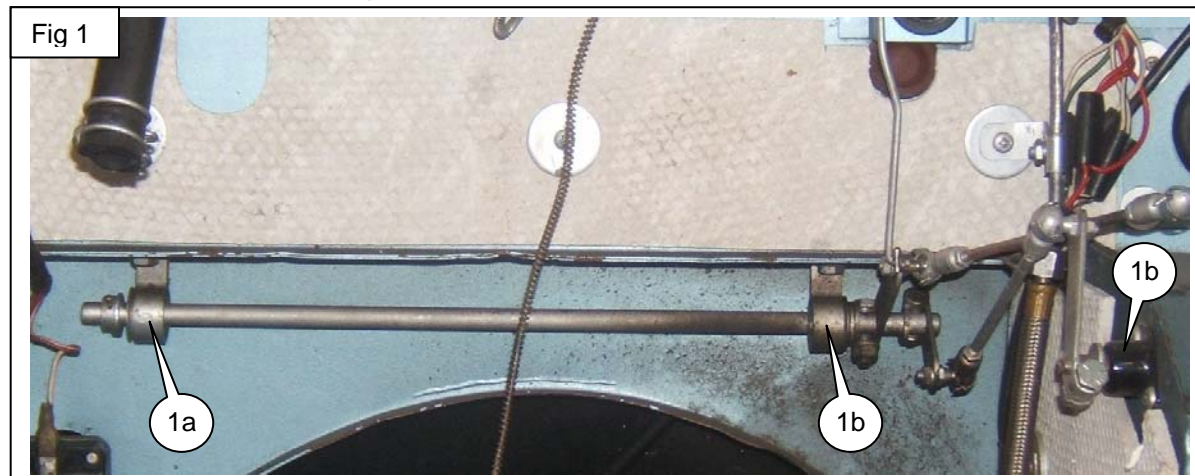


1 Supplemental Information & Instructions
2 for
3 **021-822 Teflon Throttle Shaft Bushing Set**
4 Austin Healey BN4, BN6, BN7, BT7 Dual & Tri-Carb, BJ7, BJ8

5 **About these bushings...**

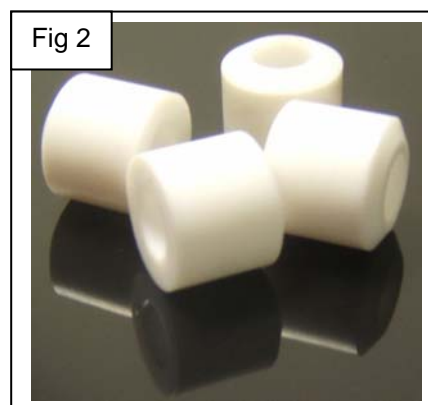


24 *The throttle shaft linkage on these cars uses four bushings, two of which are secured in “cups” in*
25 *brackets mounted on the firewall (1A, 1B), and one secured in a “cup” mounted on the foot box (1C). The*
26 *fourth bushing is inside the cockpit on the driver’s side (1d).*

27
28 *Throttle shaft bushings in the early cars were felt. Later cars came with bushing that had a rubber sleeve*
29 *vulcanized to a brass insert with a shoulder. The rubber eventually falls apart, leaving a loose brass*
30 *bushing rattling around in the cup. The remnants of the rubber sleeve generally fuse to the inside of the*
31 *cup, and that has to be scraped out with an Exacto knife or a screwdriver. Regardless of which original*
32 *bushings you have, when they age, the linkage gets loose. Eventually they need to be replaced. We have*
33 *the original type felt bushings (021-922), and we have sold them for years to restorers and enthusiasts all*
34 *over the world, and we still sell them to anyone that wants them.*

35
36 *Eric Grunden, Healey restorer and owner of **Absolutely British**, came*
37 *up with an upgrade to the stock bushings and began fitting Teflon*
38 *throttle linkage bushings to Healeys in his shop. After several*
39 *adjustments to the design (mostly fine-tuning dimensions), Eric had a*
40 *batch made, and he has been using them ever since. I was in his shop*
41 *sorting out a problem with an exhaust system and he suggested the*
42 *Moss should make these bushings. He provided some samples, and we*
43 *went to work on the engineering drawings. We found a manufacturer*
44 *willing to produce these in moderate quantity (always a challenge!)*

45
46 *Eric approved our pre-production samples in October of 2007 and fitted*
47 *them to a car he was working on. Almost more important than the*
48 *bushings themselves is the information he shared about fitting them,*
49 *which we are happy to provide here. We are grateful to Eric for his*
50 *assistance in developing this product.*



51 **Fitting Instructions**

52 **These instructions supplement, but do not replace the**
53 **factory workshop manual. Take digital photos before you**
54 **begin to assist in the re-assembly process.**

56 **Removing & Re-fitting the Gas Pedal**

57 There are two bushings on the LHD gas pedal. One is inside the
58 cockpit (3c) and the other is on the outside of the foot box (4c).
59 To remove the pedal, unscrew the large Phillips screws that
60 secure the bracket (3a).

61
62 Remove the linkage (Fig 4, 4a) from the end of the shaft.
63 Remove the screws securing the housing or cup (4b) from the
64 side of the foot box. Slide the housing (4b), the bushing (4c), and
65 the washer (4d) off the end of the shaft.

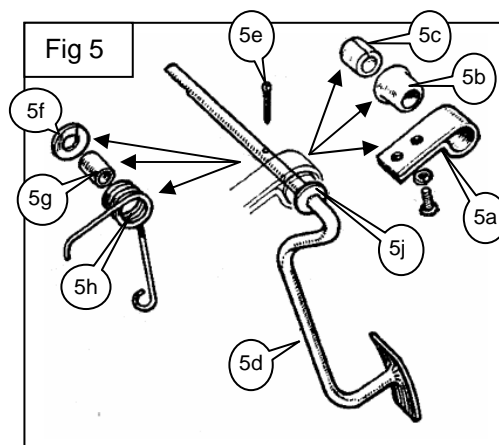
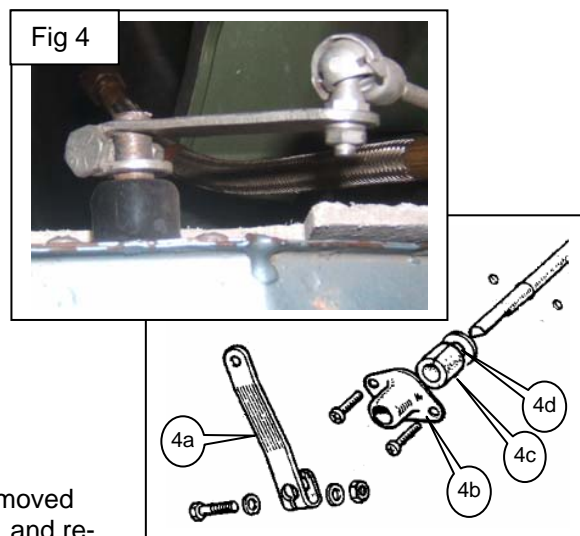
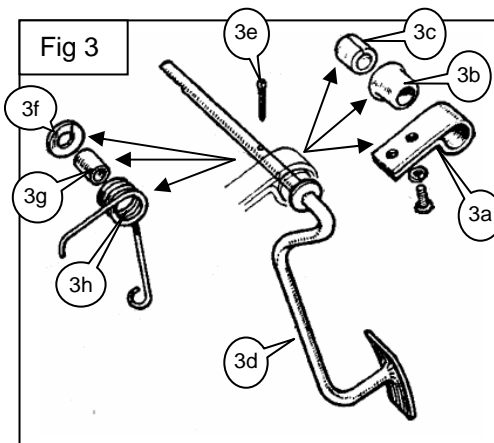
66
67 Remove the gas pedal (3d) from the vehicle. Remove the cotter
68 pin (3e) from the shaft. Slide the washer (3f), collar (3g), and
69 pedal return spring (3h) off the shaft. Slide the bracket (3a) with
70 the cup (3b) and the bushing (3c) off the shaft.

71
72 Remove the old felt or rubber/bronze bushing. Take the time to
73 carefully clean out the cup (3b), making sure that every bit of the
74 old bushing is gone. If you had the rubber/bronze bushings, you
75 will find that an Exacto knife or small screwdriver will be needed
76 to scrape the cup clean. If you don't get it clean, the Teflon
77 bushing will not fit properly and the bushing may bind on the
78 shaft. Clean up the housing and the bracket, re-painting them
79 black if needed.

80
81 Remove the old felt or rubber/bronze bushing from the housing removed
82 from the side of the foot box (4b). Clean it out as described above, and re-
83 paint it black if needed.

84
85 If the gas pedal shaft is rusty, clean it up with steel wool down to bare metal. The shafts are generally found to
86 have an OD of 0.371", and the Teflon bushings are made with an ID of 0.385". When pressed into the cups
87 (3b, 4b), the ID is squeezed down, usually to about 0.375". This makes the fit snug, but the bushings will still
88 rotate freely.

89
90 Pick one Teflon bushing (they are all the same) and test fit it by sliding
91 it over the gas pedal shaft. It should slide on without any trouble. Tap
92 the Teflon bushing into the inner cup (5b). The bushing will stick out
93 past the end of the cup- they are made longer than necessary, which
94 allows them to be sized to match the cup you have. Slide the cup with
95 the bushing into the bracket (5a), and slide the three-piece assembly
96 onto the gas pedal shaft until it rests up against the brazed-on washer
97 (5j). Now slide the spring (5h), collar (5g), and extra thick washer (5f)
98 onto the shaft and see if the cotter pin (5e) can be inserted through the
99 hole in the shaft. If it can't, you need to gauge how much material you
100 need to remove from the Teflon bushing in order for the hole to be
101 exposed. Place a piece of 40 grit sand paper on a flat surface. Hold the
102 cup, pressing the protruding bushing against the sand paper and sand
103 down the bushing until the cotter pin will go through the hole in the
104 shaft. Take care to keep the end surface flat and perpendicular to the
105 sides of the bushing. You are looking for 5-10 thou clearance between
106 the washer and the cotter pin. The Teflon sands easily and this will not
107 take long. Use a new cotter pin when you are done.



108 Reassemble the pieces (5a-f) on the gas pedal shaft. Install the pedal back in the foot box, securing the
109 bracket (5a) that holds the cup and bushing.

110
111 Check and make sure that the end of the throttle shaft (6a) is perpendicular
112 to the sheetmetal of the foot box. If it is not, you must make it so or the
113 outer bushing will bind.

114
115 Pick one Teflon bushing (they are all the same) and test fit it by sliding
116 it over the end of the gas pedal shaft. It should slide on without any
117 trouble. Tap the Teflon bushing (7c) into the outer cup (7b). The
118 bushing will stick out past the end of the cup- they are made longer
119 than necessary, which allows them to be sized to match the cup you
120 have. Place a piece of 40 grit sand paper on a flat surface. Hold the
121 cup, pressing the protruding bushing against the sand paper and sand
122 down the bushing until it is just flush with the base of the cup. The
123 Teflon sands easily and this will not take long.

124
125 Test fit the bushing/cup assembly by sliding it over the shaft coming
126 through the side of the foot box. You may find that the bushing, which fit
127 fine earlier, is now tight on the shaft. This is not all that unusual
128 because the cups vary, and some tend to be narrower at the outer end
129 than others. Some cups will actually squeeze the Teflon bushing to the
130 point where the ID is too small for the shaft. Carefully dress the hole in the
131 bushing with a round file or a piece of rolled up sandpaper. Test the fit
132 frequently so you do not enlarge the ID too much. Once you have the fit
133 corrected, re-install the cup and bushing on the side of the foot box.

134
135 Re-fit the linkage arm (7a) to the end of the gas pedal shaft (7f). When you tighten the
136 pinch bolt (7e), you may find that the two sides of the linkage will touch before the bolt
137 clamps the linkage tight on the shaft (Fig 8). Take off the linkage arm, remove the pinch
138 bolt and carefully enlarge the slot. If you can tighten the pinch bolt and have a 1/16th to
139 1/8th inch gap, you will be fine.

140
141
142
143

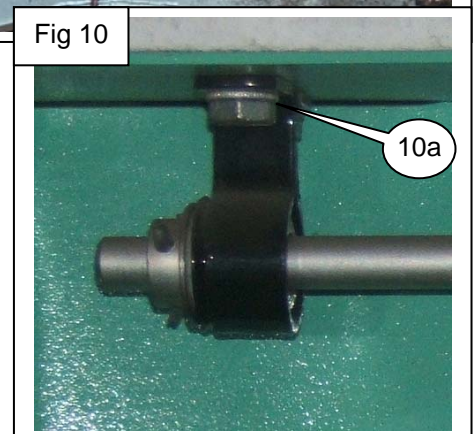
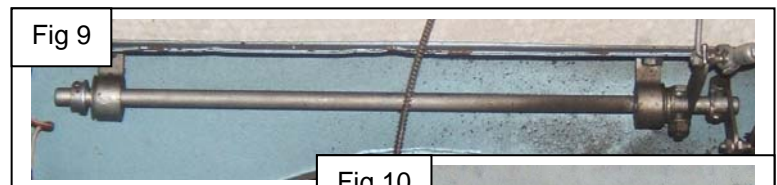
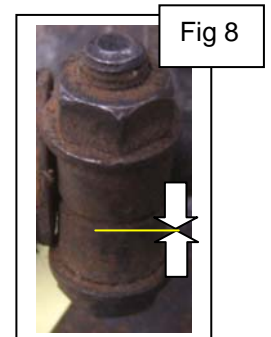
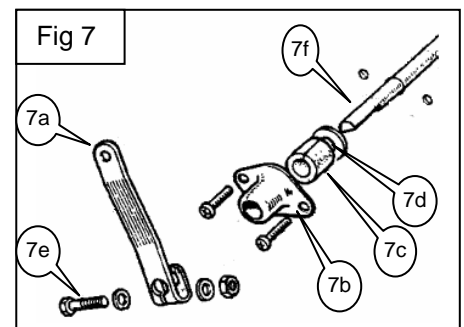
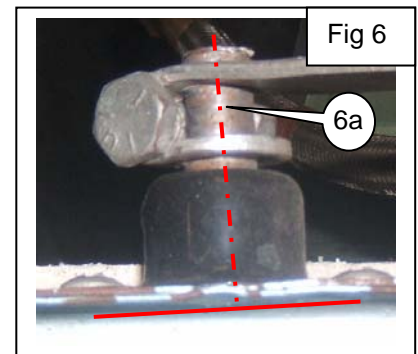
144 **Bushings on the Firewall**

145
146 First, we need to remove the linkage from the
147 firewall. (Fig 9)

148
149 Remove the bolts (10a) securing the
150 brackets to the lip of the firewall, and
151 remove the linkage as an assembly.

152
153 *One of the challenges you will face is the proper alignment of these*
154 *brackets with the holes once we have fitted the new bushings. If you*
155 *just install the new bushings and try and re-fit the assembly, none of*
156 *the holes will line up. The next section explains what you must do to*
157 *avoid this problem.*

158

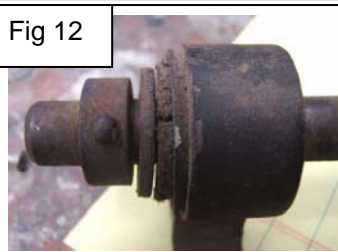


159 Place the linkage assembly on a piece of
160 paper as shown in Fig 11.

161
162 *A piece of 8 1/2" x 11" will work if you place the*
163 *linkage on the diagonal.*



173 Slide the brackets (with the original
174 bushings still in place) on both ends all the
175 way to the outside so they are tight up
176 against the stops as shown in Fig 8, as
177 opposed to Fig 7, which shows the bracket
178 pulled in from the stop.



182 With the bracket and bushing assemblies slid out to the stops
183 on both ends, carefully trace all four holes on the paper (14a).

184
185 *This will give us the reference points we need to reassemble*
186 *this linkage with the same hole spacing, which in turn means*
187 *we will not have a problem when we go to bolt this assembly*
188 *back in place.*



198 Take the linkage assembly apart, paying attention to how the
199 pieces relate to one another.

201 Referring to Fig 15, which shows the linkage fitted to the Twin
202 Carb BN4, BN6, BN7 & BT7, you can see the components.

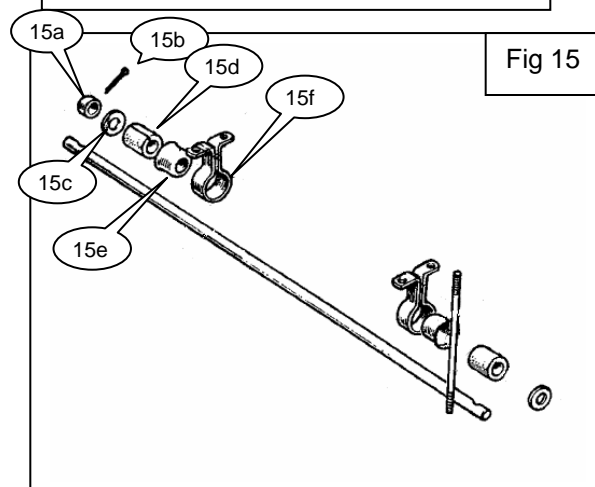
- 204 15a End Cap, goes on the end of the shaft.
- 205 15b Cotter pin
- 206 15c Flat washer
- 207 15d Bushing
- 208 15e Cup for the bushing
- 209 15f Bracket, holds the cup

211 If you are missing pieces, please refer to our catalog or
212 website to determine which parts you need for your car.

213 Do not assume everything is available!

214 Clean up the components, and organize the pieces so you can reassemble the linkage properly.

215 Test fit the Teflon bushings on the shaft. They should spin freely. If the shaft is bent, it will need to be
216 straightened carefully before you proceed.



217 Press the Teflon bushings into the cups. You can tap them lightly with a mallet if necessary.
218
219 Test fit the bushing/cup assembly by sliding it over the shaft. You may find that the bushing, which fit fine
220 earlier, is now tight on the shaft. Carefully dress the hole in the bushing with a round file or a piece of
221 rolled up sandpaper. Test the fit frequently so you do not enlarge the ID too much.
222
223 When the fit is correct, assemble the shaft.
224
225 Place the linkage assembly back on the paper, and see if the holes in the feet of the brackets line up with
226 the circles on the paper. Do not be alarmed if they don't.
227 Think about how much the bushing will have to be trimmed in order for the holes to line up.
228 Pull the bushing/cup assembly off the shaft.
229
230 Place a piece of 40 grit sand paper on a flat surface.
231 Hold the cup with the bushing against the sand paper and sand down the bushing.
232 Refit the cup and bushing assembly, and place the linkage assembly back on the paper, See if the holes
233 in the feet of the brackets line up with the circles on the paper. Repeat the process until they do.
234
235 This process must be repeated for both bushing/cup assemblies until everything lines up.
236
237 When you are done, the bushings will be snug up against the washers, which are snug up against the
238 end caps, and the holes in the feet of the brackets will line up with the holes in the firewall.
239
240 Take your time, do it right.
241
242 Bolt the linkage assembly back into place.
243 Make sure the shaft still rotates freely.
244 If it does not, the shaft may be bent, and you will need to correct that before you can proceed.
245
246 Once everything is reassembled, the linkage should move freely, but with very little free play.
247
248
249

250
251 *Although every effort has been made to make these instructions complete, clear and error free, it*
252 *is almost inevitable that you will discover something we missed, got wrong, or could have done*
253 *better. We welcome any suggestion that will improve the product or these instructions. You may*
254 *send us your comments by using the simple email form on the **Contact Us** page on our website:*
255 *<http://www.mossmotors.com/AboutMoss/ContactUs.aspx>.*
256 *If you would prefer, you may call Moss Motors Tech Services 805-681-3411 and speak to one of*
257 *the Techs. Since they are almost always on the phone, you may wind up leaving a message for*
258 *them. They will return your call as quickly as possible, usually within 24 hours.*
259
260



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