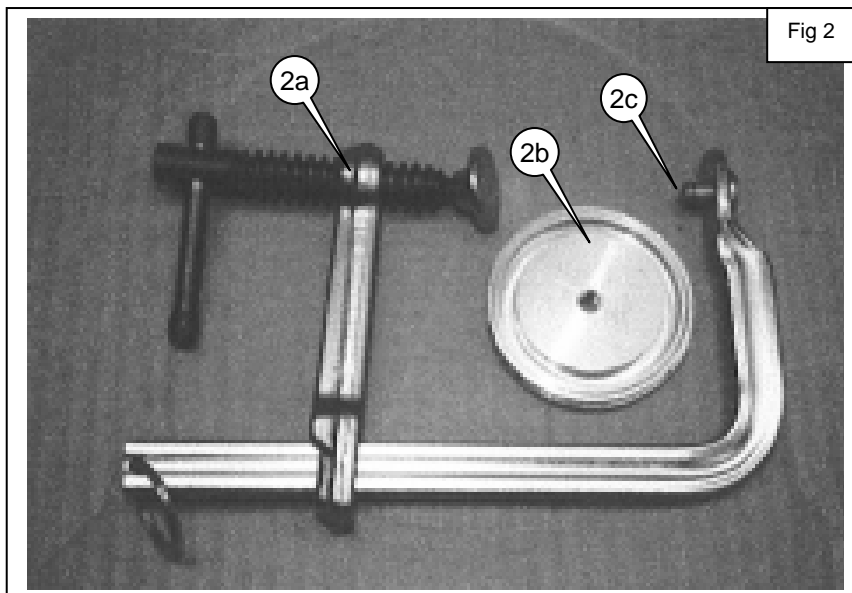


1 Supplemental Information & Instructions for
2 386-280 or 18G590*
3 Disc Brake Caliper Piston & Seal Resetting Tool
4 MGA & MGB Front Disc Brakes



22 **Anyone that has tried to install new seals and seal retainers in the calipers used on the MGA, B**
23 **and Sprite/Midget knows why you need this special tool. The original 18G590 is generally only**
24 **found in shops that have been working on MGs for many years. Some clubs have one too, but**
25 **they are rare. A small company (BMDI, in California) has come up with a replacement for the**
26 **factory tool that works exactly the same way, and it makes overhauling calipers much easier. The**
27 **price is low enough that anyone that owns one of these cars can afford to have this in their**
28 **toolbox. Fig 1 shows to tool assembled as it would be for installing new seals & seal retainers.**



The Tool consists of:

- 2a Clamp Assembly
- 2b Piston Adaptor
- 2c Bolt, to attach Piston Adaptor

**18G590 was a factory tool that worked with MGA, MGB, and Sprite-Midget. At present, the tool only works on MGA and MGB disc brakes.*

48 **Instructions for Replacing Brake Pads, Caliper Pistons & Seals**

49 *These instructions supplement, but do not replace, the instructions in the factory workshop*
50 *manual. As with all instructions, read through these completely and make sure you understand*
51 *and understand all instructions thoroughly before picking up a tool. Brakes are safety critical. If*
52 *you have any doubts about your ability to successfully complete this procedure, take the car to a*
53 *professional mechanic.*

54 **Replacing Brake Pads**

55 Park the vehicle on a smooth hard surface (like concrete).

56 Apply the hand brake, block the wheels, and jack up the car.

57 Place suitable jack stands underneath the vehicle and remove the jack.

58 Remove the front road wheels.

59 Depress the pad retaining springs and remove the split pins and the retaining springs.

60 Lift the brake pads out of the caliper.

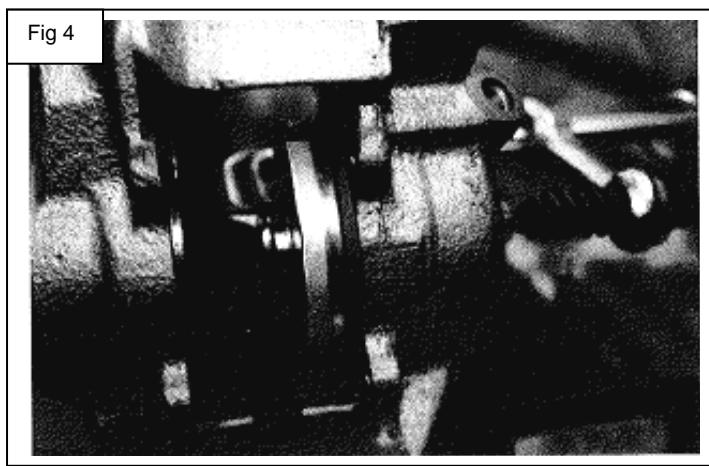
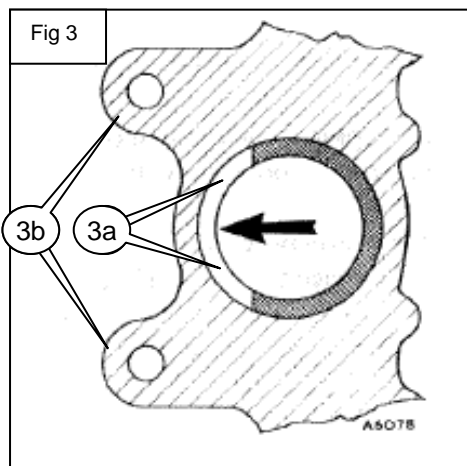
61
62 Thoroughly clean the exposed end of each piston and ensure that the recesses which are
63 provided in the caliper to receive the friction pads are free from rust and grit.

64
65 Before fitting new friction pads the caliper pistons, which will be at their maximum adjustment,
66 must be returned to the base of the bores. Service tool 18G590 or 386-280 will do the job nicely.

67
68 **Note: The level of the fluid in the master cylinder supply tank will rise during this operation and it**
69 **may be necessary to siphon off any surplus fluid to prevent it from overflowing.**

70
71 Check the orientation of the caliper pistons. The portion that has been machined away from the
72 face of each piston (3a) should be closest to the caliper mounting "ears" (3b).

73 Attach the piston adapter to the clamp with the flat side out, so the flat surface of the piston
74 adapter will contact the caliper piston. Tighten the clamp to return caliper pistons to the bottom
75 of the caliper bores. (Fig 4)



93 Insert the friction pads, replace the retaining springs and fit the split pins.

94 Ensure that the friction pads are free to move easily in the caliper.

95
96 Pump the brake pedal several times to readjust the pistons and then top up the fluid supply
97 reservoir.

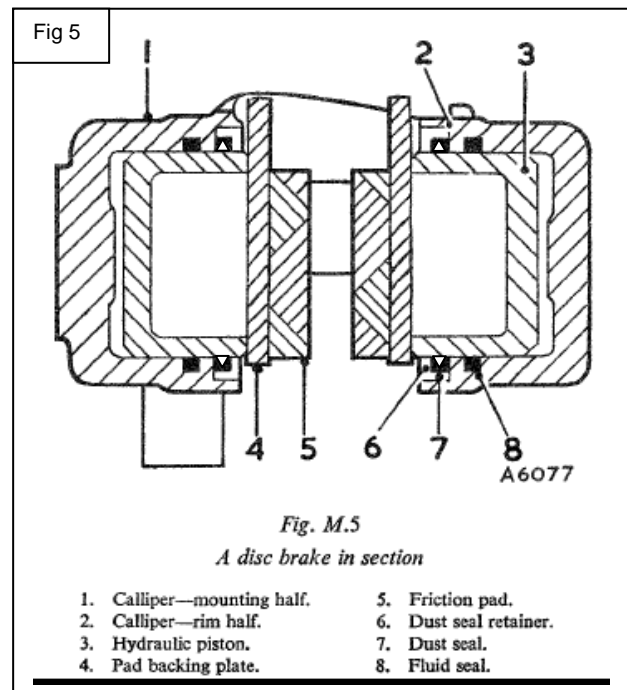
98 **Getting Oriented**

99 *The cross-sectioned caliper from the workshop manual*
100 *will serve to get us all on the same page.*

101
102 *We will refer to the caliper halves and the pistons based*
103 *on their installed location, using the same terms as the*
104 *workshop manual. The caliper half that is bolted to the*
105 *swivel axle (Fig 5, #1) is the “mounting-half” and the*
106 *other caliper half (Fig 5, #2) is the “rim-half”, meaning it*
107 *is closest to the wheel.*

108
109 *Note that the fluid seal (Fig 5, #8) is a solid square-*
110 *cross sectioned o-ring. The dust seal (Fig 5, #7) has a*
111 *v-shaped groove. In the original factory workshop*
112 *manual diagram, this is not at all clear. We have edited*
113 *this diagram for clarity on this point.*

114
115
116
117
118
119



120 **Replacing Caliper Pistons and Seals**

121 To replace the caliper piston seals the piston must be removed from the caliper bores.
122 Removing the caliper pistons can be done with the caliper either removed from the car and disconnected
123 from the brake hose or left attached to the car and brake hose.
124 Whichever procedure is used, **never separate the caliper halves**. The bolts that hold the caliper halves
125 together were specially designed to stretch a specific amount when installed and torqued to a carefully
126 calculated value. The bolts are not intended to be tightened more than once, and the specifications for the
127 amount of torque applied and the amount of stretch induced are not available. Specialists that rebuild
128 calipers have the hardware and knowledge required to separate calipers and reassemble them,

129 **Replacing Pistons with the Caliper Attached to the Car**

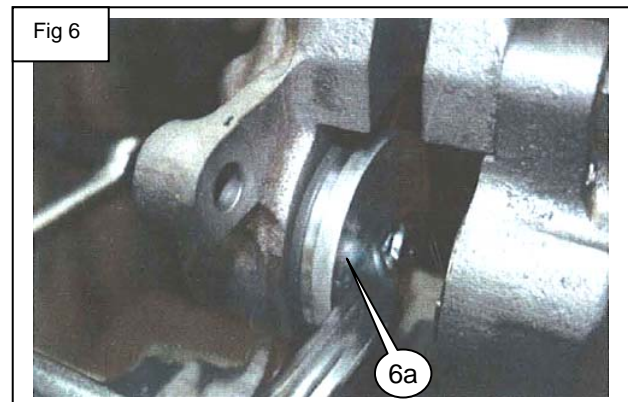
130 **Dismounting the Caliper**

131 Look at the caliper and the brake hose.
132 If you don't have one, fabricate a hanger for the caliper.
133 *Once the caliper is loose, you will need to support it in a way that does not put any strain on the brake*
134 *hose. You can fabricate a support for the caliper from a piece of coat hanger or stiff wire.*
135 Unscrew and remove the two bolts securing the caliper to the front hub and withdraw the caliper
136 from the disc and hub. *Do not disconnect the rubber hose.*
137 Support the caliper with the hanger you fabricated, making sure that the hose is not under any strain.
138 Remove the brake pads.
139 Clean the outside of the caliper.
140 Make sure that all dirt and traces of cleaning fluid are completely removed.
141 *There are several commercial solvents designed specifically for cleaning brake components. “Brake-*
142 *Kleen” seems to be one of the best, and it (or something like it) will be available at your local auto parts*
143 *store. Read and follow the directions on the product you use.*

144

145 **Removing the Caliper Pistons**

146 Place a metal catch basin or pan under the caliper to
147 catch the brake fluid that will drain out of the caliper
148 when the piston is removed.
149 Using the 386-280 /18G590 tool, clamp the piston in the
150 mounting-half half of the caliper (5a). *With the clamp in
151 place, this piston cannot move.*
152 Gently apply the foot brake.
153 *The hydraulic pressure of the brake fluid will force the
154 piston in the rim-half of the caliper to move out of the
155 caliper bore.*
156 Keep applying gentle pressure on the foot pedal until
157 the piston has emerged sufficiently for it to be removed
158 by hand. *Do not grab the piston with pliers or any other
159 tool as they will damage the outer surface of the piston,
160 making the piston unusable. For the same reason, do
161 not allow the piston to fall out of the caliper.*



163 **Inspecting the Caliper Pistons**

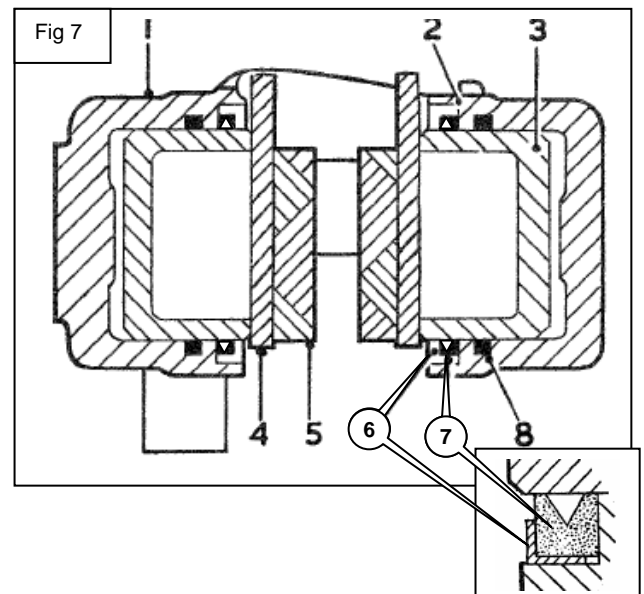
164 Carefully inspect the caliper pistons under a bright light for any corrosion or wear. If they are not perfect,
165 they must be replaced as a minute scratch on the surface of the piston will damage the fluid seal as the
166 piston moves in and out of the caliper bore. It may not leak immediately, but it will certainly leak. To
167 maximize the chance of a successful caliper overhaul, it is always recommended to replace the piston
168 when replacing the seals.

170 **Cleaning & Inspecting the Caliper Bore**

171 Back off the screw and remove the 386-280 /18G590 tool from the mounting-half of the caliper.
172 *Do not attempt to remove the mounting-half caliper piston at this point. It will be necessary to replace the
173 rim-half caliper piston before attempting to remove the mounting-half caliper piston.*
174 Using a clean lint-free cloth, clean out the caliper bore.
175 *Important! When cleaning out the caliper, do not use anything but rubbing alcohol (aka denatured alcohol
176 or methylated spirit) or fresh, clean brake fluid. Other types of cleaning fluid (like Brake-Kleen) may
177 damage the internal rubber seal between the two halves of the caliper. If that happens, the calipers must
178 be replaced, or sent off to be rebuilt.*
179 Carefully inspect the caliper bore for corrosion, rust, pits or any other damage.
180 If the bore is free from any damage, proceed to replace the seals.
181 If there is damage to the bore, the caliper must be replaced.
182 *There are specialists that can machine the calipers and fit stainless steel sleeves.*

184 **Removing the Caliper Seals**

185 With a suitable blunt nosed tool, remove the fluid seal
186 (Fig 7, #8) from its groove in the bore of the caliper.
187 *Take great care not to damage the bore of the caliper or
188 the seal retaining groove. Using something like a dental
189 pick or probe will score the caliper bore, and it will leak
190 brake fluid.*
191 The dust seal retainer (Fig 7, #6) can be removed by
192 inserting a screwdriver between the retainer and the seal
193 and gently prising the retainer from the mouth of the
194 caliper bore.
195 The rubber dust seal (Fig 7, #7) can then be removed.



198

199 **Reassembly**

200 *The most important thing to remember when assembling brake calipers is cleanliness. The smallest bit of*
201 *grit in the caliper can ruin hours of careful work, not to mention the possible consequences of a brake*
202 *failure. We suggest that you prepare a super clean work area. If you are not going to rebuild the calipers*
203 *immediately, coat the bores with brake fluid and place them in new sealable plastic bags. Wear clean*
204 *Nitrile gloves if you have them. Do not open the package with new seals until you are ready to use them.*

205
206 *Moss used to sell Lockheed Brake Assembly Grease in 10 oz. foil packets*
207 *under 220-440. Lockheed, like so many of our suppliers, re-evaluates its*
208 *product line and for whatever reason, they have decided that they will no longer*
209 *sell their foil packets of brake assembly lube. We have found a product which*
210 *does the same thing as the Lockheed brake lube. PBR is an Australian firm that*
211 *supplies original equipment brake calipers, rotors, and service parts to vehicle*
212 *manufacturers around the world. They also develop and sell high performance*
213 *brake calipers for the aftermarket. The PBR "Rubber Grease" was engineered*
214 *for use in automotive brake systems, and it is compatible with all commercial*
215 *brake fluids. PBR rubber grease is a high performance castor oil based grease*
216 *designed to preserve and lubricate plastics, rubber and components such as o-*
217 *rings, valves, diaphragms, cups and seals. We consider it to be the equivalent*
218 *of the Lockheed brake lube, and offer it in 17 oz. tubes under 220-442.*



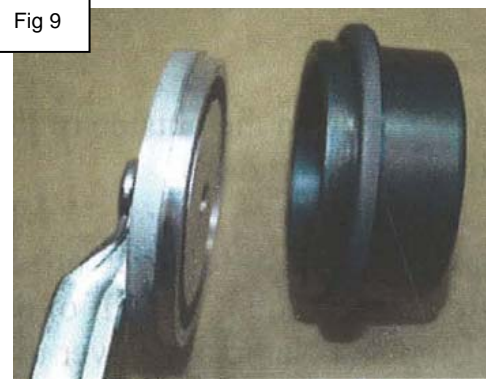
219
220
221 Take a new, perfectly dry fluid seal and coat it with brake
222 assembly grease.
223 Ease the seal into its groove with your fingers until it is seated
224 correctly.
225 Take a new, perfectly dry dust seal, coat it with brake assembly
226 grease.
227 Fit the dust seal into a new seal retainer.
228 *You will use the 386-280 /18G590 tool to press the dust seal*
229 *assembly down to correct depth on the piston.*
230 Attach the piston adapter to the 386-280 /18G590 tool with the
231 groove facing the piston, as shown in Fig 1.
232 Position the 386-280 /18G590 tool onto the caliper piston (Fig 8).
233 Slowly press the seal down over the piston with the
234 386-280 /18G590 tool.

Fig 8



235
236 Remove the piston with the dust seal and dust seal retainer in
237 place from the 386-280 /18G590 tool (Fig 9).

Fig 9



238
239
240
241
242
243
244
245 Back off the bleeder screw in the rim-half of the caliper one
246 complete turn.
247 Coat the piston with brake assembly grease.
248 Rotate the piston so that the cutaway portion of the piston is
249 correctly positioned (Refer to Fig 3).

250
251 Place the piston squarely in the mouth of the bore of the rim-half
252 of the caliper (Fig 10).
253 *The original piston is still in the mounting-half of the caliper.*

Fig 10



254 Place the 386-280 /18G590 tool on to the piston in the rim-half of the caliper.
255 (Fig 11)



256
257
258
259
260
261
262
263
264
265
266
267

268 Tighten the screw on the tool and slowly press home
269 the piston with the dust seal and retainer into the
270 bore. (Fig 12)

271

272 *The rim of the piston adaptor (12a) actually rests on*
273 *the steel dust seal retainer(12b).*

274

275 *The retainer in turn is pressing against the dust seal*
276 *(12c).*

277

278 *The rim of the piston adaptor is stepped, and this*
279 *causes the dust seal and dust seal retainer to be*
280 *pressed down into the bore of the caliper below the*
281 *rim of the caliper piston.*

282

283 Once the piston is pressed home, do not remove the
284 clamp.

285

286

287

288

289

290

291 With the 386-280 /18G590 tool clamped down on the rim-half piston, you will be able to remove the
292 mounting-half caliper piston. The method will be the same as used to remove the rim-half caliper piston.
293 (Refer to lines 145-161 above)

294

295 *The procedure for the inspection, cleaning, and installation of the caliper piston with the new seal, dust*
296 *seal and dust seal retainer in the mounting half of the caliper is the same as the procedure followed for*
297 *the rim-half of the caliper.*

298

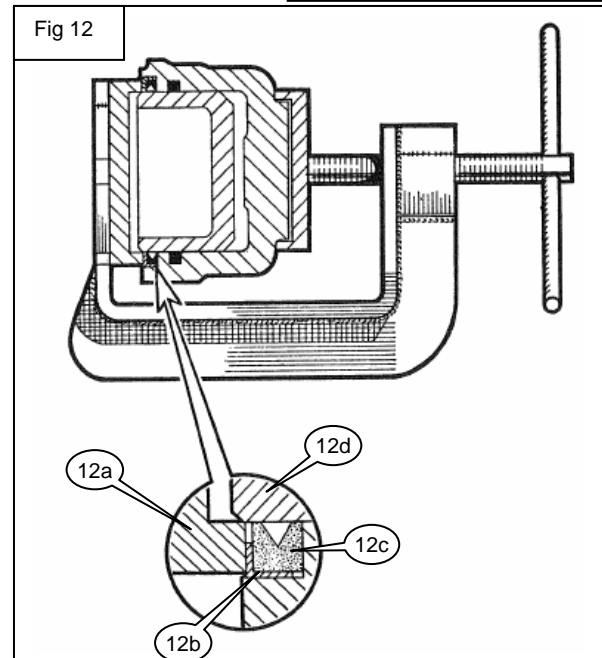
299 After the mounting-half piston has been replaced, fit the friction pad assemblies, together with their
300 retaining springs and split pins.

301

302 Refill the brake fluid reservoir and bleed the system.

303

304 *After bleeding, operate the brake pedal several times. This will serve to move the pistons out of the*
305 *calipers to the point where the clearance between the brake pads and the rotor is minimized. This will in*
306 *turn minimize the pedal travel needed to engage the brakes.*



307 **Replacing Pistons with the Calipers Off the Car**

308 *The only real difference between doing this with the caliper off the car is how you get the pistons out. On*
309 *the car, you use the hydraulic pressure in the brake lines. Off the car, you use compressed air.*

310
311 **Safety Warning!** *If the car has been sitting for some time, the caliper pistons may be “stuck”. As*
312 *increasing air pressure is applied, they may suddenly break loose and the piston can be blown out of the*
313 *caliper at high speed with great force. Think of it as a very small, very hard cannon ball. Keep your body*
314 *well away from the caliper as compressed air is applied. There will be brake fluid in the caliper, and it will*
315 *drain out when the piston pops out. Place shop towels or a catch basin under the caliper to catch the*
316 *brake fluid.*

317
318 Secure the caliper mounting “ears” (3b) in a suitable bench mounted vice.

319 Clamp the piston in the mounting-half of the caliper with the 386-280 /18G590 tool.

320 Place a shop rag or other soft material between the rim-half caliper piston and back of the 386-280
321 /18G590 tool, and drape a heavy towel over the whole caliper. *These steps are intended to minimize the*
322 *chance of a loose caliper piston from doing any damage to you, the tool, or the caliper.*

323 Gently apply a regulated, low pressure air blow gun to the port in the caliper where the brake hose was.

324 *The compressed air will force the rim-half caliper piston to move outwards.*

325 Stop the compressed air frequently and remove the towel so you can check the progress of the piston.

326 Continue with gentle air pressure until the piston has emerged sufficiently for it to be removed by hand.

327
328 *The rest of the procedure will be the same as that described for rebuilding the calipers on the car.*

329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352

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.



Moss Motors, Ltd.

440 Rutherford Street, Goleta, California 93117

In the US & Canada Toll Free (800) 667-7872 FAX (805) 692-2510 (805) 681-3400

Moss Europe Ltd.

Hampton Farm Industrial Estate, Hampton Road West, Hanworth Middlesex, TW13 6DB

In the UK: 020-8867-2020 FAX:- 020-8867-2030