

One Approach to RESTORING an AUSTIN-HEALEY

Installment 21: Trial-Fitting Individual Parts

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Beyond repairing the main body panels, fixing rusted areas and assuring the gaps and swage lines aligned pretty well, there are still many other checks that need to be made so that at final assembly all the parts you will be attaching will fit the body properly.

If you wait until after painting to see how these details fit the body, it is possible, and even likely, that you will encounter a problem that requires metal work to sort out properly. With a finished paint job there will be little enthusiasm or desire to redo work that requires welding and re-spraying, and you will be tempted to cut corners, resulting in less-than-perfect results. Thus, the additional time spent up front can pay off big time in the long run.

Fitting the Bonnet

The last body panel to attach is the bonnet, and it will be installed and adjusted along with the bonnet latch. I have encountered situations where this latch wasn't trial-fitted until final assembly and some very significant problems cropped up that were not easy to address with a nicely painted body.

There are slots in both the hinge bars and the bonnet mounting brackets that allow for adjustment up and down as well as forward and back. Whenever using bolts through slotted holes, it is imperative to place flat washers under the bolt head and/or nut so they can't wedge into the slot. At final assembly, a spring washer will also go under the nut, but this is not necessary for fitting at this stage.

Mounting the bonnet is really quite simple, but here are some tips to make it go more easily. Two people will be needed – one to support the bonnet while the other inserts fasteners and makes adjustments.

Once the four bolt-washer-nut sets have been inserted and run just finger tight, slide the bonnet on the hinges out towards the ends of the slots and make the bolt nearest the hinge tip fairly snug. Lateral positioning of the bonnet to even out the side gaps, is achieved by pushing sideways on the bonnet to slightly bend the hinge bars.

When closing, the bonnet should have a minimal – about 1/16 inch – gap at the point of closest approach between its edge and

the shroud. Vertical positioning is easily achieved by loosening the bolt closest to the bonnet edge and pushing up or down, pivoting the hinge bar about the bolt nearest to its tip. Sideways cocking of the bonnet (to even out the gaps on both sides) can be adjusted by moving it for or aft on one hinge bar, relative to the other.

For final fitting, on 100s the bolts should be inserted from the outside towards the center of the car; on 6-cylinder models the bolts insert just the reverse – towards the outside of the car. For this test installation, it doesn't matter which way the bolts are inserted.

Adjusting the Bonnet Latch

Once the bonnet fits the shroud opening to your satisfaction, the next task is to adjust the bonnet latch. There is a shelf screwed to the body to which the latch mechanism is bolted. The striker assembly is mounted to the bonnet and has adjustment in two lateral directions, with the pin able to be screwed in or out for vertical adjustment. It is not uncommon for these components to require some finagling so that the latch works properly, and such adjustment could require a bit of body work as well, which is why latch operation should be thoroughly checked before painting. Since you will have to re-position the striker during final assembly anyhow, making the adjustment at this stage (where it is easy to free up the latch if it gets stuck) and learning how the components work will also pay big dividends later.

You might want to first refinish the latch components before this fitting, as once you have set the height adjustment on the striker pin you will not want to disturb it. Also, it might be a good idea to take a short break from body work at this point, anyway.

Again, the fitting process is fairly simple, but if not done properly you can encounter latch misalignments that result in sticking of the bonnet closed (see box on next page). It is very difficult to free up a stuck six-cylinder bonnet latch, but can be ten times more so on a 100 if the engine and gearbox are in the car, because they block access to the latch from the underside. Once you get the hang of the method described, you will be able to line up a latch in 15 minutes.

Other Pieces to Fit to the Body

Before moving on to final body panel preparation for painting, there are many other bits that should be installed to assure they fit properly. Even with a car where everything seemed fine when you took it apart, it is not unusual to find that some adjustment is still required to make these items fit "just right." In most cases you will be looking at the results with a more-critical eye than you did at first, and end up fixing small details that had been "off", even when the car left the factory.

Aluminum Door Opening Facing At this time it is a good idea to finish fitting the aluminum facing pieces around the door opening. The bottom of the vertical door shut face nests behind the horizontal sill piece edge, and the joint between these two should be tight along all edges.

Trim the edge of the shut pillar aluminum facing, as necessary, to allow for the piping. If the original trim screw holes (through the wing flange and shut pillar edge) are not stripped, drill holes in the trim to line up with them. On 100s the screws are #6 sheet-metal raised-head Phillips, the same as used on interior trim panels. On all six-cylinder cars they are #4 truss head sheet metal (Phillips well into the BJ8s, and Pozidriv on later BJ8s). Tap new hole threads using surrogate sheet metal screws, as described in Part 18. I use thin metal or cardboard shims to stuff into any gap behind the bottom of the shut pillar facing so that it stays snug against the rear of the sill piece.

Tips on Adjusting the Bonnet Latch

The latch pieces are zinc plated (except for the wavy top plate on 100s which is painted black), as are the striker pin and spring cup. The spring and striker base are painted black, as is the heavy latch return spring.

1. Install the latch pull rods (and bell crank at the right front on 6-cylinder Healeys), or insert the pull rod through the firewall on 4-cylinder models.

2. Mount the latch mechanism to the shelf and then this sub-assembly to the firewall (100s) or front brace (6-cylinder models). Connect all pull rods and links (just partially bend the cotter pins) but *do not install the heavy return spring to the latch!*

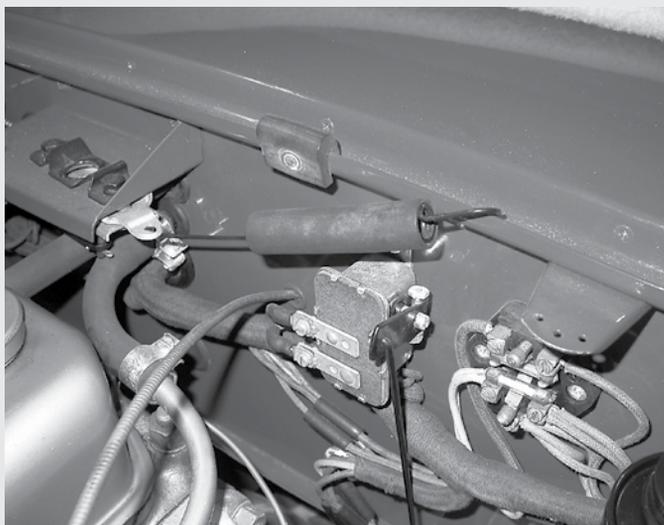
3. Screw the striker pin into its base so there is just enough thread exposed to accommodate the jam nut and mount the striker to the bonnet, but leave the bolts loose enough so that the assembly can be slid to position it (remember to use flat washers under the bolt heads). Lower the bonnet slowly so that you can approximately align the spring cup with the center hole in the top wavy metal plate over the latch, and now make the two striker mount bolts "just snug".

4. Pull the latch rod so that the slide plate is fully to the side (without the return springs it should stay in the "open" position) – you will see a perfectly round opening in the latch hole.

5. Lower the bonnet – it will be supported at the latch by the striker spring. Gently push down a bit and listen and feel for any rubbing of the striker pin head as it starts to enter the latch hole. If this is the case, *stop!* The striker will need to be adjusted on the bonnet so that there is no rubbing as the pin enters the latch. When this adjustment is correct, you should be able to push the bonnet down flush with the shroud and have it bounce right back up.

6. Once this condition is achieved, fully tighten the two striker mounting bolts and attach the heavy latch spring.

Looking down through the latch in the fully-open position.



Latch return spring unhooked on a Healey 100. The process for adjusting the latch works just as well on a finished car.

7. Push the bonnet down into the latch. If it doesn't stay down (latched), the pin is not extended out far enough. Since you had unscrewed it to its longest position at the start, this means that either the mounting bracket on the bonnet has been pushed up too high or the shelf to which the latch is mounted is sitting too low. This issue will have to be sorted out before finishing the bodywork and painting.

8. If the pin engages the latch at step 7, you can then fine-tune the height of the bonnet, relative to the shroud, by adjusting the pin. If the bonnet stands high, just push up on the spring, grip the pin's tip, and screw it up a bit at a time until the bonnet surface is flush with the adjacent shroud when the latch is engaged. If the bonnet sits too low, even though the latch engaged the striker pin, you will need to perform more extensive adjustments to the latch shelf height or bonnet striker mounting bracket, as noted in (7) just above. 9. If you have to remove the components to sort out the problem described in (7) above, you will have to repeat steps

1- 6 until the pin engages and the bonnet is not sitting lower than the adjacent shroud. Remember to always leave the heavy latch spring disconnected until you have re-reached the condition of step 6. If you don't, the pin could stay engaged with the latch when trying to release the bonnet and you'll have the big problem described at the start.

10. When the latch is finally adjusted, remove it, leaving the shelf attached to the body – this piece (and its mounting screws) will be painted body color. Being careful not to move the center pin, tighten the jam nut to fix its position on the striker base. When the latch is re-installed on the bonnet later on, you will have to repeat steps 1, 2, 4, 5, and 6 above. The pin position should be correct, so you will not need to change it, as described in steps 3 & 8.



Photo 1: Aluminum facing pieces on a BJ8; the horizontal sill piece traps the shut face piece behind its vertical and horizontal rear edges. The edge of the shut pillar piece is trimmed so that the piping edge ends up about 1/8 inch back from the outer face of the rear wing.

It will not be possible to insert the front screw into the outer, lower lip of the sill plate until the door has been removed, so make a note to do this later. Also, on 6-cylinder cars, fitting of the sill protecting piece, which lays over the door draught seal, should be delayed until trimming of the interior.

Next make holes to mount the striker assemblies. With the shut face trim held in position by a few of its mounting screws, mark from the back side the large boss hole position (on roadsters) or two screw hole positions (convertibles) as you had determined from test fitting of the striker plates. If, with the engine-gearbox removed, the door gaps remain unchanged from when you did panel fitting, you can continue to finish installation of the strikers and testing of the door locks now. It is not necessary to make adjustment slots for the mounting screws that match those in the steel shut face (roadster fitting) as you should be able to locate screw holes fairly accurately, and only need to drill them a bit oversize to allow for final adjustment. Remember that shims are positioned behind the aluminum facing on roadsters, and these will need to be slipped into place (they can be held in position by taping to the back side of the aluminum facing). Similarly, if any shims are required to position the striker on convertibles forward so that it easily nests with the door lock, these should also be located behind the aluminum facing.

If the door gaps opened up with removal of the engine-gearbox, then you will need to put off these final door lock fitting steps until final assembly.

Windshield. You need the complete windshield assembly – glass mounted in the frame and to the side posts – to see that it fits properly. On all cars, aluminum shims are used between the pillar mounting points and the sides of the scuttle to fill any gaps so that when the mounting bolts are tightened the side posts are not pinched or cocked, which might put stress on the glass. On four-cylinder Healeys,

you also need to check that the upper part of the windshield pillars slide smoothly off their chrome bases, and that their bottom pins line up with the receiving pockets that mount into the wing-shroud joint, when the windshield is changed to the “lowered” position.

You probably should also test-fit the side curtains (on roadsters) or vent window frames (on convertibles) to the doors to see that their forward slope can be matched by adjusting the windshield angle. This is particularly important if any of these items were not original to the car. You don’t have to do final adjusting now – just check that the available adjustment range will allow for proper alignment at final assembly.

Cockpit Trim On all roadsters the cockpit trim pieces should be fit to make sure they haven’t become bent from handling. This is a good time to make sure that the threads that sheet metal mounting screws engage are not stripped (weld up and re-drill as necessary). Note any shims that will be needed to achieve good alignment across the door gaps, and package up all hardware with descriptive notes so that you will be able to later re-assemble these items correctly. This fitting must be done before you have the aluminum moldings refinished.

Dash In roadsters the dash/fascia mounts to two end brackets that are welded to the scuttle at the door hinge pillars. The position and curvature of these brackets should be such that there is an easy fit as the dash is mated to them.

Rear Bumper The rear bumper should have sufficient curvature to create a uniform gap (approximately two inches wide) to the rear shroud across the bottom of the boot opening. It would be good to make a template from thin plywood that matches the rear shroud, and is two inches in width, as the outer edge will be useful for correctly arching the bumper before plating.

Exterior Door Handles The door handles should mate tightly against the door skin. Test-fitting also provides an opportunity to experience just how easy (or difficult) attaching them will be later on.

Top Frame With the windshield in place it is important to check out the top frame (especially before having it painted or powder-coated):

Photo 2. This view shows the three lower mounting tabs for the grille. Note, view is from inside the shroud and the shroud is inverted.





Photo 3: Fitting the grilles – this includes rounding up all required fasteners. Note that the unpainted headlight bucket and the bumper have been mounted to check body panel shape.

- Does it “comfortably” mate up with the windshield
- Does it operate smoothly – no binding of the joints
- When folded, do the link bars clear each other (won’t damage their paint later on)
- On convertibles, do the joints over the door windows line up perfectly. To completely assess this, you will need to engage the latches to the windshield. There also are shims that may be needed under either the front or rear of the top frame’s mounting plates; these also can adjust how the joint above the door window lines up.
- Do the front latches engage the windshield post studs without binding or pulling the top excessively to one side or the other. Note that the hooks themselves are bent slightly, angling outward.
- On roadsters, are the adjusting feet/bolts at the bottom of removable frame free (often these are broken off or rusted to the frame)
- Some re-shaping of the latch hooks may be needed, and now is the time to do so, before having them plated.

Grille The grille should be installed completely. On 100s this is fairly straightforward. However, on six-cylinder roadsters and convertibles it is more complex. You will need to check a number of details:

- The condition of the three mounting tabs that are riveted to the bottom edge of the grille opening in the shroud. These have nuts spot-welded to them. Make sure that all bits are firmly together, and chase the threads with a tap to be sure that bolts will screw in easily.
- Mating of the grille-bar assembly tabs to their body attaching points. Original grilles require some adjusting of tab positions, but new replacement ones will need more extensive re-shaping.
- Fit of the brow to the top of the grille opening. On Mk IIs and Mk IIIs, this is a two-piece subassembly, consisting of the brow and oval grille surround. The brow nests behind the lip of the oval, along the top edge, and nests in front of the three tabs on the surround; these tabs must line up with the captive nut holes in the brow. The two grille pieces are held together by threading studs through the tabs and into the brow’s captive nuts.
- That you have all the little brackets and various fasteners bits. On Mk II and Mk III cars these are numerous, and of many different configurations. Be sure to refer to the Service Parts List.
- On 100-Six and 3000 Mk I roadsters, that the lower trim piece fits over the bottom edge of the grill opening. You may be able to just lay it in position against the flange at this stage, as to install it requires flexing and

you don’t want to risk overdoing this and cause damage. Also, on these models check that the two corner holes line up where 10-32 screws attach the brow to the shroud.

Bonnet Grille on Six-Cylinder Models Fit of the bonnet grille and top brow needs to be carefully checked. These pieces, when installed, sandwich the bonnet scoop between them. Corners of the inner grille part often rub hard against the bonnet at the scoop opening corners, while the front lip of the top brow may not uniformly cover the top edge of the grille. Such “flaws” are often found on undamaged cars with all-original pieces.

With reproduction items, the fit is often even worse. You may spend an inordinate amount of time getting the parts lined up satisfactorily, and likely will have to compromise and settle for less than perfection.

Another important detail to be aware of is the thick fiber spacers that slip over the three brow studs and support the planar surface from being drawn down as the nuts are tightened. Without sufficient spacers, dimples will appear where each stud is attached to the brow.

For this test fitting, be sure to use flat washers under the nuts to bridge the slotted bonnet holes (spring washers will also be used at final assembly). Note that the ends of the brow will likely not line up perfectly with the bonnet at the sides of the scoop. A small gap is desirable so the paint doesn’t chip in these areas later on. The nuts should only be “firmly” finger-tightened – watch for when the chrome surface starts to show the onset of dimples at the stud locations.

On final assembly the spring washers should just be compressed and a little “medium”/blue Locktight should be used on the stud threads.

Lights Remember that earlier, before sending the shrouds out for weld repair, we had already fit the head, running, and tail light units to the body. These can be re-installed if you want to make a final check of how they mate against the body and mounting hole positions.

Next Time

With all body pieces fitted, the final step prior to painting will be surface preparation and contouring. We will address fine points of panel contours, options for selecting paint, and sequences that may be followed to finish the chassis and body panels. This will really be the last step before the fun of re-assembly begins.