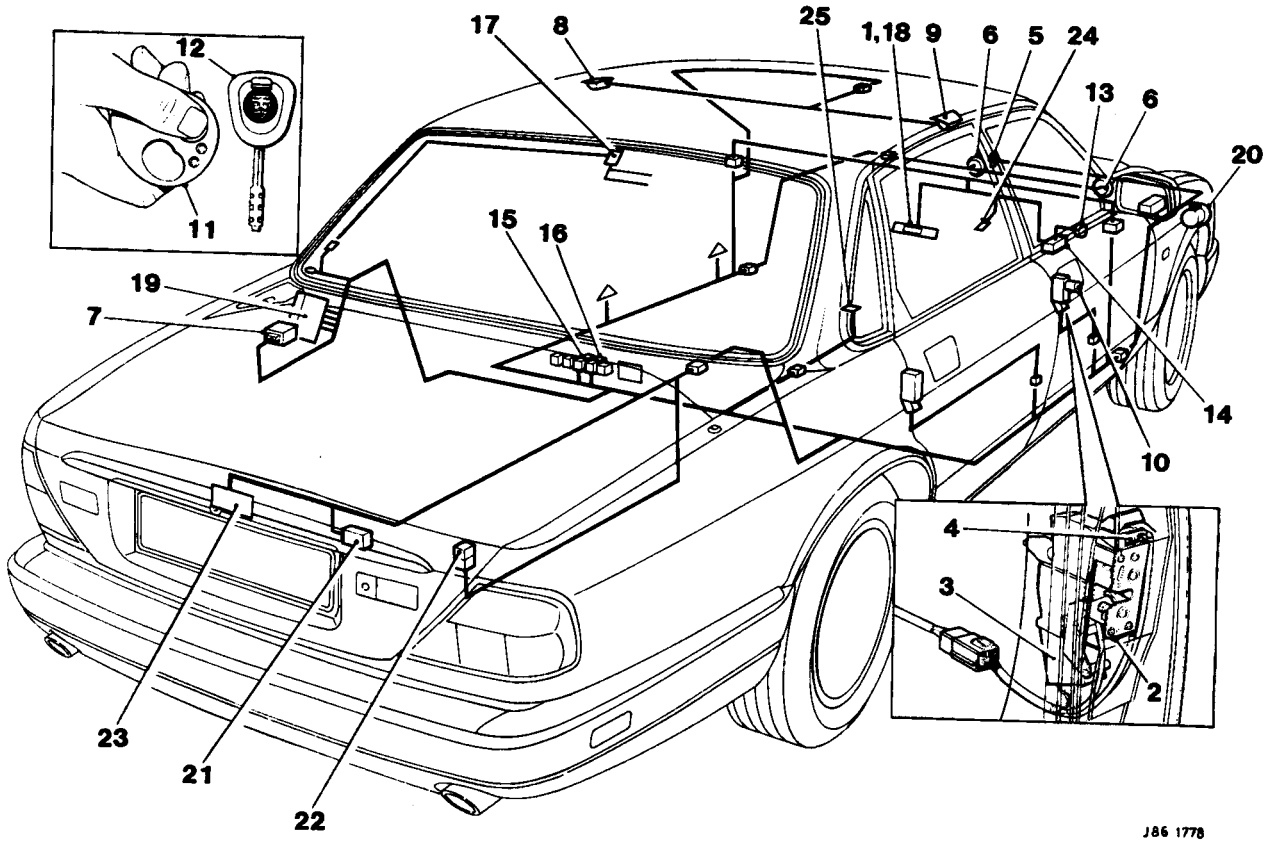

Fig. 1 Component Location Diagram

Key to Component Locations

Item No.	Description	Access details
01	Central locking switch	part of clock module
02	Door ajar switches (4 off)	part of door latch assembly
03	Door lock actuators (4 off)	part of door assembly
04	Door lock switches (2 off)	part of door latch assembly
05	Hood switch	located above siren
06	Horn	located on front RH side of engine bay
07	Inclination sensor	behind luggage compartment LH liner
08	Intrusion sensor (LH)	located above LH door behind roof lining
09	intrusion sensor (RH)	located above LH door behind roof lining
10	Key barrel switches (2 off)	part of door latch assembly
11	Key fob transmitter	part of key fob
12	Key transponder	part of key
13	Reader exciter coil	part of ignition switch
14	Reader exciter module	part of steering column assembly
15	Relays (deadlock)	
16	Relays (door lock / unlock)	
17	Rear screen aerial	part of rear screen
18	Security active indicator	part of central locking switch
19	Security and locking control module (SLCM)	located in luggage compartment behind LH liner
20	Sounder	located on front RH side of engine bay
21	Trunk release actuator	located in trunk latch mechanism
22	Trunk release relay	
23	Trunk lid release switch (external)	part of trunk lid
24	Trunk lid release switch (internal)	part of fascia switchpack
25	Valet switch	in centre console compartment

A5

A5.2 COMPONENT DESCRIPTIONS

A5.2.1 Central locking switch

The central locking switch is located on the driver'sfascia switchpack and allows locking/ unlocking and all close from inside the vehicle when all doors are closed.

A5.2.2 Door ajar switches

Located in each front door lock mechanism to indicate door not closed correctly.

A5.2.3 Door lock actuator and switch

Located within each front door panel assembly to provide automatic lock/ unlock operation.

A5.2.4 Door lock switch

Located in each front door lock mechanism to indicate door lock/ unlock state.

A5.2.5 Hood switch

Located underhood adjacent to the horn to give indication of hood not closed correctly.

A5.2.6 Horns

Located adjacent to each headlight unit and utilized as part of the full alarm application.

A5.2.7 Inclination sensor

Located adjacent to the SLCM under the luggage compartment LH side liner to give indication of unauthorized jacking / lifting of the vehicle.

A5.2.8 Intrusion sensors

Located above each front door to give indication of unauthorized entry into the vehicle passenger compartment.

A5.2.9 Reader exciter coil

Forms an integral part of the ignition switch to prove correct key insertion by communicating key transponder signal to control module.

A5.2.10 Reader exciter module

Located on the steering column to receive signals from the reader / exciter coil and disarm the engine immobilization system on correct demand.

A5.2.11 Security active indicator

An LED built into the central locking switch to indicate when security system is armed.

A5.2.12 Security and locking control module

Located in the luggage compartment below the LH side liner. Controls system operation and interface with associated modules to achieve correct response to input signals.

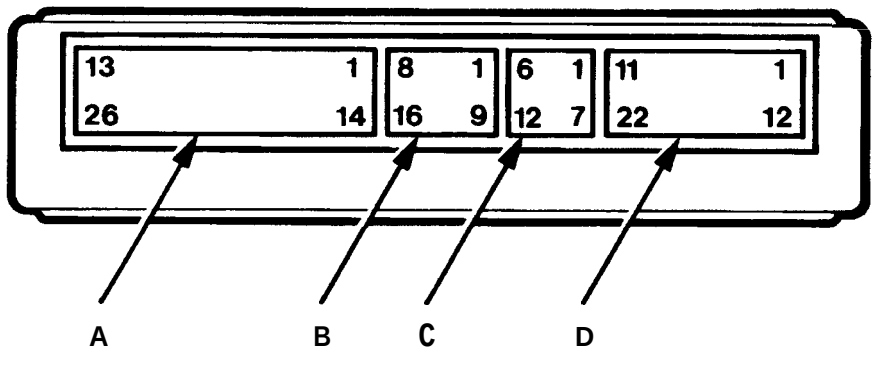

Fig.1 Control Module Connector Pins

Connections to the SLCM are detailed in the following table:

Connector A (26–way)

Pin No.	Signal	Description	Comment
01	O / P	Deadlock (front right / rear left)	switch to ground 200mA
02	O / P	Unlock driver's door	switch to ground 200mA
03			
04			
05	I / P	Vehiclespeed	7600 pulses/ mile
06	O / P	Inclination alarm	
07		Intelligent sounder	serial communications
08	O / P	Memory seat 2	switch to +12V for 500ms
09	O / P	Visual warning	switch to ground
10	O / P	Secure mode status	arm: 200Hz square wave ± 5% disarm: 400Hz square wave ± 5% duration: 64ms
11	O / P	Trunk lid release relay	switch to ground
12	I / P	Power +12V battery	+12V power supply
13	O / P	Sounder +ve	half of push pull network
14	O / P	Deadlock (front left / rear right)	switch to ground (200mA)
15	O / P	Lock relay	switch to ground (200mA)
16			
17			
18			
19	O / P	Alarm LED	switch to +12V (20mA)
20	O / P	Start inhibited	coded communication
21	O / P	Memory seat 1	switch to +12V for 500ms
22	O / P	All close	switch to ground
23	O / P	Interior lights on	switch to ground for 80ms ± 5%
24	O / P	Horn relay	switch to ground (200ms)
25	I / P	Powerground	OV (nominal)
26	O / P	Sounder–ve	

Connector B (16–way)

01			
02		Intrusion sensor (RH)	ground screen
03	O / P	Intrusion sensor (RH)	40kHz
04	I / P	Intrusion sensor (RH)	signal
05	O / P	Intrusion sensor (RH)	+8V
06		Ground	
07		R.F. ground	
08		Diagnostic ISO K line	
09			
10		Intrusion sensor (LH)	ground
11	O / P	Intrusion sensor (LH)	40kHz
12	I / P	Intrusion sensor (LH)	signal
13	O / P	Intrusion sensor (LH)	+8V
14		Ground	
15	I / P	R.F. signal	
16		Diagnostic ISO L line	diagnostic link input

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Connector C (12–way)

Pin No.	Signal	Description	Comment
01	I / P	Passenger door ajar	switch to ground
02	I / P	Trunk lid release external	switch to ground
03	I / P	Gearshift 'in–park' signal	not in–park = ground
04	I / P	Lock actuator status (RH)	switch to ground
05	I / P	Passenger door key unlock	switch to ground
06	I / P	Driver door key unlock	switch to ground
07	I / P	Driver door ajar	switch to ground
08	I / P	Ignition coil on (aux)	switch to ground
09	I / P	Transponder immobilization	data communications
10	I / P	Lock actuator status (LH)	switch to ground
11	I / P	Passenger door key lock	switch to ground
12	I / P	Driver door key lock	switch to ground

Connector D (22–way)

Pin No.	Signal	Description	Comment
01	O / P	Fuel filler flap lock	switch to ground 200mA
02			
03			
04			
05			
06	I / P	Trunk valet isolate switch	momentary switch to ground
07	I / P	Inclination alarm	
08	I / P	Trunk lid release (internal)	switch to ground
09	I / P	Hood open / ajar	switch to ground
10	I / P	Inertia switch	switch to ground
11	O / P	Transponder immobilization on	data communications
12	O / P	Memory seat remote indicator	switch to ground for 500ms
13	O / P	Headlight convenience	switch to ground for 25 seconds
14			
15			
16			
17	I / P	Ignition on	switch to ground
18	I / P	Ignition key in	switch to ground
19	I / P	Central locking switch	switch to ground
20	I / P	Trunk lid ajar	switch to ground
21	I / P	Rear doors ajar	switch to ground
22	O / P	Unlock relay	switch to ground (200mA)

A5.2.13 Siren

Located on the RH side at the front of the engine bay to provide audible alarm signals.

A5.2.14 Trunk lid release (external)

Located in trunk lid for conventional key access to luggage compartment.

A5.2.15 Trunk lid release (internal)

Located on fascia switchpack to allow lid release from driving position.

A5.2.16 Valet switch

Located in the central column compartment to allow securing of luggage compartment independently of other facilities.

A5.3 GENERAL INFORMATION

The following information details the purpose and function of the system components irrespective of individual variant features.

A5.3.1 Locking:

Central locking

A traditional central locking application, such that when the driver's / passenger's door is locked/ unlocked using the door key all four doors lock / unlock simultaneously.

Note: Locking operations will only take place when all doors are completely closed.

Remote central locking

Automatic locking / unlocking, activated by the larger of the two key fob buttons.

Note: Locking operations will only take place when all doors are completely closed.

Deadlocking

A means of securing door locks so that they cannot be opened using the interior release mechanism, and arming the security sensing system, using the door key or remote transmitter

Two–stage unlocking

A key / remote operated unlocking procedure which releases driver's door and fuel filler cap locks only, initially, and then releases all other doors and the luggage compartment locks.

Drive–away locks

Automatic locking of all doors, and luggage compartment (but not fuel filler cap), when gear selector is moved away from 'Park' and the ignition switch is in position II, providing all doors are closed.

Central lock / unlock, all close

Automatic locking of all doors and luggage compartment by operation of the fascia mounted central locking switch. Continued switch operation causes closure of sliding roof and open windows.

Interior trunk lid release

Trunk lid unlocking from fascia mounted switch.

Flush sill **buttons / intrusion override**

Sill buttons fitted flush to door trim panel to prevent unauthorized override operation, buttons are latched in position when deadlocking is applied.

A5.3.2 Security system

Base system

Provides standard vehicle arming, ie door ajar, actuator lockstatus, trunk lid or hood ajar and passenger door unlocking, does not include inclination or

Intrusion sensing

Detection of intrusion into the passenger compartment by removal or breakage of any glazed area, entry via any protected enclosure and unauthorized door opening detection.

Inclination (tilt) sensing

Detection of unauthorized jacking /towing.

Passive arming

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Arming of the security system, excluding intrusion sensors, without audible confirmation.

Audible tones

Audible indication of driver error when attempting to arm the system, or on initiation of deadlocking.

Engine immobilization

Automatic immobilization of the engine crank facility whenever the ignition key is turned to position 0.

A5.3.3 Convenience

All close

Automatic closure of open windows and sliding roof by prolonged action of key, or remote fob transmitter after door locking.

Headlamp convenience

Automatic illumination of headlamps for driver convenience on operation of key fob button after locking sequence completed.

Remote trunk lid release

Automatic release of the trunk lid lock on operation of the smaller key fob button after door unlocking.

Trunk valet isolate

Independent locking of the trunk lid to eliminate unauthorized entry to the luggage compartment.

Driver seat memory select

Automatic recall of a memorized driving position on operation of the smaller key fob button.

Intrusion sensing override

Allows intrusion sensing to be disabled until the next disarm action.

A5.3.4 Alarms

There are eight possible alarm activation modes; driver's door, hood, ignition key in (ignition auxiliary position, ignition ON), inclination, inner door handle action (causing actuator status switches to operate), intrusion, passenger door and trunk.

Any of the above conditions occurring after the vehicle is fully armed will cause full alarm state.

Any of the above conditions, except door opening, occurring after the vehicle is fully armed and active disarming is selected will cause full alarm state. Door opening after active disarming selection will give a 30 second audible tick period before full alarm is entered.

Any of the above conditions occurring after the vehicle has been passively armed will give a *30* second audible tick period before full alarm is entered.

Activation of full alarm state causes sidelights, direction indicators, interior lights or headlamps to flash (dependant upon market variations), the security sounder to operate and the vehicle horns to operate (if programmed to do so).

An error tone is generated if active arming is selected with either hood or trunk open, or the transmitter is pressed with ignition key in auxiliary position.

A5.4 KEY FOB VARIATIONS

Due to the varying applications for different world markets, three types of key locking (local and remote) have been developed. The following tables detail these variations:

A5.4.1 European & UK markets (variant 1)

DOOR LOCKING				
Action	**Device operation**			**Function**
	Kev	R ote signal transmitter		
		Large button	Small button	
Lock and arm (perimeter only)	Turn to lock position and release	1st press	N / A	Locks all doors, trunk and fuel filler cap. Arms alarm system.
Lock, arm (perimeter only) and all-close	Turn to lock position and hold for 2 seconds	Continued hold of 1st press for 2 seconds	N / A	Locks all doors, trunk lid and fuel filler cap. Arms alarm system. Key only; closes open windows and sliding roof in 1.5 seconds.
Deadlock (perimeter, inclination, intrusion) and all-close	Turn to unlock, then lock within three seconds; hold in lock for all close	2nd press and hold for 2 seconds	N / A	Deadlocks all doors, locks trunk lid and fuel filler cap and arms alarm system immediately. Closes windows and sliding roof after 1.5 seconds.
Headlamps ON for 25 seconds	N / A	3rd press (1st press if button not operated within the last 4 seconds)	N / A	Switches headlights on for driver convenience.

Note: If key is turned to lock position with vehicle already locked / deadlocked, all-close will be activated.

DOOR UNLOCKING				
Action	**Device operation**			**Function**
Unlock	Turn to unlock position and release	N / A	1st press	Unlocks doors, trunk lid (key only) and fuel filler cap. Disarms alarm system, except for 30 second audible tick, Turns on interior lights for 15 seconds. Remote button only; cancels trunk valet lock-out and recalls memorised driving position.
Trunk lid release	N / A	N / A	2nd press (within 10 seconds of previous action)	Trunk lid release
Remote panic	N / A	N / A	3 second press	Unlocks, disarms and enters full alarm state ie audible alarm (both sounder and horn) and visual alarm (flashing lights).

A5.4.2 North American markets (variant 2)

DOOR LOCKING				
Action	**Device operation**			**Function**
	Key	**Remote signal transmitter**		
		Large button	Small button	
Lock and arm (perimeter only)	**Turn to lock position and release**	**1st press**	N / A	Locks all doors, trunk and fuel filler cap. Arms alarm system.
Lock, arm (perimeter only) and all-close	**Turn to lock position and hold for 2 seconds**	**Continued hold of 1st press for 2 seconds**	N / A	Locks all doors, trunk lid and fuel filler cap. Arms alarm system. Key only; closes open windows and sliding roof in 1.5 seconds.
Headlamps ON for 25 seconds	N / A	2nd press (**1st** press if vehicle is locked and armed	N / A	Switches headlights on for driver convenience.

DOOR UNLOCKING				
Action	**Device operation**			**Function**
Unlock (driver's door only)	Turn to unlock position and release	N / A	1st press	Unlocks driver's door, and fuel filler cap. Disarms alarm system. Turns on interior lights for 15 seconds. Remote button only; cancels trunk valet lock-out and recalls memorised driving position.
Unlock (all doors)	Either turn to unlock and hold for 2 seconds or perform a second unlock action	N / A	2nd press	Unlocks all other doors, key only; unlocks trunk lid.
Trunk lid release	N / A	N / A	3rd press (press to be within 10 seconds of previous action)	Trunk lid lock release
Remote panic	N / A	N / A	3 second press	Unlocks, disarms and enters full alarm state ie audible alarm (both sounder and horn) and visual alarm (flashing lights).

A5.4.3 Rest of the World (variant 3)

DOOR LOCKING				
Action	Device operation			Function
	Key	Remote signal transmitter		
		Large button	Small button	
Lock and arm (perimeter, inclination, intrusion)	Turn to lock position and release	1st press	N / A	Locks all doors, trunk and fuel filler cap. Arms alarm system.
Lock, arm (perimeter, inclination, intrusion) and all-close	Turn to lock position and hold for 2 seconds	Continued hold of 1st press for 2 seconds	N / A	Locks all doors, trunk lid and fuel filler cap. Arms alarm system. Key only; closes open windows and sliding roof in 15 seconds.
Headlamps ON for 25 seconds	N / A	2nd press; within 10 seconds of first with vehicle unlocked, disarmed (1st press if vehicle is locked and armed)	N / A	Switches headlights on for driver convenience.

DOOR UNLOCKING				
Action	Device operation			Function
Unlock	Turn to unlock position and release	N / A	1st press	Unlocks all doors, trunk lid (key only) and fuel filler cap. Disarms alarm system. Turns on interior lights for 15 seconds. Remote button only; cancels trunk valet lock-out and recalls memorised driving position.
Trunk lid release	N / A	N / A	2nd press (press to be within 10 seconds of previous action)	Trunk lid lock release.
Remote panic	N / A	N / A	3 second press	Unlocks, disarms and enters full alarm state ie audible alarm (both sounder and horn) and visual alarm (flashing lights).

A5.5 HOW TO OPERATE THE SYSTEM

Locking, unlocking and setting the vehicle alarm system is carried out by key or by radio frequency key-ring transmitter.

Operation of the system by key or key–ring transmitter will be described separately in this sub–section.

Key–ring transmitter functions vary slightly between market variants. The action for each variant is described separately where appropriate

Note: Certain functions differ due to market variations. Differences will be detailed in the the following instruction tables. The variants are defined as follows:

- Variant **1** – European and UK markets
- Variant 2 – North American markets
- Variant **3** – Rest of the World.

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A .5.1 Locking (key)

Instruction	Variant 1	Variant 2	Variant 3
rurn key to lock position and release.	Lock all doors, trunk lid, fuel filler cap and arm the alarm system (perimeter only).	.ock all doors, trunk lid, uel filler cap and arm the larm system.	Lock all doors, trunk lid, fuel filler cap and arm the alarm system (perimeter only) alarms.
rurn key to lock position, nold for 2 seconds and re-ease.	Lock all doors, trunk lid, fuel filler cap. Arm the alarm system (perimeter only). Close open windows and sliding roof.	.ock all doors, trunk lid, uel filler cap. Arm the larm system. Close open vindows and sliding roof.	Lock all doors, trunk lid, fuel filler cap. Arm the alarm system (perimeter only). Close open windows and sliding roof.
rurn key to unlock position and then to lock position within 3 seconds. Hold in ock position for 2 seconds :o close windows and slid-ng roof.	Deadlock all doors, lock trunk lid and fuel filler cap. Arm the alarm system (perimeter, inclination and intrusion). Close open windows and sliding roof. Once deadlocking is completed, the sounder gives one audible tone.	No feature	Deadlock all doors, lock trunk lid and fuel filler cap. Arm the alarm system (perimeter, inclination and intrusion). Close open windows and sliding roof. Once deadlocking is completed, the sounder gives one audible tone. Note: No deadlock feature in Japanese market.

A5.5.2 Unlocking (key)

Instruction	Variant 1	Variant 2	Variant 3
Turn key to unlock position and release.	Unlock all doors, trunk lid, fuel filler cap. On variant **1** unlocking with the key does not disarm the alarm system. An audible ticking indicates that the alarm will activate after **30** seconds unless the key is turned to position II in the ignition or the key–ring transmitter button (small) is pressed.	Unlock drivers door only, trunk lid, fuel filler cap. Disarm the alarm system. Switch on the interior light for **15** seconds.	Unlock all doors, trunk lid, fuel filler cap. Disarm the alarm system. Switch on the interior light for **15** seconds.
rurn key to unlock position and hold for 2 seconds.	No feature	Unlock all other doors and trunk lid.	No feature

A5.5.3 Locking / Unlocking (Key–ring Transmitter)

Each vehicle is supplied with two radio frequency transmitters, designed to be attached to the drivers key–ring. Key–ring transmitter **1** is dedicated to driving position memory **1** and key–ring transmitter **2** is dedicated to driving position memory **2.**

The key–ring transmitter is activated by pointing it towards the vehicle and pressing one of the two operating buttons; the large button locks the vehicle and arms the alarm system, whilst the small button unlocks the vehicle and disarms the alarm system. When either one of the buttons are pressed, an indicator light on the key–ring transmitter flashes; red for the large button, green for the small button.

If the ignition key is left in the ignition switch the following features will be inhibited:

- Alarm system
- Remote luggage compartment release.

If the ignition key is left in the ignition switch in position 1 the remote headlamp convenience feature will be inhibited.

Note: Locking is inhibited if any door is open or ajar.

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A5.5.4 Locking (Key–ring Transmitter)

Instruction	Variant 1	Variant 2	Variant 3
Press large button once.	Lock all doors, trunk lid, fuel filler cap and arm the alarm system (perimeter only). Direction indicators flash once. Warning light (central locking switches) flashes when vehicle secured.	Lock all doors, trunk lid, Fuel filler cap and arm the alarm system (perimeter, inclination and intrusion alarms). An audible signal will be heard and side lights will Flash once. Warning light (central locking switches) flashes when vehicle secured. Headlamps on for **25** seconds if vehicle previously locked and armed.	Lock all doors, trunk lid, fuel filler cap and arm the alarm system (perimeter only). Direction indicators flash once. Warning light (central locking switches) flashes when vehicle secured. Headlamps on for **25** seconds if vehicle previously locked and armed. **Japanese Market Only:** Lock all doors, trunk lid, fuel filler cap and arm the alarm system. Headlamps on for **25** sec onds if vehicle previously locked and armed.
Press large button again within **3** seconds of first press.	Deadlock all doors, Arm the alarm system (perimeter, inclination and intrusion).	Headlamps on for **25** sec onds.	Deadlock all doors, Arm the alarm system (perimeter, inclination and intrusion). **Japanese Market Only:** Headlamps on for **25** seconds.
Press large button for third time within ten seconds of previous action.	Headlamps on for **25** seconds. Note: The headlamps will also come on if the large button is pressed whenever the vehicle is locked or deadlocked.	No Feature.	Headlamps on for **25** seconds. **Japanese Market Only;** No Feature.

A5.5.5 Unlocking (Key–ring Transmitter)

Instruction	Variant 1	Variant 2	Variant 3
Press small button once (vehicle locked and armed).	Unlocks all doors, trunk lid, fuel filler cap. Disarms the alarm system and switch on interior light for 15 seconds. Cancels luggage compartment valet lock-out, if set. Recalls the memory position of the driver's seat, steering column and door rear view mirrors. Two audible signals will be heard and the direction indicator will flash twice during the unlocking/ disarming process.	Unlocks drivers door only, trunk lid, fuel filler cap. Disarms the alarm system and switch on interior light for 15 seconds. Cancels luggage compartment valet lock-out, if set. Recalls the memory position of the driver's seat, steering column and door rear view mirrors. Two audible signals will be heard and the direction indicator will flash twice during the unlocking/ disarming process.	Unlocks all doors, trunk lid, fuel filler cap. Disarms the alarm system and switch on interior light for 15 seconds. Cancels luggage compartment valet lock-out, if set. Recalls the memory position of the driver's seat, steering column and door rear view mirrors. Two audible signals will be heard and the direction indicator will flash twice during the unlocking/ disarming process. **Japanese Market Only:** **No** audible or visual indication of unlocking/ disarming.
Press small button again.	Releases luggage compartment. Button must be pressed within ten seconds of first press.	Unlocks all passenger doors.	Releases luggage compartment. Button must be pressed within ten seconds of first press.
Press small button again.	No feature	Releases luggage compartment. Button must be pressed within ten seconds of first Press.	No feature

Note: The sounder gives a short, high–pitched warble every time a button on the key–ring transmitter is pressed, whenever on of the following conditions is present:

- The trunk lid or hood is not properly closed when an attempt to arm the security system is made.
- The ignition key is in the ignition switch
- If there is a failure within the security system.

A5.5.6 Panic Feature (Key–ring Transmitter Only)

When in or near the vehicle, the alarm can be set off to deter a would–be offender. This feature will also unlock the doors and fuel filler flap. For this feature to operate, the ignition key must not be in position 'I' or 'II'.

The panic alarm will sound for five times the normal full alarm period. The alarm can only be stopped by turning the ignition key to position 'I' or 'II'. The key–ring transmitter can not be used to cancel the panic alarm.

To operate the panic alarm:

- Variants 1 and 3, press and hold the small button for 3 seconds.
- Variant 2, press and hold either the small or large buttons for 3 seconds.

Note: The panic alarm can be operated at any time during the locking or unlocking procedure, regardless of the state of the locking/ security system.

A5.5.7 Central Locking

Note: The following lock conditions are inhibited when any door is open or ajar.

The central locking switch is mounted on the facia. With the ignition switch in either position 'I' or 'II', press the central locking switch to lock all the doors and the luggage compartment, if they are unlocked.

Hold down the switch for 3 seconds to close any open windows or the sliding roof.

A further press on the central locking switch after 3 seconds will unlock the doors and the luggage compartment.

If the switch is pressed when ignition switch is not in position I or II, tilt and intrusion sensing will be disabled until the next arming action. The active indicator, mounted in the switch housing, will flash to confirm this action.

A5.5.8 Passive Arming

Passive arming is a dealer option on variants 1 and 3.

Passive arming of the vehicle, If the feature has been activated, takes place 30 seconds after the last closure of the doors, trunk lid, hood or sliding roof. For passive arming to take place the ignition switch must be in the 'OFF' position.

When passive arming occurs, the direction indicators flash once, the red warning light in the central locking switch lights for 2 seconds the flashes once the vehicle is armed.

Note: There is no audible indication when passive arming occurs.

To disarm a passively armed vehicle the ignition key or key–ring transmitter can be used as follows:

- Ignition key – Switch to position 'II'.
- Key–ring transmitter – Refer to A5.3.5 *Unlocking.*

A5.5.9 Trunk Release

The trunk lid can be released in the following ways:

- From the vehicle interior by pressing the trunk release switch mounted on the facia.
- By using the ignition key in the trunk lid if the vehicle is disarmed. If not disarmed the the alarm system will be activated and can be switched off by ignition key or key–ring transmitter.
- Remotely (as part of the unlocking procedure) by the key–ring transmitter.

A5.5.10 Trunk Valet Isolate

A valet switch is located in the centre console compartment and is fitted on all variants.

The switch is provided to prevent unauthorized entry into the luggage compartment by a parking attendant by inhibiting the luggage compartment remote release switch.

The green headed valet key can be used to park and lock the vehicle but does not unlock the luggage compartment.

A5.5.11 Flush Sill Buttons

Variants 1 and 3 (except Japanese market) are fitted with flush sill buttons mounted in the door trim panel.

To lock the door from the interior press the sill button down, flush with the door trim panel. To unlock the door pull the door lever out.

A5.6 SYSTEM DIAGNOSTIC METHODS

The following information details diagnostic procedures for system fault identification using a Portable Diagnostic Unit (PDU).

PDU is designed and supplied by Jaguar Cars Ltd. to interrogate the electronic control circuitry of the various vehicle systems, diagnose fault conditions and indicate to the operator recorded faults and possible remedies. On initiation of diagnostic procedures PDU will display the model variant and control module type, a list of enabled functions can also be accessed. Ensure that this information is correct for the vehicle under test, ie that the correct module is fitted and all appropriate options are enabled.

Detailed information on testing using PDU is detailed in the support documentation supplied with the unit.

A5.7 SYSTEM TESTING

The following information details the procedures for a complete system test to identify and locate possible fault conditions. Where faulty operation is identified refer to Diagnostic Sub–Routines for possible causes and remedies.

Locking, unlocking and setting the vehicle alarm system is carried out by key **or** by radio frequency key-ring transmitter.

Note: Ensure all doors are fully closed before initiating lock procedures.

Key–ring transmitter functions vary slightly between market variants. The action for each variant is described separately where appropriate

Note: Certain functions differ due to market variations. Differences will be detailed in the the following instruction tables. The variants are defined as follows:

- Variant 1 – European and UK markets.
- Variant 2 – North American markets.
- Variant **3** – Rest of the World.

A5.7.1 Locking (key)

Instruction	Variant 1	Variant 2	Variant 3
Turn key to lock position and release.	Check that all doors, trunk lid and fuel filler cap lock and that the alarm system (perimeter only) arms.		
Turn key to lock position, hold for 2 seconds and release.	Check that all doors, trunk lid and fuel filler cap lock, the alarm system (perimeter only) arms and all open windows and sliding roof close within 1.5 seconds.		
Turn key to unlock position and then to lock position within 3 seconds. Hold in lock position for 2 seconds to close windows and sliding roof.	Check all doors are deadlocked and trunk lid and fuel filler cap are locked. Check alarm system (perimeter, inclination and intrusion) arms and all open windows and sliding roof close within 1.5 seconds. Ensure that once deadlocking is completed, the sounder gives one audible tone.	No feature	Check all doors are deadlocked and trunk lid and fuel filler cap are locked. Check alarm system (perimeter, inclination and intrusion) arms and all open windows and sliding roof close within 1.5 seconds. Ensure that once deadlocking is completed, the sounder gives one audible tone. **Note:** No deadlock feature in Japanese market.

A5.7.2 Unlocking (key)

Instruction	Variant 1	Variant 2	variant 3
Turn key to unlock position and release.	Check all doors, trunk lid and fuel filler cap unlock. with the key does not disarm the alarm system. An audible ticking indicates that the alarm will activate after *30* seconds unless the key is turned to position II in the ignition or the key–ring transmitter button (small) is pressed.	Check drivers door and fuel filler cap unlock. Check that the alarm system disarms and the interior light illuminates for 15 seconds.	Check all doors, trunk lid and fuel filler cap. Check that the alarm system disarms and the interior light illuminates for 15 seconds.
Turn key to unlock position and hold for 2 seconds.	No feature	Check all passenger doors and trunk lid lock.	No feature

A5.7.3 Locking / Unlocking (Key–ring Transmitter)

Each vehicle is supplied with **two** radio frequency transmitters, designed to be attached to the drivers key–ring. Key–ring transmitter 1 is dedicated to driving position memory 1 and key–ring transmitter **2** is dedicated to driving position memory **2.**

The key–ring transmitter is activated by pointing it towards the vehicle and pressing one of the **two** operating buttons; the large button locks the vehicle and arms the alarm system, whilst the small button unlocks the vehicle and disarms the alarm system. When either one of the buttons are pressed, an indicator light on the key–ring transmitter flashes; red for the large button, green for the small button.

If the ignition key is left in the ignition switch the following features will be inhibited:

- Alarm system
- Remote luggage compartment release.

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If the ignition key is left in the ignition switch in position 1 the remote headlamp convenience feature will be inhibited.

A5.7.4 locking (Key–ring Transmitter)

nstruction	Variant 1	Variant 2	Variant 3
?ress large button once.	Check all doors, trunk lid and fuel filler cap lock and the alarm system (perimeter only) arms. Ensure direction indicators flash once and the security active indicator flashes when vehicle secured. Check that headlamps are illuminated for **25** seconds if vehicle was previously locked and armed and button has not been pressed within 4 seconds.	Check all doors, trunk lid and fuel filler cap lock and the alarm system arms. Ensure that an audible signal is heard, side lights flash once. and security active indicator flashes when vehicle secured. Check that headlamps are illuminated for **25** seconds if vehicle was previously locked and armed.	Check all doors, trunk lid and fuel filler cap lock and the alarm system (perimeter only) arms. Ensure direction indicators flash once. and security active indicator flashes when vehicle secured. Check that headlamps are illuminated for **25** seconds if vehicle was previously locked and armed. **Japanese Market Only:** Check all doors, trunk lid and fuel filler cap lock and the alarm system arms. Check that headlamps **il**luminate for **25** seconds if vehicle was previously locked and armed.
?ress large button again within **3** seconds of first ?ress.	Check all doors are deadlocked and the alarm system (perimeter, inclination and intrusion) is armed.	Check headlamps illuminate for **25** seconds.	Check all doors are deadlocked and the alarm system (perimeter, inclination and intrusion) is armed. **Japanese Marked Only:** Check headlamps illuminate for 25 seconds.
?ress large button for third ?ime within ten seconds of ?revious action.	Check headlamps illuminate for **25** seconds. **Note:** The headlamps will also **il**luminate if the large button is pressed whenever the vehicle is locked or deadlocked.	No Feature.	Check headlamps illuminate for **25** seconds. **Japanese Marked Only:** **No** Feature.

A5.7.5 Unlocking (Key-ring Transmitter)

Instruction	Variant 1	Variant 2	Variant 3
Press small button once (vehicle locked and armed).	Check all doors, trunk lid and fuel filler cap unlock Check that the alarm system disarms and the interior light illuminates for 15 seconds. Check luggage compartment valet lock-out is cancelled, if set. Ensure the memory position of the driver's seat, steering column and door rear view mirrors is restored. Check that two audible signals are heard and the direction indicator flashes twice during the unlocking/ disarming process.		**Japanese Market Only:** **No** audible or visual indication of unlocking/ disarming.
Press small button again	Check luggage compartment released when button pressed within ten seconds of first press.	Check all passenger doors unlocked.	Check luggage compartment released when button pressed within 10 seconds of first press.
Press small button again	No feature	Check luggage compartment released when button pressed within 10 seconds of second press.	No feature.

Check that the sounder gives a short, high-pitched warble every time a button on the key-ring transmitter is pressed, whenever one of the following conditions is present:

- **The trunk lid or hood is not properly closed when an attempt to arm the security system is made.**
- **The ignition key is in the ignition switch**
- **If there is a failure within the security system.**

A5.7.6 Panic Feature (Key-ring Transmitter Only)

Ensure the ignition key is not in position 'I' or 'II' and check panic alarm as follows.

To operate the panic alarm:

- **Variants 1 and 3, press and hold the small button for 3 seconds.**
- **Variant 2, press and hold either the small or large buttons for 3 seconds.**

Ensure that the panic alarm sounds for five times the normal full alarm period and the alarm can only be stopped by turning the ignition key to position 'I' or 'II' ie the key-ring transmitter can not be used to cancel the panic alarm. Check that the alarm unlocks the doors and fuel filler flap.

Note: **The panic alarm can be operated at any time during the locking or unlocking procedure, regardless of the state of the locking / security system.**

A5.7.7 Central Locking

Note: Ensure all doors are fully closed before commencing lock operations.

With the ignition switch in either position 'I' or 'II', press the central locking switch and check that all the doors and the luggage compartment lock, if they are unlocked.

Hold down the switch for **3** seconds and check any open windows or the sliding roof close, if open.

Check that a further press on the central locking switch after **3** seconds will unlock the doors and the luggage compartment.

If the switch is pressed when ignition switch is not in position I or II, tilt and intrusion sensing will be disabled until the next arming action. The active indicator, mounted in the switch housing, will flash to confirm this action.

To disarm a passively armed vehicle the ignition key or key–ring transmitter can be used as follows:

- Ignition key – Switch to position 'II'.
- Key–ring transmitter – Refer to A5.3.5 Unlocking.

A5.7.8 Passive Arming

Passive arming is a dealer option on variants 1 and **3** only.

With the ignition switch in the OFF position, check that passive arming of the vehicle takes place **30** seconds after the last closure of the doors, trunk lid, hood or sliding roof.

Ensure that when passive arming occurs, the direction indicators flash once and the security active indicator in the central locking switch lights for 2 seconds then flashes once when vehicle arming is complete.

Note: There is no audible indication when passive arming occurs.

A5.7.9 Trunk Release

Check that the the trunk lid can be released in the following ways:

- From the vehicle interior by pressing the trunk release switch mounted on the facia.
- By using the ignition key in the trunk lid if the vehicle is disarmed. If not disarmed the the alarm system will be activated and can be switched off by ignition key or key–ring transmitter.
- Remotely (as part of the unlocking procedure) by the key–ring transmitter.

A5.7.10 Trunk Valet Isolate

Check that valet switch operation prevents unauthorized entry into the luggage compartment by inhibiting the luggage compartment remote release switch and the green headed valet key can be used to park and lock the vehicle but does not unlock the luggage compartment.

A5.7.11 Flush Sill Buttons

Variants 1 and **3** (except Japanese market) are fitted with flush sill buttons mounted in the door trim panel. Check button operation as follows:

To lock the door from the interior press the sill button down, flush with the door trim panel. To unlock the door pull the door lever out.

A5.8 DIAGNOSTIC SUB–ROUTINES

The following information details possible remedies to faults identified in the system during the system test. For detailed testing of individual components refer to section A5.9, *Pin Point Tests.*

Fault: **System will not lock / and arm**

Possible causes:
1. Transmitter battery faulty (remote operation only)
2. Rear screen aerial cable damaged / disconnected (remote operation only).
3. No power supply to SLCM.
4. Wiring harness or connectors faulty.

Remedy:
1. Renew battery, refer to section A58.
2. Identify and repair aerial cable fault.
3. Check fuse F4 in trunk fuse box.
4. Check harness and connectors from SLCM. Repair or renew as necessary.

Fault: **All Close facility only inoperative or faulty**

Possible causes:
1. Faulty components in sliding roof or window systems.
2. Damaged harness wiring between SLCM and Sliding Roof Control Module (SRCM) and Body Processor Unit (BPU).

Remedy:
1. Refer to Section 15.7 Closures.
2. Examine and repair or renew faulty harness.

Fault: **Door locking / unlocking facility inoperative or faulty**

Possible causes:
1. **No** power supply to lock relays.
2. Door lock/ unlock relays faulty.
3. Door actuators faulty.
4. Keylock switches faulty.
5. Deadlock circuitry faulty.
6. Wiring harness or connectors faulty.

Remedy:
1. Check fuse F1 in RH 'A' post base fusebox.
2. Renew faulty relay.
3. Renew door lock assembly complete.
4. Renew door lock assembly complete.
5. See Deadlock fault Sub–Routine.
6. Examine and repair or renew faulty harness.

Fault: **Deadlocking facility inoperative or faulty (not NAS)**

Possible causes:
1. **No** power supply to deadlock relays.
2. Deadlock relays faulty.
3. Deadlock status micro–switch faulty.

Remedy:
1. Check fuse F1 in RH 'A' post base fusebox.
2. Renew faulty relay.
3. Renew doorlock assembly complete.

Fault: **Intrusion sensing inoperative**

Possible causes:
1. Faulty sensor.
2. Harness wiring or connectors faulty.

Remedy:
1. Renew sensor.
2. Examine and repair or renew faulty harness.

Fault: **Inclination sensing inoperative**

Possible causes:
1. Faulty sensor.
2. Harness wiring or connectors faulty.

Remedy:
1. Renew sensor.
2. Examine and repair or renew faulty harness.

Fault: **Fuel filler cap locking / unlocking faulty**

Possible causes:
1. No power to actuator relay.
2. Wiring harness or connectors faulty
3. Relay faulty
4. Actuator faulty.

Remedy:
1. Check fuse F1 in RH 'A' post fuse box.
2. Examine and repair or renew faulty harness.
3. Renew relay.
4. Renew actuator.

Fault: **Panic feature inoperative**

Possible causes:
1. Transmitter battery inoperative.
2. Rear screen aerial cable damaged / disconnected.

Remedy:
1. Renew battery.
2. Identify and repair aerial fault.

Fault: **Central locking switch inoperative**

Possible causes:
1. Harness wiring or connectors faulty.
2. Switch faulty.

Remedy:
1. Examine and repair or renew damaged harness.
2. Renew switch.

Fault	**Trunk lid locking / unlocking faulty**
Possible causes:	1. No power to actuator relay. 2. Wiring harness or connectors faulty 3. Relay faulty 4. Actuator faulty. 5. Switch faulty.
Remedy:	1. Check fuse F8 in trunk fuse box. 2. Examine and repair or renew faulty harness. 3. Renew relay. 4. Renew actuator. 5. Renew switch.

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Fault	**Valet isolate facility inoperative**
Possible causes:	1. Faulty switch 2. Harness wiring or connectors faulty.
Remedy:	1. Renew switch. 2. Examine and repair or renew faulty harness.

Fault	**Sill buttons inoperative**
Possible causes:	1. Mechanical failure 2. Door microswitch faulty.
Remedy:	1. Refer to VSM. 2. Renew door lock assembly complete.

Fault	**Memory position selection inoperative**
Possible causes:	1. Transmitter battery inoperative. 2. Rear screen aerial cable damaged / disconnected. 3. Memory switch pack faulty
Remedy:	1. Renew battery. 2. Identify and repair aerial cable fault. 3. Refer to Section 15.4.

Note: For door, hood and trunk ajar fault diagnosis refer to Section 15.2