IMPORTANT
SEE PAGE 19 FOR
YOUR APPLICATION FOR

FAMILY DAYS

FOR COWLEY EMPLOYEES
1st & 2nd SEPTEMBER 1984

AUSTIN R

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SEE PAGE 19 FOR
YOUR APPLICATION FORM

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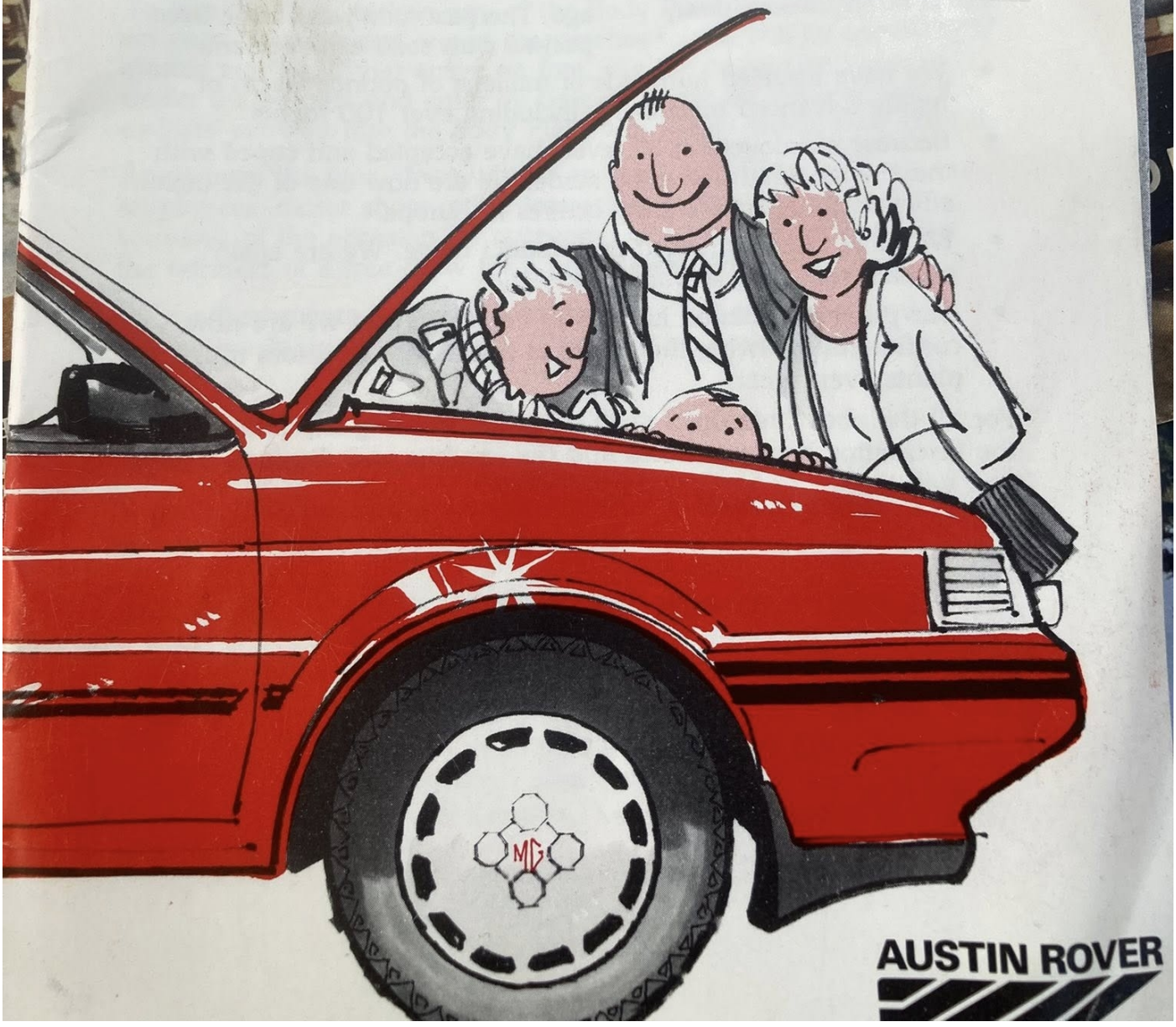
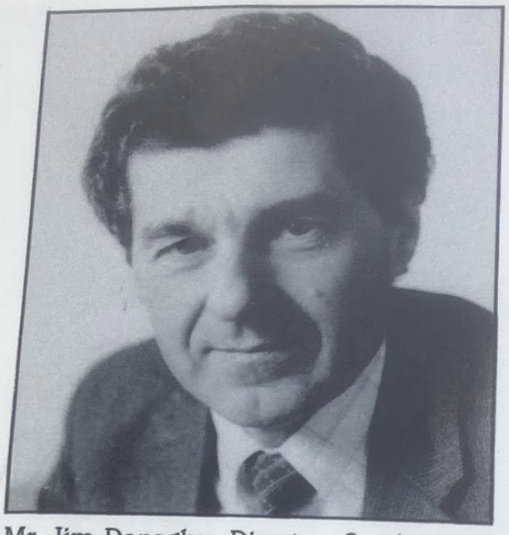


AUSTIN ROVER

FAMILY DAYS



Mr. Jim Donaghy, Director, Cowley Operations

I am pleased to extend this invitation to all Cowley based employees to bring your family to visit Cowley on one of the two 'Family Days'.

Cowley today is a vastly different place to what it was even four years ago. The past four years have been packed with solid achievement:

- We have installed hundreds of millions of pounds worth of highly advanced machinery, including over 100 robots.
- Because employees at all levels have accepted and coped with the changes that had to be made, we are now one of the most efficient car manufacturing centres in Europe.
- We have totally changed the product range. We are again making cars people want to buy.
- Our public reputation has vastly improved and we are now confidently showing thousands of appreciative visitors round the plants every year.

For all the above reasons I shall be proud to bring my family to see the fascinating new machines and the exhibits and displays. I hope you will too.

Your programme for the day

In order to make the visit of your family comfortable and enjoyable there will be two separate Family Days. There will be several tour sessions each day. A whole tour is likely to take you and your family about three hours.

For reasons of safety it will not be possible for the tracks to be running during the visit, although some equipment will be demonstrated.

The day and time of the session for which you are booked will be shown on your ticket and entry is strictly by ticket only at the date and time stated. This is to make sure no one tour will be too crowded.

To join the tour, park in any of the Body Plant Car Parks (see map on page 3) and board one of the coaches which will be operating a shuttle service. If you arrive on foot, use the pedestrian subway under the by-pass and enter by Gate 4. If you are cycling, use the cyclists' subway into the Body Plant which also enters near Gate 4.

Apart from the tour, there will be an historic vehicles display, an employees' motor show, other interesting attractions and a souvenir of the occasion for everyone. One lucky family will be the winners of a free draw for a brand new Maestro 1.3 HLE

Light refreshments – hot and cold drinks, hot and cold food – will be available at the Roman Way Club on both days.

How to get tickets

To get your ticket and enter the draw for a Maestro complete the form at the back of this booklet

REMEMBER

- ***BRING YOUR TICKET AND THIS PROGRAMME***
- **Wear comfortable shoes**
- **Ask the show marshals for assistance if you need help i.e. lost children, toilets, First Aid etc.**
- **Children are not used to factory conditions – parents must take care to advise them of the unusual hazards, i.e. handling newly cut metal panels**

AUSTIN ROVER **Cowley Operations**

Ticket Application Form No. 09136

This form must be handed in by Friday 24 August. After completion, detach the form, fold it in half (this side in) and put it in the internal post or ask your supervisor to do so.

If you have any problem, e.g. disabled visitor etc., please ring 2488 on the internal phone system (preceded by 022 if calling from Body Plant).

Name Mr A.F.H. Pandridge.

Home Address 10 Church Road
Horspath
Oxford

Clock No 224014 *Dept* Rivet Room *Zone* 9K

Supervisor's Name Mr K Dingle

Superintendent's Name D Woods

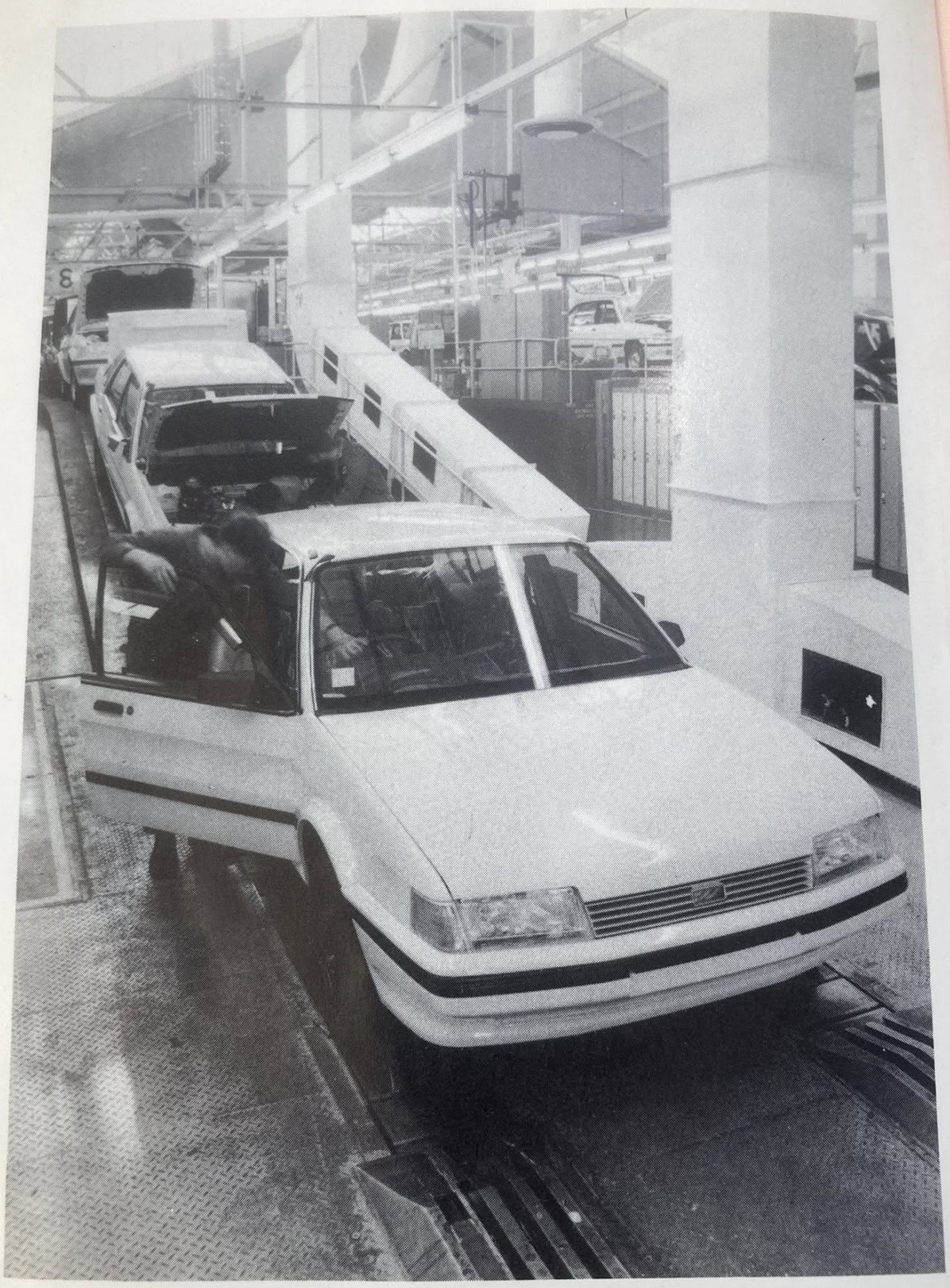
I wish to apply for a ticket to attend one of the Family Days and take part in the draw for a Maestro.

I wish to bring the following members of my family with me (maximum 3):

Name Mrs Sheila Pandridge *Name* X

Name X

Signed A.F.H. Pandridge *Date* 23/8/80



The Montego final assembly line.

FAMILY DAYS

TOUR GUIDE

The aim of this guide is to help you understand what you will see on the tour.

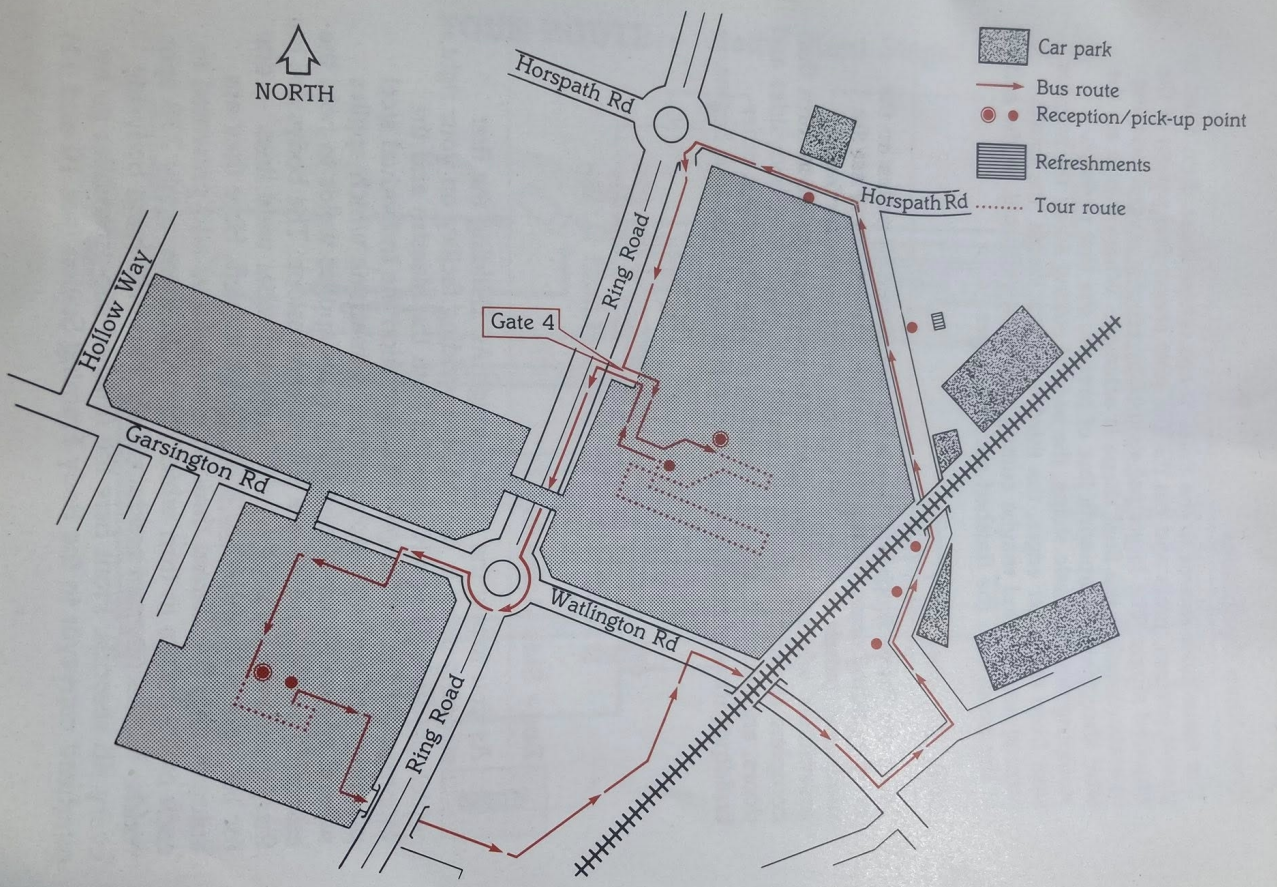
The numbered paragraphs describe the various processes involved in building a motor car in the order in which you will see them. These same numbers are used on the plans on pages 5 and 6, and will also be used on notices in the factory, to show where each process takes place.

The factory tour joins the car making process at the point at which we manufacture the side panels and doors for the Maestro and the Montego. By this point a lot of work has already been done.

Car making at Cowley begins in the Engineering Department where the engineers produce designs for three major purposes: for the panels which will make up the car body itself; for the tools that will stamp out these panels to the appropriate shape and size and for the jigs and fixtures that are needed to control assembly of the body.

Making the Tools

The next stage in the production process takes place in the Tooling Department. Here skilled craftsmen, working from the engineering drawings, control machines which carve from vast iron castings the various solid metal 'dies' used to press sheet steel into the hundreds of different shapes and sizes required to make a car body. These machines are guided in their carving in two ways. Some have a probe which follows the contours of a pattern of the required shape (made of wood or plastic) and cut the metal block to an identical shape; others are 'numerically controlled', that is they are operated by a computer tape which carries the required shape in the form of a mathematical formula.


NORTH
Horspath Rd
Horspath Rd
Ring Road
Hollow Way
Gate 4
Garsington Rd
Watlington Rd
Ring Road
Car park
Bus route
Reception/pick-up point
Refreshments
Tour route

Press Shop Operations

The scene now moves to the Press Shops where these dies, fitted to power presses, press and cut the flat steel sheets into panels of the required shape. The larger panels usually require several pressing operations before the final shape is achieved. Where this is so, the steel sheet passes through a line of presses, the first perhaps stamping out the basic shape, the second cutting away the surplus steel from the outer edges, the third turning a flange, the fourth turning another and maybe cutting a hole as well until, at the end of the press line, the finished panel emerges.

Body Building

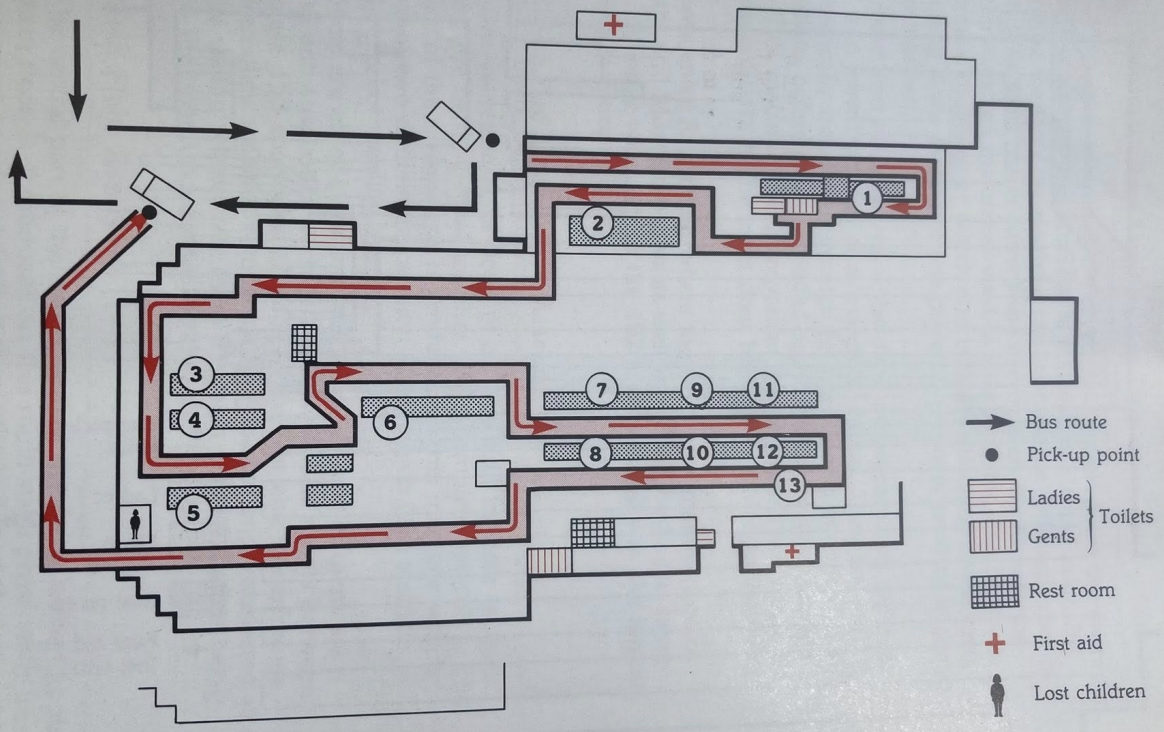
From the Press Shops the panels are transferred in pallets to the body building areas for the construction of the body. First the individual panels are welded together into convenient 'sub-assemblies' which are themselves then welded together to form the complete car body. Two of the major sub-assemblies, bodysides and doors, are constructed in AC Building (others in various other buildings throughout the plant) and this is where the tour begins.

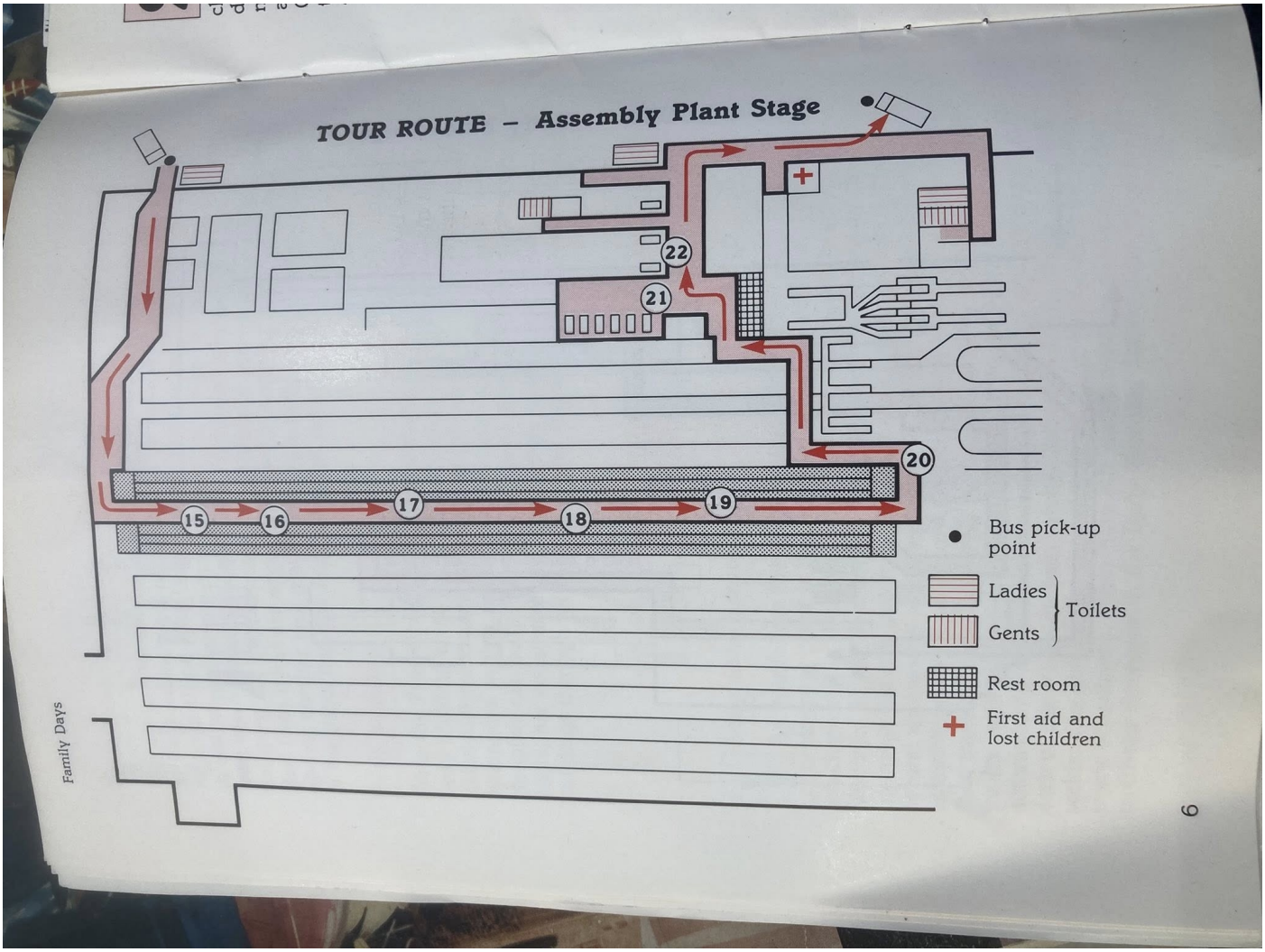
TOUR ROUTE

1 Body Side Assembly

As you follow the route through AC Building the first stopping point is the massive welding facility on your right, which produces the body sides for both the Maestro and the Montego. At the first stage of the operation the individual steel pressings are put into a multiwelder (a machine which applies several spot-welds simultaneously). This applies welds to hold the assembly steady and ensure correct dimensions. The bodysides are then transferred by conveyor to the main robot weld lines – one for the right side of the car and one for the left. Here they are automatically transferred through eleven stages and presented to each of the robots in turn which, between them, apply 238 spot welds. The facility can produce a right and left hand bodyside every 46 seconds. From here the finished sub-assemblies go by overhead conveyor to the Body Framing Station (see 10 and 11).

TOUR ROUTE – Body Plant Stage




TOUR ROUTE – Assembly Plant Stage
22
21
20
15
16
17
18
19
Bus pick-up point
Ladies
Gents
Toilets
Rest room
First aid and lost children

2 Automatic Door Construction Line

The other major facility in AC Building produces the doors for the Maestro and Montego at the rate of 310 per hour. By changing the tools the machine can produce ten different types of door. (The tools not in current use can be seen stored near the machine, as can the cranes used to change them). The facility is an automatic multiwelder which also includes clinching operations. Clinching is the folding of one piece of steel over another to clamp them together.

The inner and outer halves of the door are prepared on separate lines and joined together at a 'marriage' station. They are then automatically transferred through further welding and clinching operations before being unloaded and taken to the door storage area. This machine also incorporates a robot which automatically applies adhesive to the inner door before it is joined to the outer door.

We now enter A Building where the remaining manufacture of Maestro and Montego bodies as well as that of the Rover, takes place. When it was built in the 1920s A Building was the largest building in Europe.

3 Rear End Underframe Assembly

The underframe, or floor, of a car is built in three sections before being welded together into a complete assembly. The rear half of the underframe is produced on this machine which consists of two manual preparation lines, which feed a single automatic robot welding line.

The robots are all of a similar design though four of them are inverted and suspended on a gantry system. The robots between them place 153 spotwelds on each of the rear end underframes. The assemblies are then automatically unloaded and transferred to a marriage station where they meet the main floor (4) before being taken to the main underframe multiwelder (8).

4 Main Floor Assembly

The central part of the underframe of the car is known as the main floor. It is produced on this multi-stage press weld line. The component panels are loaded manually and then the assembly

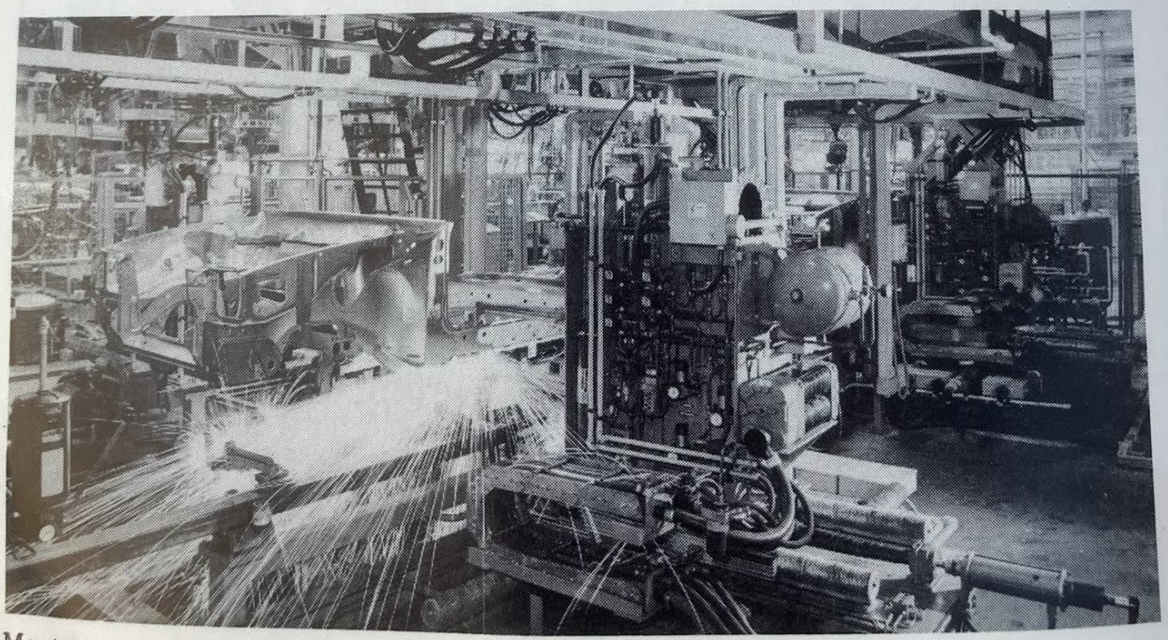
is transferred through the various welding stations on a shuttle system, where it receives 221 spotwelds. It is then automatically unloaded and transferred to join the front and rear ends.

5 Front End Underframe Assembly

The front engine compartment of the car is produced on this technologically advanced multi-stage pressweld line which comprises a multiwelder and two robots. Some of the components are automatically loaded onto the machine from magazines. Two pre-assembly jigs produce the left and right hand sections, which are then joined together with the front and rear sections and transferred through ten stations where all the necessary welds are added, by multiweld presses or by robot. Altogether 255 spotwelds are added at this station before the assembly is automatically lifted onto an overhead conveyor, which takes it to a small conveyor where some manual seam welding is carried out. The overhead conveyor then takes the completed front end to join the rear end and the main floor at the next welding station.

6 Underframe Complete Assembly

At this point the three major sub-assemblies (3, 4, 5 above) come together to make up the complete underframe of the car. The three sub-assemblies are automatically loaded onto the

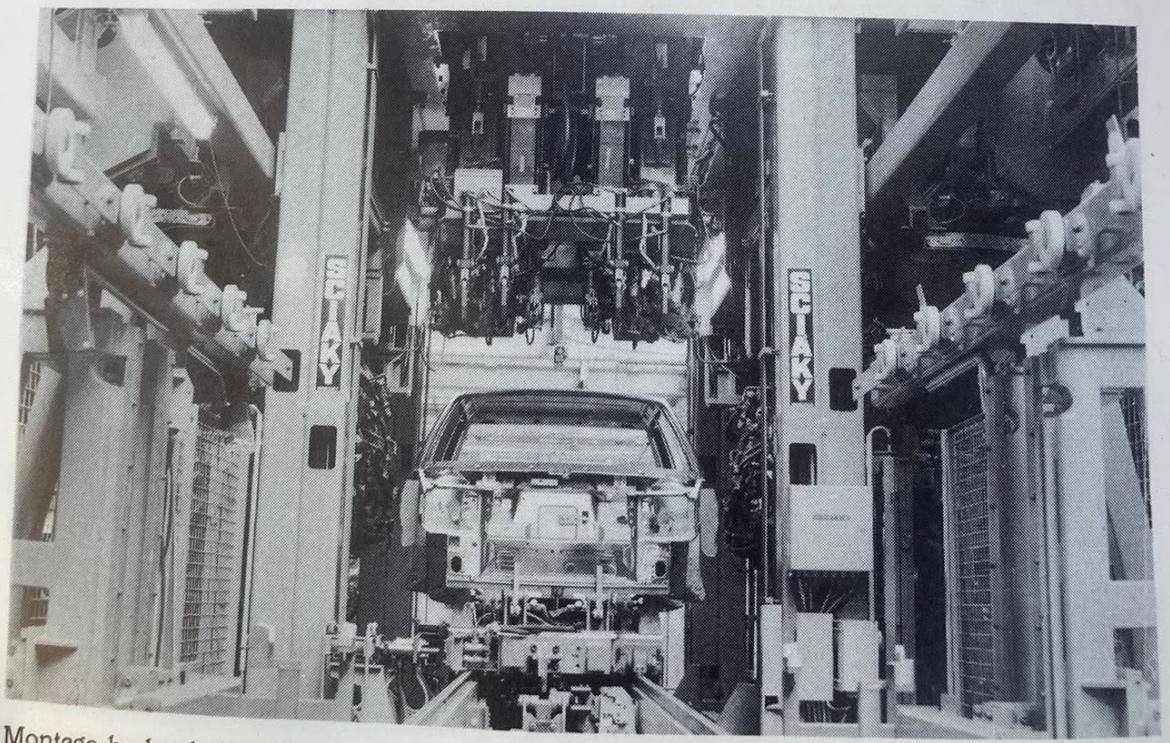


Montego complete underframes being welded in an automated welding line.

multiwelder and placed together. There then follows an automatic welding sequence which applies 184 spotwelds. These welds are mainly applied by 12 'simple' welding robots – 'simple' because they move through two axes only. On completion, the finished underframe is upended and moves into an automatic sequencing store, known to everyone in the factory – and you will see why – as the 'kipper racks'. Until this point in the body building process components for the Maestro and Montego are constructed on the same manufacturing facility, the tools being changed as necessary, and both underframes are stored in the 'kipper racks'. The Montegos can be recognised being slightly larger. After this, each model has its own separate manufacturing facility.

78 Body Tagging Stations

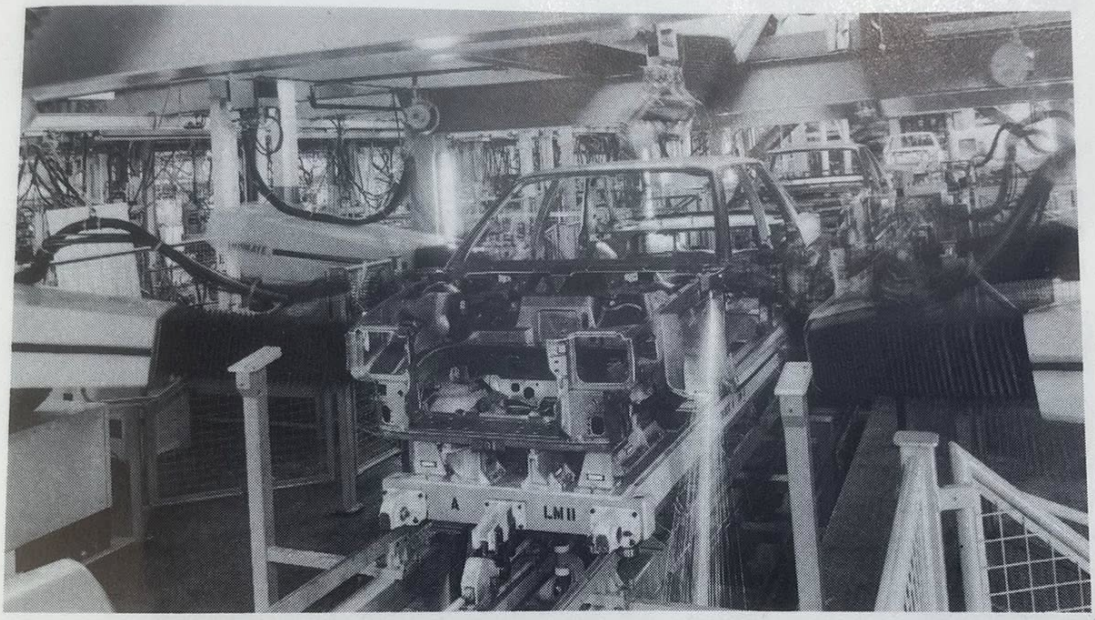
This is the point at which, for the first time, a recognisable car body emerges, as the complete underframe meets the bodysides and the roof panels. At this station the four major assemblies, two sides, floor and roof, are tagged ready for body framing. 'Tagging' is simply closing small metal tags over the edges of the assemblies to hold them in position for welding.



Montego body shell in the Automatic Body Framing (ABF) station.

9 10 Automatic Body Framing Stations

The two Body Framing Stations, one for Maestro and one for Montego, are the focal points of the body building system. These two multiwelders have interchangeable tooling and are capable of identifying different body types and automatically selecting the tools needed. The first operation they carry out is to check the body dimensionally to ensure that all the panels are correctly located. If the body does not meet its exacting standards the machine will refuse to continue. Having accepted a body, 80 critical welds are applied and the now rigid bodyshell is automatically passed on to the next station.



One of the robot finish lines.

11 12 Robot Finish Lines

The fawn coloured robots at this station are very different in appearance from the orange ones at the rear underframe (3) but they do a similar job. Here an automatic selector system identifies the body type, and this in turn tells the robots which programme to use. The body is transferred through 8 stations, where the various floor mounted and overhead robots apply 312 spotwelds to each body. The bodies are then delivered to floor level conveyors which take them to the 'finish lines'.

13 Finish Lines

On the finish lines, which you can see on your left, the bodies move from station to station at which the doors, bonnets, boot lids and tailgates are fitted. The surfaces of all the panels are also inspected and they are rubbed down as necessary to ensure a smooth finish ready for painting. From the final finish lines the bodies, after a detailed final inspection, leave A Building by a conveyor which takes them over the Oxford ring road to the Assembly Plant North Works and then over the Garsington Road to the South Works Paint Shop. We also leave A Building now and board the coach again to meet the Maestros and Montegos again in the Assembly Plant.

Paint Shop (not on tour)

In the Paint Shop the bodies are thoroughly cleaned and zinc phosphate is applied to give a key for the paint. Then an electric current is passed through the body whilst it is totally submerged in corrosion resistant paint. (This ensures an even spread and that the

Montego body shell, complete with polyester technology bumpers, receives a final colour coat in the highly automated spray booths.

paint reaches all nooks and crannies). Next, robots spray underseal on its bottom and then automatic spray machines apply two coats of primer sealer. After further preparation, more automatic spraying machines apply three finishing coats. Finally, wax is injected into the box sections to give even more protection against the elements. The bodies then go by overhead conveyor to QT Block, which is the trim and final assembly building, and is where we meet them again.

14 QT Block

The painted bodies enter QT Block from the Paint Shop and are lowered on to the moving assembly lines where, progressively along the tracks, tens of thousands of components are fitted until at the end of the final line the engine is started and the car is driven to the 'rolling roads' for a series of tests and checks.

We join the production line where already many parts have been fitted. Samples of the operations which take place along this part of the line are:

15 Headliner Fitting

The soft trim that covers the interior roof of the car is called the headliner. This is premoulded to the size and shape of the roof of the car. The operator feeds it through the windscreen aperture, offers it up to the roof and presses it into position. It is held there by Velcro Strips, the front section being held by the sun visor fixings and the sides by the coat hooks and grab handles, thus ensuring a snug fit all round.

16 The Glazing Robots

In the fitting of the front and rear windscreens Austin Rover has broken new ground in the use of robots for vehicle manufacture. On a platform above the assembly track robots apply primer and adhesive to the edge of the screens. These are then automatically transferred to the track where two long-reach robots present them to the apertures in the body shell.

Video cameras on the robot heads guide the screens into position and ensure a perfect fit. The machine is capable of fitting 40 windscreens and 40 back windows per hour.

17 Carpet Fitting

The carpets fitted to the Maestro and Montego come ready moulded to the size and shape of the floor, with the appropriate cut-outs already in them to accept seat belt anchors, gear lever and hand brake. The grade and colour of the carpet to be fitted is determined by the 'build label' which is read by the operator. The carpet is then installed into position in the car, being held there by Velcro strips until the mat retainers are fitted, giving the luxury of wall to wall comfort.

18 Rear Seats

The seats for both Maestro and Montego are made in the Trim Shop in Assembly Plant and transferred to the Car Assembly Building by overhead conveyor. The seats are unloaded from the conveyor, placed into position and screwed down securely. The delivery of the seats has to be carefully programmed to ensure that the seat arriving by conveyor matches the car coming along the track. There are many different seats according to the colour of the car or according to the model. For example blue cars have different seats to brown ones and the MG Montego has different seats to the Vanden Plas.

19 The 'Sniffing Robots'

This is a test to ensure that the passenger compartment is completely watertight. It replaces the conventional method of spraying a car with water and these at Cowley were the first in the world. As the car moves into the test area all doors, windows etc are closed and other holes sealed and a mixture of helium gas and air is pumped into the interior. When the car enters the Testing Station it automatically triggers a computer programme which sends the twin robots (one at each side of the car) 'sniffing' round the body joints – windows, doors, boot, seams etc. As the robot heads travel around the body they gather up to 400 separate pieces of information on the location of any gas leaks and the intensity of each leak. And because the robot moves around precisely the same path on each car, comparing each against the same standards held in its memory, the test is more thorough and more objective than is possible using a water test followed by a manual inspection. The computer produces a detailed print-out giving the accurate location

of any leaks found on the car requiring rectification. This print-out then stays with the car throughout the production process.

20 Engines and Gearboxes

If you look to your right at this point you will see the engine 'carousels'. This is where the engine and gearbox are fitted into the car. The carousels are endless circular conveyors on which ancillary components are fitted to the engines and gear boxes and which then carry them to join the main assembly lines. Where the two tracks run in tandem, lifting tables raise the engines and gearbox up into the car where they are bolted into position.

21 Finished Car Display

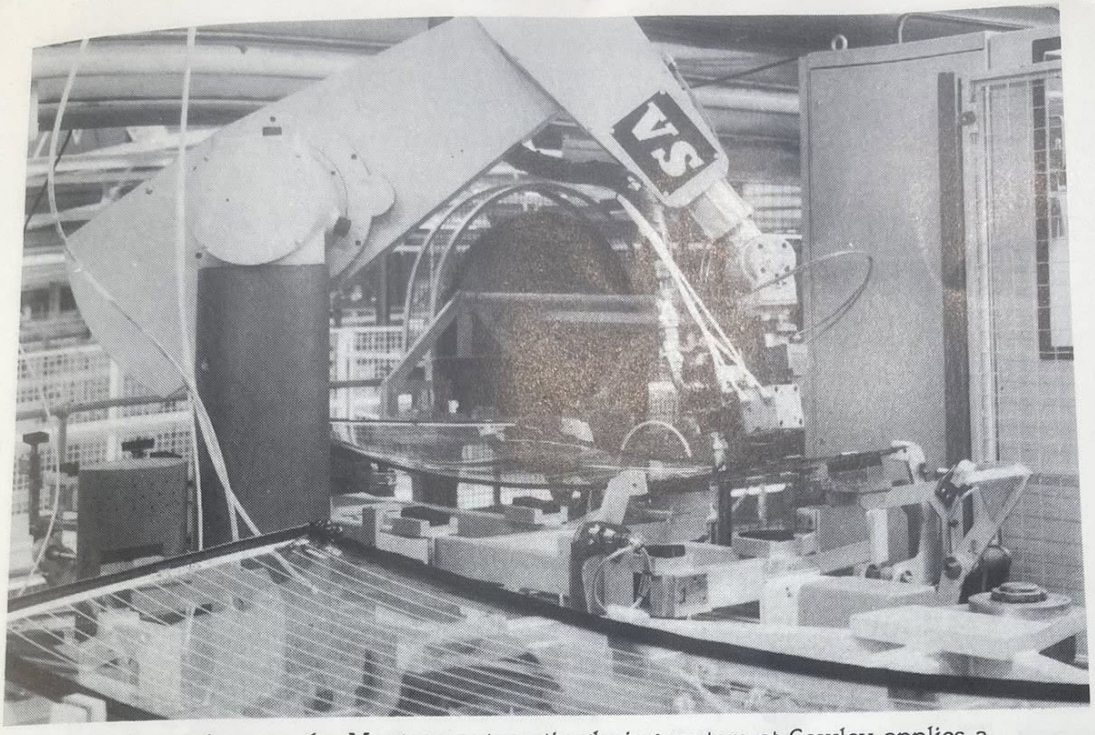
This is what all the designing, planning, pressing, welding, painting, building and checking has been for – finished cars ready for the customer.

22 Engine Tune and Emission Test

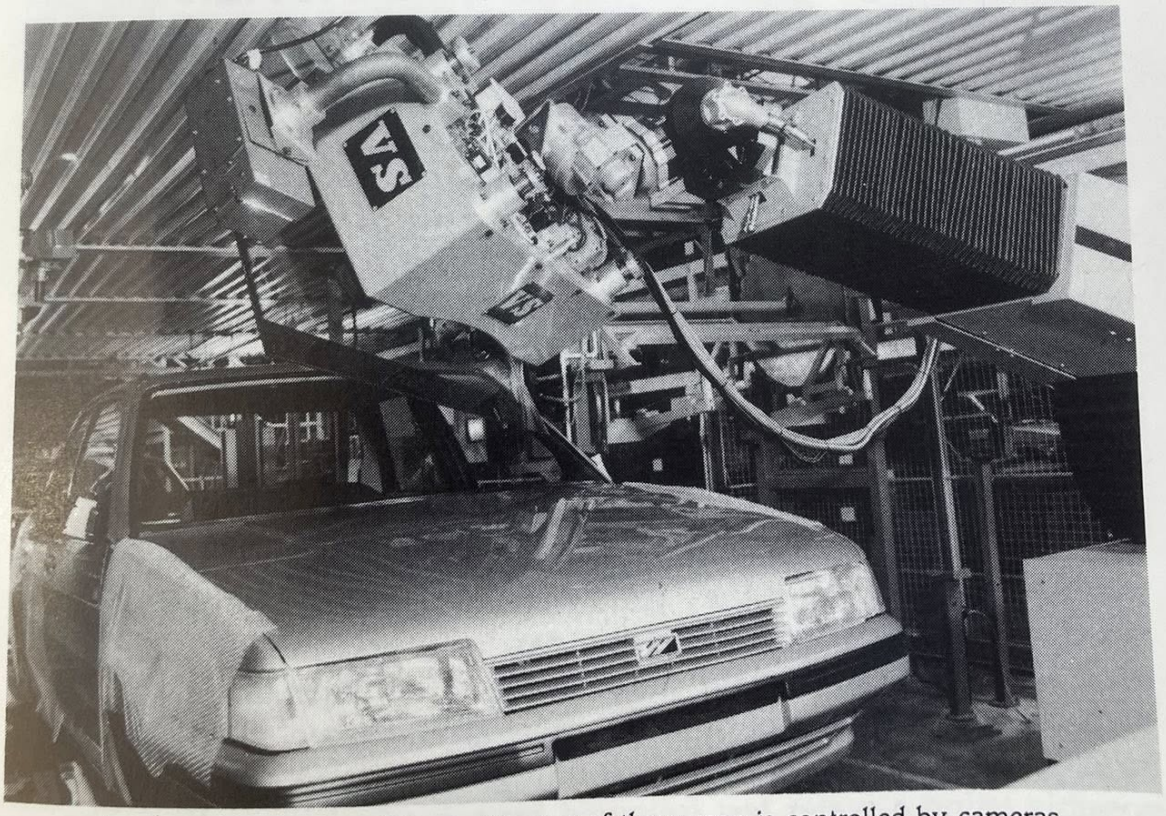
The conveyor tracks on your left are where the engines are tuned and emission tests are carried out.

The emission test is to ensure that the car complies with the EEC 'Clean Air' regulations. A pipe from a gas analysis machine is connected to the exhaust pipe. The engine is started and gas from the car's exhaust is fed into the machine, analysed and recorded. The operator adjusts the carburetter mixture as necessary to give the correct reading on the machine. The carburetter is then made 'tamperproof'.

We now leave QT Block and board the coaches again to return to the car parks or to the Romanway Sports Ground where refreshments are available and an employees motor show is being staged.



One of the four robots on the Montego automatic glazing system at Cowley applies a precisely controlled bed of adhesive around the edge of a rear screen. . .



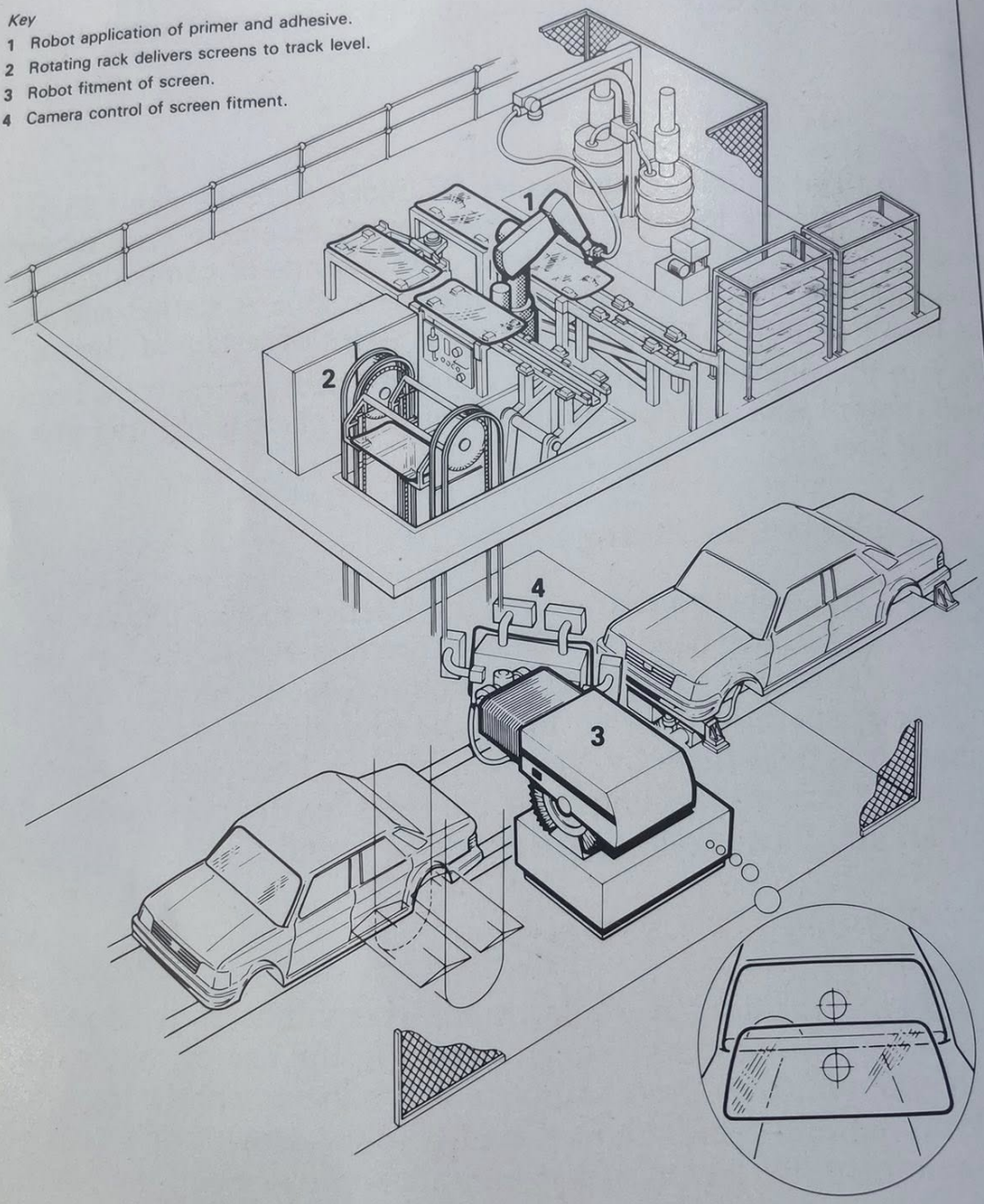
. . . another fits a front screen. The positioning of the screen is controlled by cameras mounted around the robot head.

AUSTIN ROVER

Automatic Glazing System

Key

1 Robot application of primer and adhesive.
2 Rotating rack delivers screens to track level.
3 Robot fitment of screen.
4 Camera control of screen fitment.



This diagram represents the front screen preparation and fitment sequence in the new automatic glazing system on the Montego assembly line at Austin Rover's Cowley manufacturing complex. The rear screen sequence is identical.

PSF (COWLEY) SPORTS & SOCIAL CLUB

FAMILY DAYS SPECIAL

Emperor Ballroom

Saturday 1st September

FAMILY SOCIAL NIGHT

8 p.m. to Midnight

Dancing to

SKOL DISCO

D.J. – John Dean

CHILDREN'S DISCO DANCING – COMPETITION (Entries on the Night)

BINGO, PLUS PARTY GAMES – SUPER PRIZES TO BE WON

SKOL LAGER ***50p***
JOHN BULL ***50p***
TETLEY ***50p***
(From 8 p.m. to 10 p.m.)

DRAUGHT PEPSI – SHANDY – LEMONADE
15p *Per Glass*

MEMBERS/GUESTS 50p
CHILDREN FREE

TICKETS AVAILABLE FROM THE CLUB BOX OFFICE