Service Instruction
Moulton Leading Link Front Suspension

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Alex Moulton Bicycles

This service instruction contains information relating the service of Alex Moulton Bicycles manufactured by Pashley Cycles. The servicing methods for AM bicycles are almost identical and information is included about these models.

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MOULTON APB®

From 2001 onwards, Pashley built Moulton bicycles are no longer known as 'Moulton APB' models, now being simply 'Moulton'

WARNING: Do not attempt to service your bicycle unless you fully understand the procedure to be followed, have the correct tools and are confident in your ability to carry out the work. If you are at all unsure, refer to your dealer. Always check over the bicycle carefully after any service or repair work.

1.0 General Description

The Moulton suspension, as used on AM, AM-ATB and APB Moulton bicycles, is almost always trouble free, but there are certain problems that users should be aware of. They are usually simple to cure. No regular maintenance is required, but it is wise to keep the exposed parts clean and to use the bicycle regularly to keep everything running smoothly.

There are two leading links at the base of the fork, with stainless pivot studs running in dry shell bearings. Damping is provided by light blue friction discs on each side of the dropouts, and the damping is adjusted by six M5 stainless 'nyloc' nuts. The suspension coil spring is located within the steerer (fork column) tube, and is operated on by a suspension bearing, which is attached to the fork stirrup by means of a threaded stud, aluminium height adjuster. The bearing and height adjuster are joined by a ball and socket joint. A bumpstop washer is fitted to the base of the threaded stud. The assembly is protected by a flexible gaiter or a wiper seal (inside the steerer tube, fitted between the height adjuster and the suspension bearing.

2.0 Adjustment

Damping is varied by tightening or loosening the M5 nuts on the leading link plates – use an 8mm spanner. With the middle nut tightened firmly, adjust the nuts on the ends of the plates. A small variation will make a large difference to damping. It is possible to 'lock out' the front suspension by tightening all the nuts down firmly. Do not loosen the nuts so much that there is any side play between the fork and the stirrup. The standard setting for damping is to tighten the nuts so that you are just not able to move the washers with your fingernail.

Ride Height (Preload) is adjusted by the aluminium height adjuster on top of the fork stirrup – pull back the bellows (if fitted) to reveal the height adjuster. Back off the locknut and turn the adjuster as indicated by the 'Raise' label on it to increase the ride height, and turn in the other direction to reduce ride height. The leading links act as 'pointers' - they should be approximately level when you are riding the bike (normal road use). When riding laden, it is wise to reset the ride height to suit the load. Do not screw the adjuster up by more than approximately 25 mm (1"), and tighten the locknut after adjustment.

3.0 Problems and their Remedies

3.1 Clunking or Banging Noises

If these occur when ‘bottoming out’, this indicates a worn or damaged bumpstop washer. Inspect this, and if it needs replacing, the suspension will have to be disassembled.

If these occur when 'topping out', the damping level is usually too low. Try tightening the leading link plates. Otherwise, ensure that the leading links are fitted the correct way round (middle hole closer to the front than the back). The rebound stop washer may be damaged or missing. By slackening the leading links it should be possible to see the light blue washer on the middle stud, between the plates. The plates may look to be fouling the stirrup itself, but this is normal and in fact, the dropout is resting on the rebound stop.

3.2 Suspension Squeaking

If the front suspension squeaks, remove the handlebar stem by undoing the expander/wedge bolt, and lifting the handlebar assembly out of the steerer tube. Drop one or two drops of oil down into the steerer tube. This should lubricate the spring and stop the squeaking after the bike has been used for a short while. If this fails, dissassemble the suspension as below, clean and re-lubricate. Note, if an Ertalyte bearing is fitted to the bike (year 2000 onwards) more oil, or a lubricant spray such as GT85 may be used.

At very high mileages, the shell bearings fitted to the dropouts may need to be replaced. Note that these bearings appear to wear rapidly when new, and the bearing surface will change colour. This is normal and indicates that the low friction material is being spread around the bearing surfaces.

3.3 Seized Suspension

This usually indicates a stuck suspension bearing, but do first check that the damping is not too tight by slackening off the leading links. If not, the suspension will have to be disassembled (see ‘Disassembly’ below), and the suspension bearing replaced. The bearing will have to be removed using force - a long rod such as a mudguard stay (from a large wheeled bike) will often suffice. Insert this down the steerer from the top, working it past the spring retaining pin and the spring onto the suspension bearing and hammer it out. A standard ‘V’ mudguard stay is ideal as one stay can be inserted on one side of the spring retaining pin, and the other stay on the other side. If this fails, there are two straightforward methods of removing the bearing:

i) If the bike is an APB or other Pashley built Moulton from late-1995 onwards, the spring retaining pin (near the top of the fork) can be removed using a hammer and a suitable punch. Take care, as the spring will be released when the pin is removed and may eject itself from the tube – make sure that the top of the fork is pointing at the floor, not your face. With the spring removed, a large drift can be inserted into the steerer tube (diameter approx ¾”, 19mm, no larger) from the top and the bearing can then be hammered out. Note that on all AM series Moultons the spring retaining pin is brazed in and attempts must not be made to remove it.

ii) Otherwise, obtain a long self tapping screw, long enough to thread through the bearing whilst leaving an inch (25mm) or more of the screw showing at the base of the tube. Drill a suitable pilot hole into the bearing and attach the screw to the bearing. The exposed part of the screw can then be gripped with a self-locking wrench or similar tool, and a hammer/mallet applied to the tool in order to drive the bearing out.

In exceptional circumstances, return the fork to your dealer for removal of the bearing.

4.0 Disassembly

This is not necessary under normal circumstances, but the unit will have to be taken apart in some cases. The suspension has few parts and is quite simple to disassemble.

With the bicycle held in a workstand, remove the front wheel, front brake cable and any computer sensors attached to the fork stirrup. Some people may find the job easier if the whole fork assembly is removed from the frame.

Remove the six M5 stainless steel ‘nyloc’ nuts and washers from the leading links. The outer links should then be removed - this can be tricky and it may be necessary to compress the suspension slightly. Remove the four (two on each side) light blue 'Tufset' washers from the forkends. The inner plates can now be removed, along with the. four-inner "Tufset' washers. On the middle stud there will be a small 'Tufset' washer which is the rebound stop. Take care removing the inner plates, as the fork stirrup is spring loaded (unless the bearing has seized).

The stirrup should now slide out of the steerer tube, followed by the spring. Remove the black rubber suspension boot (if fitted). On the threaded stud on top of the stirrup there should be, from the bottom up, a black "bumpstop" washer, a small knurled aluminium locknut; a tall aluminium height adjuster, with knurling on the lower portion and topped by a dark or light grey suspension guide bearing. Pashley built models not fitted with a suspension boot and AM bicycles have a wiper seal just below the suspension bearing. The suspension bearing is fitted to the height adjuster by a ball and socket joint.

Do not remove the shell bearings from the dropouts unless they need to be replaced, which is only necessary at very high mileages. The bearings can be carefully pressed out, and, similarly, new ones must be carefully pressed in.

5.0 Re-Assembly

Clean all parts thoroughly, including the inside of the steerer tube, dropouts and the spring, and dry off with a clean cloth. Do not clean out the inside of the shell bearings in the dropouts. If possible, polish the inside of the steerer tube using a flapwheel (on a long stem, held in an electric drill) to remove any traces of corrosion. If necessary, fit the suspension bearing to the height adjuster using a vice (as a press). The use of a hammer to fit the bearing is likely to destroy the bearing. Lightly grease the threaded stud on top of the fork stirrup (do not use white grease) and re-fit the bumpstop washer, locknut and height adjuster - the bumpstop washer is screwed down as far as possible. Screw the locknut and height adjuster down close to the bottom, but not down so far as to be hard to adjust after assembly.

Grease the outside of the spring and insert into the steerer tube. The suspension bearing should also be lubricated. Important note – use Silicone Grease (for spring and bearing) on cycles fitted with the dark grey ‘Nylatron’ bearing, and Lithium Molybdenum Disulphide Grease (for spring and bearing) on cycles fitted with the light grey ‘Ertalyte’ bearing. Do not grease or lubricate any part of the leading link assembly.
Place the suspension boot over the lip at the base of the steerer tube and insert the stirrup assembly. Ensure the forks are the correct way round - when viewed from the side they are slightly angled back. Place Tufset blue washers on the inside of the dropouts and press in the inside leading link plates (with the rebound washer on the middle stud) This will require you to press the stirrup into the fork itself to ensure that the rebound stop clears the dropouts. The middle leading link stud should be closer to the front of the plate rather than the back - don't put them in the wrong way round.

Add the blue washers on the outside of the dropouts and the outer plates, followed by the stainless washers and nylock nuts. Tighten the nuts as per the adjustment section.

6.0 Service Parts

Two different types of front suspension bearing have been fitted to APBs. Pre-year 2000 models are fitted with a dark grey 'Nylatron' bearing with a simple cylindrical shape. Models built after 1999 are fitted with a light grey 'Ertalyte' bearing with a 'bobbin' type shape and a larger diameter to suit the increase steerer tube bore of these models. The new 'Ertalyte' bearing is harder wearing, has lower frictional characteristics and does not absorb water. This results in smoother performance and superior long term durability. There are also two types of spring, one with a larger diameter to suit the new suspension bearing. Early APBs (pre-1995) were fitted with 'hard' springs, which are not ideal for light riders and those riding mainly on the road. Current models are fitted with softer springs.

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Most suspension parts are interchangeable between APBs, AM road bikes and AM-ATBs, but care must be taken with suspension bearings and springs. Pre-2000 APBs and post-1990 ATBs use a 'small' bearing (approx 0.796" diameter) whilst 2000-on APBs, pre-1990 AM-ATBs and all AMs use a larger bearing (approx. 0.868" diameter). If you are at all unsure as to which size bearing is required, please measure the existing bearing. Note that from 2001 onwards, Pashley built models are referred to simply as Moultons.

Dark grey 'Nylatron' suspension bearings are no longer available as service items from Pashley, but light grey 'Ertalyte' bearings, with the 'bobbin' shape, are available in the old size (0.796" diameter) to replace the 'Nylatron' bearings. Leading link assemblies have changed in design on occasion. Early AM plates are simply flat. Later models have boxed in leading links, assembled with stainless screws, threaded spacers and nuts (do not try to disassemble the threaded spacers, they are bonded in place). Some models have leading links with pressed in studs in place of the screws on the end, retaining the hex headed bolt in the middle. More recent and current models have dispensed with the bolt, using three studs instead. These new links can be fitted to all older models. Parts should be ordered through your local dealer. To avoid confusion when ordering spare parts, please refer to the parts list and quote the part number when ordering.

Part Description	No. per Cycle	Pashley Part No.	Pre- 2000 APB	2000-on APB
Suspension Bearing – Small (Ertalyte)	1	OC5001	✓	
Suspension Bearing – Large (Ertalyte)	1	OC5001B		✓
Suspension Spring – Small	1	OC5012	✓	
Suspension Spring – Large	1	OC5112		✓
Wiper seal (underneath bearing)	1	OC5031		✓[1]
Aluminium Height Adjuster	1	OC5003	✓	✓
Aluminium Locknut	1	OC5013	✓	✓
Suspension Gaiter	1	OC5006	✓	✓
Bumpstop Washer	1	A6947	✓	✓
Friction Washer/Rebound/Nuts set	1	A6983	✓	✓
Leading Link set (no washers etc.)	1	A6985	✓	✓
Fork Insert Bearing	4	OC5015	✓	✓

Front Suspension Service Kits

Large Bearing Kit
Part No. A6980

Contents:
1 x OC5001B
1 x A6983

Small Bearing Kit
Part No. A6982

Contents:
1 x OC5001
1 x A6983

A6983 set includes 8 friction washers, 2 rebound stops, 6 stainless steel washers and 6 stainless steel nyloc nuts.

[1] Only fitted on models without front suspension gaiter