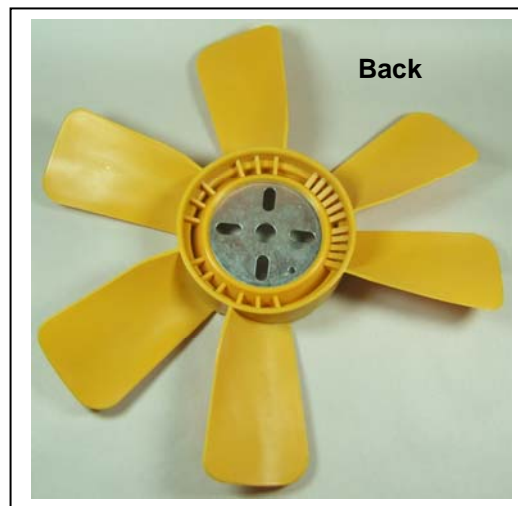
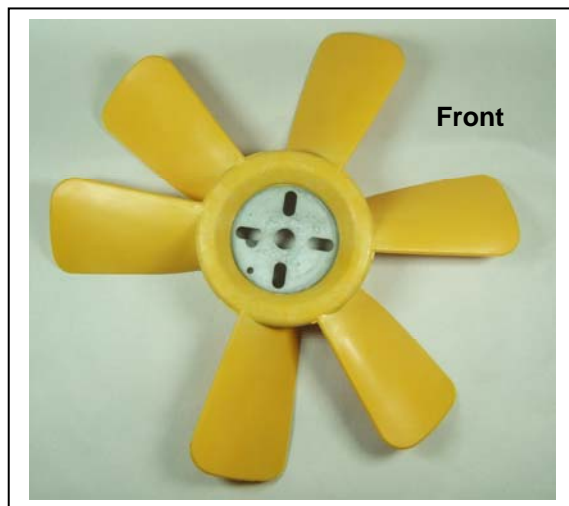


1 **Supplemental Information & Instructions**
2 **for**
3 **834-882 Fan, 6-Bladed (Plastic), the “Texas Kooler”**
4 **Austin Healey 100-6 & 3000 (6 cylinder cars)**



23
24 *Most of the Healey owner's I know have had issues with the cooling system at one time or another. At*
25 *speed, the system works fine. Idling on a hot day, the heat builds up and the needle on the temp gauge*
26 *keeps climbing. Those symptoms generally mean the fan is not moving enough air through the radiator. It*
27 *should come as no surprise that a group of Healey enthusiasts in the North Texas Austin Healey Club*
28 *(NTAHC) would come up with the answer – a fan they called “The Texas Kooler”. If you spend any time*
29 *talking to other Healey owners about cooling, sooner or later the Texas Kooler will come up in*
30 *conversation because it worked, and worked well. I have one on my BJ8, and I can tell you they move a*
31 *lot of air. The NTAHC bought the fans from a manufacturer in Fort Worth, and sold them through the club*
32 *website. Unfortunately, the plant closed and the tooling was destroyed. With the cooperation of the club,*
33 *Moss set out to have the Texas Kooler reproduced. The asymmetrical design makes it more efficient, and*
34 *requires that the fan be dynamically balanced. To balance the fan, additional ribs of material are molded*
35 *into the back of the fan. We are pleased to be able to offer this fan to Healey owners.-Michael Grant,*
36 *Product Manager, Moss Motors Ltd.*

37 **Color**

38 *Although this is not an original fan, you can paint it the color that is appropriate for your vehicle. For the*
39 *100-6 & 3000 MKI (at least through the end of 1960) the fan should be painted a medium bright red. After*
40 *1960, the fans on the 3000 MKI, II & III were painted a medium yellow. The fan comes in a yellow color,*
41 *but it is not really the correct shade. For those that want a more correct color, the Concours Guide gives*
42 *the Plasti-Cote spray enamel called “Caterpillar-Yellow” as a reasonable approximation.*
43

44 **Installation (Takes 30-45 minutes)**

45 *Part 1: You will need some room between the radiator and the fan to work.*

46 Drain enough coolant into a catch basin so that you can remove the upper radiator hose without spilling
47 coolant when the hose is removed.

48 Remove the upper radiator hose.

49 Loosen the bolts at the bottom of the radiator, but do not remove them.

50 Loosen and remove the upper radiator bolts.

51 Gently push on the top of the radiator to pivot it forward out of the way.
52

53 *Part 2: Removing the existing fan.*

54 *Loosen the four bolts securing the fan to the water pump pulley.*

55 *Remove the bolts, washers, lock washers, and the fan.*

56

57 *Look at the front of the water pump. The BN4, BN6, and the BN7 & BT7s up to 29E-H2245 used a water*

58 *pump that had a pulley secured with a nut. Many of these original pumps have been replaced with a*

59 *pump that has a pressed on pulley, which is not a problem for the fan. If you have one of these original*

60 *pumps, the nut securing the pulley will prevent the fan from sitting flat on the front face of the pulley.*

61 *Remove the nut and set it aside- you will need it in a minute.*

62

63 *Part 3: Install the new fan using the original bolts and lock washers*

64 *Hold the fan in position and start the first bolt.*

65 *Repeat the process with the other three bolts.*

66 *Tighten the bolts, pulling the fan up against the face of the water pump pulley.*

67 *Rotate the fan by hand, making sure the fan does not wobble. If it does, you will need to determine the*

68 *cause and rectify that before you proceed.*

69 *There must be a minimum of ¼" clearance between the back edge of the fan blade and the crank pulley.*

70

71 *If you removed the nut securing the pulley to the water pump, replace the nut and tighten it.*

72

73 *Part4: Re-Position the Radiator and Check the Clearance*

74 *Pull the radiator back into position.*

75 *Start the two upper bolts, but leave them loose.*

76

77 *With the fan installed, you want to be able to slide your hand between the radiator and the fan hub. If you*

78 *have an extra thick core, you may find that you only have about a half an inch gap between the fan and*

79 *the radiator. There is some room for adjustment in the radiator mounts, and you may find that you can*

80 *shift the radiator forward far enough to obtain the needed clearance. The ½" to 1" gap is sufficient **if and***

81 ***only if** your engine mounts, transmission mounts, and the transmission restraint are in excellent shape. If*

82 *they are oil soaked or old and soft, the engine and transmission (which weigh about 700 pounds) will*

83 *move forward enough to push the fan into the radiator if you hit the brakes hard. We cannot stress this*

84 *enough! If you cannot get the fan a full ½ inch away from the core, or if your mounts/restraint are not new,*

85 ***do not install the fan.***

86 *(On the next page we illustrate the parts that you should inspect and possibly replace)*

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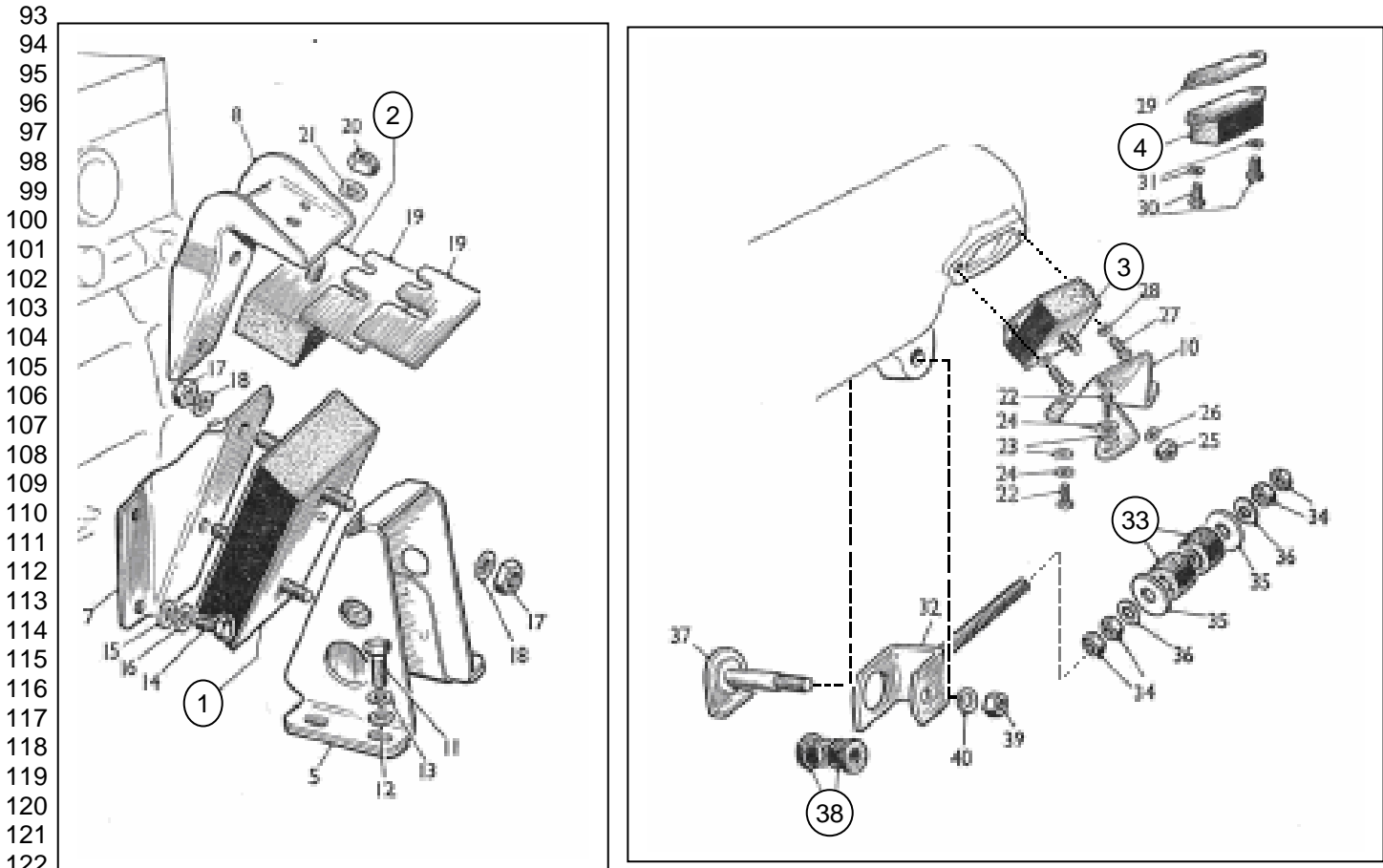
88 *When you have the necessary clearance, tighten the upper radiator mounting bolts.*

89 *Replace the upper radiator hose.*

90 *Re-fill the cooling system.*

91

92 ***If you cannot install this fan with the recommended clearance, do not use this fan!***



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Ref	Moss #	Description	Quantity
1	321-341	Motor Mount	2
2	021-342	Buffer, motor mount	2
3	413-050	Gearbox Mount	2
4	021-345	Rebound Buffer	1
33	021-769	Bushing, tie rod	2
38	280-050	Bushings, gearbox	2

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The components called out above are critical when it comes to keeping the engine where it belongs. Unless you know when they were replaced, they are suspect, especially if oil soaked. They may be intact, but so soft as to be of no real use.

Since you bought a replacement fan, we will assume you may have some concerns about overheating. We have appended out four page collection of Tech-Tips relating to the Healey and overheating/cooling issues. This is included in the hopes that you will find this information interesting if not useful.

|

141

Supplemental Information for Overheating Austin Healeys

142

143 ***Gauge Accuracy***

144 If the instrument is not accurate, you may be chasing a ghost. Use a separate mechanical temp gauge, or
145 one of the new infrared temperature sensors. (see Moss 386-265)

146 ***What is too hot?***

147 185-195° F is fine. Going up a steep grade, the temperature will climb, approaching 200°F or better.
148 Again, it is not a problem. It will come down once you start downhill. Engine coolant temps 220°F and
149 above are too hot because engine oil additive packages start to break down above 220°F.

150 ***When does it overheat?***

151 As a general rule of thumb, a car with all the correct parts and in good running order that overheats
152 standing still but runs fine at speed has an air flow problem- the air flow through the core is not adequate.
153 A car that maintains a stable temperature at idle but the temperature increases with increasing speed
154 may have a core that is not adequate for the heat generated or the coolant is moving too quickly through
155 the core and the heat is not being dumped. The coolant gets hot and stays hot.

156 ***Sudden Case of Overheating***

157 If the temperature starts to rise for no obvious reason, you may have a mechanical problem.
158 The fan belt may be loose (or broken). If the generator warning light comes on at the same time, it is
159 almost surely the belt. A failed hose or hose connection will also cause the temperature to rise quickly.
160 You may also have a blown head gasket. That can be checked by testing for combustion by products in
161 the radiator top tank, or by checking the oil for water contamination. Note: When you shut the engine off,
162 the water is no longer circulating, and the block will continue to dump heat into the coolant. The
163 temperature gauge is going to show the rise. This is normal, and does not indicate a problem.

164 ***Fan Rotation***

165 Easy to check and see – is it pulling air through the core?

166 ***Replacement Fans***

167 There are a number of options available. Moss has offered several over the years, and right now we have
168 electric fans, and two replacement fans. The 231-708 is a kit built around a large stainless-steel flex fan
169 made by Hayden. It move a lot of air, but they are noisy. The best option we have now is the “Texas
170 Kooler”, an asymmetrical six-bladed fan (834-882). It is a modern design, moves a tremendous amount of
171 air, and it is relatively quiet.

172 ***Thermostat***

173 I assume you have one! The water flows too quickly through the core without one; the water does not cool
174 off. The faster you drive the hotter it gets. All things being equal, you would expect the thermostat to
175 "cycle". A 185°F degree thermostat opens at about 185°F, and the coolant temperature will drop. The
176 thermostat closes (perhaps not all the way), coolant temp comes up, thermostat opens, and so on. My
177 BJ8 with a 195°F thermostat does that at idle on a hot day and when cruising I see the same pattern on
178 the gauge. If you run a 160°F degree Thermostat, it won't work that way- the car warms up to 160°F, the
179 thermostat opens and it will stay open all the time because the coolant never gets back to 160°F.

180 **Thermostat by-pass**

181 The Austin Healey cooling system has a by-pass; when the thermostat is closed, the water come out of
182 the head, into the housing, and then direct back to pump. This design keeps the water circulating, which
183 prevents hot spots from forming in the cylinder head. It also helps the engine warm up more quickly.
184 Original thermostats had a sleeve that moved to block off this by-pass as the Thermostat opens. With the
185 by-pass blocked off, virtually all the water in the block goes through the radiator. If you don't block off the
186 bypass, some water will not go through the radiator, and the engine may run hotter as a result. The
187 original sleeved type thermostat is therefore more effective than the general replacement type thermostat,
188 because it prevents the coolant from bypassing the radiator. It also costs more.

189 **Vacuum Advance**

190 If the timing is off, car can run hot. Check your advance at 3,000 RPM.

191 **434-156 Thermostat, Bellows Type, 160°F**

192 For the Austin Healey 100, 100-6, and 3000. This is a Moss reproduction of
193 the OE type bellows thermostat, with a sleeve to block off by-pass when
194 thermostat opens. Suitable for systems using 4-7 lbs/sq in radiator caps as
195 original. For systems over 7 lbs/sq. in, use 454-155, a wax capsule
196 thermostat which also has a sleeve to block off the bypass. The reason that
197 you cannot use a 434-165 bellows type thermostat with a cap rated over 7
198 lbs/sq in is the pressure in the system collapses the bellows, opening the
199 bypass, causing increased operating temperatures and possibly,
200 overheating. The original Healey 100 bellows thermostats opened between
201 158-167° F, or 70-75° C. At engine 3099 the 11K399 wax capsule thermostat
202 was introduced to go with the 7 lb/sq in radiator cap. The new thermostat
203 opened at 154° F or 68°C.



204 **434-155 Thermostat, Wax Capsule Type, 160°F**

205 This is a wax capsule type thermostat with sleeve to block off by-pass. It is
206 suitable for systems with higher than stock pressures (over 7lbs/sq. in). The
207 wax capsule design is not affected by the higher pressure. For 4-7 lb systems
208 you can use the 434-165 thermostat. This thermostat is designed to fail "open"
209 instead of closed. The sleeve is in the full raised position when cold, nearly
210 touching the top mounting flange. The closure to block fluid flow is between
211 the inner cylindrical body and the top flange. As this unit approaches the
212 preset operating temperature and begins to open, the sleeve moves
213 downward (along with the cylindrical body) to block the bypass port.
214 *Thermostat (A) was supplied up to January 2007, after that, thermostat (B).*
215 Section CCC.2 of the factory workshop manual notes that "A non-bellows wax
216 element type of thermostat, interchangeable with the bellows type used
217 previously, was fitted from engine No. 29F/2592 to improve the effectiveness
218 of the car heating equipment." It opened at 182° F or 83° C.



219
220 It's possible to use a modern non-sleeved thermostat if you partially block the by-pass. This will reduce
221 the amount of coolant that by-passes the core, but it is open all the time. If you do that, drill a few small
222 holes in the rim of the thermostat to allow some coolant to flow through even though it is closed; this
223 warms up the thermostat more quickly. There is lots of room for experimentation but I don't know of a set
224 procedure. Any doubts about the thermostat, make sure it's working properly-test it in a pan of hot water.

225 ***Removing the Thermostat***

226 A conventional thermostat can fail "closed" which will quickly lead to overheating. If the thermostat has
227 failed, let the engine cool off. Remove the thermostat and punch out the middle, leaving the outer ring.
228 Reinstall this outer ring. It will act as a restrictor, slowing the water down enough for the radiator to be
229 effective. It will get you home. If you take the thermostat out altogether, the coolant will pass through the
230 radiator too quickly, and you will probably overheat.

231 Side note: BMC competition cars did not use a thermostat; they fitted a brass restrictor plate which looks
232 like a large flat washer. It restricted the rate of flow through the radiator, allowing the water to dump heat
233 to the atmosphere.

234

235 ***Radiator Caps***

236 For the 100-4, the original cap was 4 pounds per square inch (lbs/sq in). Many 4 pound caps have been
237 replaced with a 7 lb/psi cap, which raises the boiling point 7-10 degrees. The 100-6 and 3000s had 7
238 pound caps. The 7 pounds pressure effectively raises the boiling point and will prevent air bubbles from
239 forming in the cylinder head which instantly creates hot spots. We understand that some BJ8s were fitted
240 with 10 pound caps, but Moss does not offer one at this time. Make sure the seal on the cap reaches
241 down inside the neck far enough to actually seal. Original Healey radiator necks are 1" deep and many
242 modern caps (even those listed for your car) don't go that far, most being made for the modern ¾" deep
243 neck.

244 ***Open vs. Closed Coolant Systems***

245 The cooling system in the Healey is open, meaning that when the pressure inside the system exceeds the
246 pressure exerted by the spring on the radiator cap, the radiator vents through an overflow tube to the
247 atmosphere. For this reason, you need to leave room in the radiator top tank for expansion. Check you
248 coolant level- it should be about 1" below the sealing surface in the filler neck. If you overfill the system,
249 the expansion of the coolant will force coolant out past the radiator cap, through the overflow tube and out
250 onto the ground. Modern coolant systems incorporate a recovery tank. A special pressure cap is fitted,
251 which allows fluid and air to be forced into the recovery tank when the coolant heats up and expands.
252 When it cools down, the coolant contracts, and pure coolant (no air) is drawn into the top of the radiator.
253 This type of system is more efficient, and you can use a higher pressure cap, up to 12 or 14 pounds. To
254 make this conversion, it is necessary to have the filler neck on the radiator top tank replaced with a
255 modern ¾" deep neck so a modern coolant recovery type cap can be fitted. A word of caution: as you
256 increase the pressure in the cooling system, you may discover problems that were not there at lower
257 pressure, like leaks. Moss does not offer a coolant recovery system for the Healey, so you will have to do
258 some improvisation. This kind of project is why we encourage every British Car owner to join a club- you
259 can find out more in 10 minutes talking to someone who has done it than you can all day on the Internet.

260 ***Radiator core***

261 When was it flushed?

262 If the core has tubes that are partially blocked it won't work very well. The radiator may need to be
263 overhauled by a specialist. They will de-solder the top & bottom tank, and run a metal rod through each of
264 the coolant tubes to clean out any foreign material. This process is also known as "rodding out".

265 ***Flushing the Block***

266 A 1/16" layer of calcium carbonate build-up on an engine is equal to 4" of solid cast iron in heat transfer.
267 Cleaning out the water passages in the block can be very important. There are limits to what can be done
268 with the engine in the car, but a radiator shop should be able to assist you.

269 **Ducting**

270 Another factor to consider is the way air flows around the radiator. Missing panels or gaps mean the air
271 will tend to flow around the radiator instead of through the core. This would tend to be worse at speed
272 than standing still, but it will reduce the cooling ability of the radiator. While standing still, air drawn
273 through the core will be forced down, and it is possible for this hot air to be drawn back up and through
274 the radiator again. Look at the nose of a factory rally car. They had a cone of aluminum sheetmetal the
275 effectively sealed the nose of the car to the surface of the radiator. You don't have to get that carried
276 away, but it may give you some ideas.

277 **Coolant**

278 Run a good quality anti-freeze and water, with 50% to 60% antifreeze. Generally speaking increasing the
279 percentage of anti-freeze **reduces** the efficiency of heat transfer. That's why you never run 100% anti
280 freeze-it does not transfer heat as well as the 50/50 mix, and it will freeze before a 50-50 mix of antifreeze
281 will.

282 **Coolant Additives**

283 Redline Water Wetter really works. It is a unique wetting agent for cooling systems which reduces coolant
284 temperatures. Wetting agents are chemical substances that increases the spreading and penetrating
285 properties of a liquid by lowering its surface tension—that is, the tendency of its molecules to adhere to
286 each other. Customers of ours have reports 10-12 °F drops. For racing, it is mixed with plain water, and it
287 provides rust and corrosion protection. It has much better heat transfer properties than a water and
288 glycol-based antifreeze mixture. For the street, it can be added to new or used antifreeze to improve the
289 heat transfer of ethylene and propylene glycol coolant. It will not harm aluminum, cast iron, copper, brass
290 or bronze. It also has anti-foaming properties. Moss offers it under Moss # 220-115.

291 **Fan Shrouds**

292 A fan move air by creating a low pressure area behind the radiator. Measuring the air flow through a
293 radiator core will show that there is not much air movement through the core except the area swept by the
294 blades. This means the radiator is not as effective as it could be. There is no doubt that a fan shroud will
295 greatly improve the efficiency of any fan. A fan shroud is just a box lid that is secured to the back of the
296 radiator. There is a big hole in the shroud for the fan. When the fan rotates, it creates a low pressure area
297 behind the whole radiator core, and air then flows through the entire core. It can make a huge difference
298 in the temperature in traffic, or idling on a warm day. Again, Moss doesn't offer a shroud, but I have seen
299 several cars with shrouds that were made by the owner and there's no reason you couldn't make one.

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Although every effort has been made to ensure the accuracy and clarity of this information, errors and/or omissions on our part are almost inevitable. Any suggestions that you may have that will improve the information (especially detailed installation notes) are welcome. Please use the simple email form on the "Contact Us" page on the Moss website: <http://www.mossmotors.com/AboutMoss/ContactUs.aspx> If you prefer, you may call our Technical Services Department at 805-681-3411. So many people call us for help that we are often not able to answer the calls as fast as we'd like, and you may be asked to leave a message. We apologize in advance for the inconvenience. We will get back to you within 2 business days.



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