

Servicing Lens Mechanisms

National Camera Workshops

Part of the reason that we have not included any material specifically on lenses in the course is that the tremendous variety in lens mount construction makes it difficult to come up with general guidelines for disassembly. (Learn Camera Repair has manufacturers service manuals and/or exploded parts diagrams for many lenses that can help you with those specific lenses).

Here are some starting point suggestions:

Cleaning

Lens Elements: Dust should be blown off with compressed air. Grease or fingerprints can be removed with a commercial lens cleaner or a mixture of 80% ether or 20% alcohol and a good lens tissue. Avoid using an excessive amount of cleaning solution, as it can damage the cement used in the mounts for the lens elements. Do not use silicone treated tissue!

Mechanical Parts: The same cleaning solutions and techniques used to clean shutters can be used for cleaning the mechanical parts of a lens. Diaphragm blades and blade operating rings used in auto-aperture lenses must move as freely as shutter blades.

Lubrication

Diaphragm Parts: They should be rubbed with dry moly (powdered molybdenum disulfide). Grease or oil should not be used near these parts.

Focus Mechanism: Moving parts of the focus mechanism are lubricated with grease. The type of grease will depend on these factors.

1: The tolerance or play between parts. A worn helical will require stiffer grease.

2: The customer's preferences. Some prefer a stiffer focus action, some prefer a smoother, easier focus action. If you do not know the customer's preferences, use a grease similar to what was used in the lens originally.

Other lubrication points will vary depending on the lens design. Note the points which have been previously lubricated before cleaning.

General

Most screws and retaining rings in lenses are sealed. Alcohol or acetone will loosen the seal and make the disassembly easier. These parts should again be sealed when the lens is reassembled.

Click stops in the aperture setting ring or the Auto-Manual aperture selector indicate the presence of a detent, which may be a ball bearing. Watch for ball bearings as you disassemble a lens; and take care not to misplace them.

If a part is held in place by set screws, it is often positionable. That is, it will fit in several different positions. Only one position may be correct, so try to understand why it is positioned as it is; and if possible scribe or mark the position or make a drawing of it. As each ring or section is separated, check to see if it will fit in more than one way and determine if one is correct. When in doubt, always mark the position before disassembling.

If it is necessary to disturb the infinity adjustment, mark its position.

If it is necessary to disassemble the helical, it is VERY important to mark the position at which the threads separate and also to count the number of revolutions of each part to the point of separation. There may be more than one thread involved in the focusing assembly, and the position of each is important regardless of whether or not it is a multiple thread.

Mechanically, lenses are very simple. The two areas that seem to be the most difficult are the assembly of the helical and determining how to get the lens apart, as this varies considerably between lenses.

Most lens repairs will only involve cleaning the diaphragm. In most lenses it is possible to remove the diaphragm without separating the helical thread or disturbing the infinity adjustment.