POTENTIAL SUNROOF AND FRONT END WATER LEAKS

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THESE ARE LISTED IN THE LEAST LIKELY ORDER

1. Windscreen washer jet mountings, usually water will leak from the centre of the dash board after egressing through the scuttle holes drilled for the jet mounts.
2. Rubber windscreen surround, this can cause rusting under the rubber but front end leaks are usually from other sources, except on coach built cars when body racking will promote water leakage through the windscreen seal. Normally body mounting degrading cause's body movement and windscreen seal tearing in these cases.
3. Rubber grommet surround of roof radio aerial, water runs through grommet hole and around the top windscreen egressing down the "A" pillar.
4. Rubber grommet surround of wiper spindles, water runs around inner metal scuttle skin and egresses at base of "A" pillar.
5. Drain blocked on centre scuttle air intake or intake rusted, water egresses and runs across to base of "A" pillar, usually accompanied by some water leakage from centre of dashboard.
6. Metal tubes in "A" pillars penetrated by screws that are too long and which retain the windscreen wood trim.
7. Sunroof drain collector dish solder joint to main body, in each front sun roof corner.
8. Sunroof collector tube to collector dish, rusting through occurs just above the position where the drain rubber pushes onto the collector tube.
9. Sun roof rubber drain tubes

LOCATING AND TESTING FOR WATER LEAKS

Note that any leak at the front that commences above the external body swage line, this line being level with the door handles, will be deflected by the bees wax block in the side scuttle panel. This block is positioned in the side scuttle panel, about 4 inches (100mm) below the swage line and running across the panel for approximately 4 inches (100mm). That is the bees wax block runs parallel with the swage line and the side scuttle panel is the side panel immediately forward of the front doors. Implications are that the wax block can move, usually nose diving at the front end and water is deflected from the leak into the forward section of the sills. In this case large quantities of water can be cascading down the inside of the "A" pillar and into the front end of the sills, unknown to the owner. If on the other hand the wax block forms a good water restriction the vertical scuttle panel rusts outwards. The first signs of this are when bubbles appear in the paint just under the swage line some 6 inch (150 mm) forward of the front door handles.

As with all these sun roof drain and other top end potential leak areas it is important to remove the inner carpeted side panels which fit on the inside of the vertical scuttle panels and carry out the water tests described. On the later and larger 4.5 Litre Bentley Mark VI / Silver Dawn, except for the first few chassis, these vertical scuttle panels contain the side air vent flap. Small tacks retain the carpeted panels, with the rear edge in some cases held by a vertical line of screws embedded in the carpet pile. Judicial prying with a screwdriver will show the method of retention.

Once the carpet panels have been removed, the bottom of the rubber drainpipe, which protrudes from the front underside of the sill, should be blocked off, say with a wine cork. On 4.5 Litre cars and R types two drain hoses will be present in the under sill, the other drain coming from the side air vent water drain. Open the sun roof and slowly fill the particular drain until the water level reaches the top of the drain holes but is not present on any of the sun roof drain channels. On the later cars, if the wrong drain pipe of the two

possibilities has been blocked, water will (should) issue freely from the unblocked pipe, in this case swap the wine cork or plug over.

If the "A" pillar drain has not been compromised and is good and intact, then the drain pipe of water will stand without the level lowering. In this situation we know the condition of the drainpipe from the bottom end to the top of the collector or tun dish at sunroof level will be good. Should the water drop, say one to two inches, this is a sign that the collector tube onto which the rubber drain hose fits has rusted and is holed. If the water level drops say three to four inches this is a sign that the rubber drain hose condition has deteriorated. It will be realised that sometimes rubber drain hoses are changed in the mistaken belief that they were to blame for a leak when the collector tube was at fault, in other cases the replacement of the rubber has been attempted in a rough manner causing the collector metal tube to part company with the collector.

Should the water level in the drain drop below say 8 inch (200mm) it is almost certain that side screws which are too long have been used to retain the windscreen wood trim and have penetrated the copper "A" pillar drain tubes. The side screws retaining the side or vertical section of the wood trim are short to prevent such damage and the screw length should be checked with a depth wire poked down the screw hole.

In every instance of drain repair the full sequence of water tests should be completed in order to test the integrity of the repairs. In all cases the collector tube stub should be handled with great care and no attempt made to pull or twist off old rubber drain hoses, in all case hoses should be cut off with a sharp knife. During each part of the previously mentioned tests and the ones following, the drain pipe and the inside of the side scuttle panel should be examined for water leakage at the lower inside end, where the carpet panels have been removed. Once all repairs have been undertaken this lower inner scuttle area must be entirely dry after the drainpipe has been filled with water and left standing for one hour. A dipstick of some form say like circular 0.125-inch rubber will be needed to check the water depth in the drainpipe.

Should the water level be static with no obvious leaks, then add more water at the upper end so that the liquid is covering the sun roof drain channels for some 3 inches (75 mm) each side of the top corner drain egress point. The object of this is to check the integrity of the solder joint between the collector or tun dish tray and the main sun roof body drain channels, by immersion in water. In the case of a collector tray solder joint leaking the headlining will usually show wet spots in the top corners, but in all cases the water can be seen by examining the inner lower end of the "A" pillars and vertical scuttle panel.

REPAIRING

Access to conduct a repair is likely to be the first issue. When access is gained it will be quickly realised that the type of possible repair might also be limited as soldering in situ is limited without major paintwork reinstatement.

If it is intended that the rubber drain hose is to be replaced it is then necessary to peel back the corner of the headlining material to gain access and then cut off rather than pull off the old hose. The headlining will also need peeling back to gain access for attention to replacing a collector. As the headliner is held by the wooden windscreen trim this must be removed and the best way is to follow the workshop manual instructions on the first steps to remove a windscreen. Various modifications have taken place over the years that affect the method of removing the wooden windscreen surround and gaining access to the front sunroof drains. By way of example on an early Bentley MKVI this could involve the following:-

GAINING ACCESS

1. Place the wipers in the parked position. Unscrew grub screws holding wiper knobs and trafficator switch, remove knobs and switch.
2. Remove trim from underneath windscreen finisher, this may be a felt or material covered panel held by screws.
3. Remove the radio speaker grill for safekeeping.

4. Remove the passenger's grab handle.
5. Remove the windscreen washer button assembly or its bracket from the wooden finisher and also the nuts holding the wooden finisher on the driver's side that are mirror imaged to the grab handle.
6. Remove the interior mirror, sun visors and radio aerial knob.
7. Slide the sunroof rearward, then accessing the sunroof aperture from above, remove the screws holding the internal rectangular sun roof wooden finisher and remove the finisher.
8. Remove all the finisher retaining screws positioned around the inside of the wooden finisher; make sure the screws at the sides are short enough not to penetrate the copper drain tubes.
9. Prize out the top of the finisher taking care the veneer is not damaged on the protruding spindles, lift out the finisher bodily clearing the steering wheel. Take care to collect, undamaged, the trimmed inserts protruding from the sides and under the lower finisher corners.
10. Peel backwards the headliner carefully from the windscreen aperture to provide sufficient access to the corner sunroof drain rubber hoses.

METHODS

The complete top corner of the sunroof aperture, both internal and external on the roof itself is very heavily leaded. Any attempt to flame melt solder is likely to result in molten solder underneath the external paint at the top of the "A" pillar and internally within the drain channel. This also means that the front section of the head lining must be peeled back well out of harm's way as previously explained.

It is possible to use flame heated copper soldering iron tips, where heavy copper tips are used on an old fashioned soldering iron. The repairer will however need to be prepared to make specially shaped copper tips and the heating by flame needs to be done away from the car.

In the case of the need to repair the collector it is possible to fabricate another collector positioning the new one inside of the old unit. When this method is used it is feasible to bond the newly fabricated unit to the old one with epoxy glue. It is also possible to replace the collector but the removal of the old unit can be painstaking if damage to the paintwork is to be kept to the inside of the sunroof aperture. If the job is a true repair, as against a fully repaint and body rebuild, bonding in a new collector usually effects a good repair. If however the job is being done as part of a body rebuild it is worth considering making new collectors out of stainless steel. As this material does not bond well with some epoxy glues, for a true on-going repair it is better to use steel sheet.

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