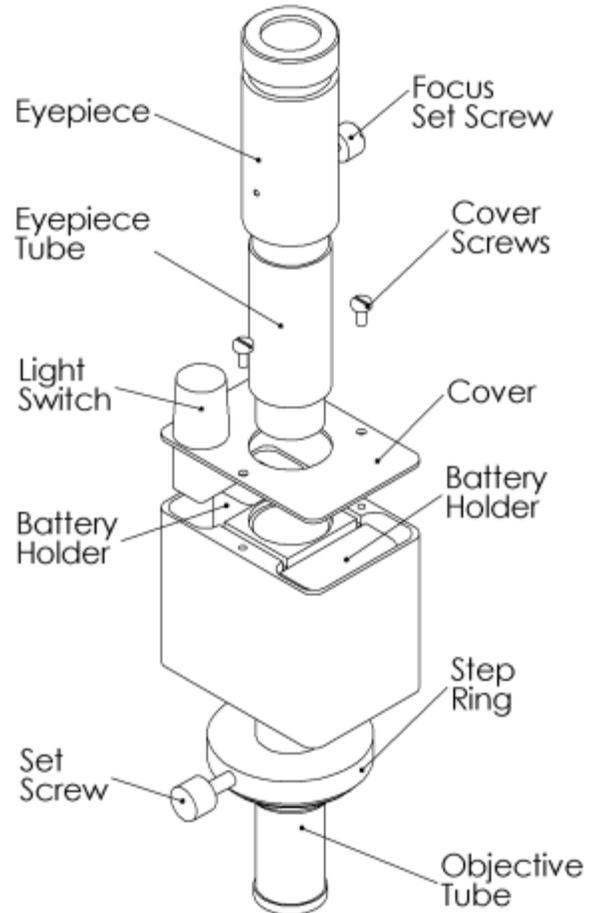


## 1 Inspection

Turn on the light by turning light switch clock-wise to maximum intensity. Insert OpticalPlus into a cylinder allowing the step ring to rest on the cylinder neck shoulder. Loosen the step ring set screw and lower OpticalPlus to the start of the thread while observing through the eyepiece. Tighten the step ring set screw. Adjust focus by loosening focus set screw and rotating the eyepiece. Tighten the set screw when thread is in focus. Examine the lower set of threads by rotating OpticalPlus 360 degrees. Loosen step ring set screw, raise OpticalPlus to view the next set of threads. Repeat previous two steps until all threads have been examined. Don't forget to turn off the light after inspection.

### ***Using with VisualPlus III***

When used in combination with VisualPlus III, OpticalPlus can be used to locate and examine imperfections found during eddy current testing. Make sure that you perform VisualPlus inspection with probe pointed at the first letter of cylinder serial number when starting data acquisition. Loosen step ring set screw, locate a tick mark on the step ring scale corresponding to the crack position angle reported by VisualPlus. Line up this mark with the first letter of the cylinder serial number. While holding the ring in place with one hand, line up a vertical groove on the side of OpticalPlus with 0 scale mark on the step ring and lower OpticalPlus in the cylinder while examining threads.



## 2 Condemning Cylinders

While using OpticalPlus, if you find a feature that appears to be a crack, perform a follow-up inspection with VisualPlus III to determine if what you are seeing is actually a crack. Look at the recorded trace in the location where you identified a potential crack. Note if there is a peak at that location that was not identified because it is a superficial cut or if it is a valid

crack that is obscured by thread damage or corrosion. Do not condemn a cylinder for a "crack" based solely on the use of OpticalPlus. Many common, harmless features found in cylinder threads—for example, tooling stops, the attenuated tips of acceptable folds, and superficial cuts or gouges—can be mistaken for cracks, especially under magnification. (This restriction does not apply to threads that are badly corroded or otherwise damaged to such an extent that a VisualPlus probe cannot be screwed in; such cylinders should be condemned for reasons other than neck cracks.) Please use data from both OpticalPlus and VisualPlus III instruments to make decisions in borderline cases.

### 3 Changing Batteries

OpticalPlus uses three N size alkaline batteries. While not as common as AA batteries the N size battery can be obtained from Radio Shack, AIT, and most electronics stores.

Please play the battery change video on our website. Open [www.visualplus.net](http://www.visualplus.net), select products and click on Battery Change Video in the Optical Plus section.

To change batteries unscrew and remove eyepiece tube, unscrew and remove three cover screw, carefully lift the cover and remove battery holders by gently pulling on wires or using a screwdriver. Please note the wire arrangement so that OpticalPlus can be re-assembled in the same order. Replace batteries noting the polarity indicated inside each battery holder. Place both battery holders back into the instrument body in the same orientation as noted during disassembly. Push wires with rubber tubes on them into channels to keep wires from coming loose while placing the cover on OpticalPlus. Replace cover and tighten three cover screws. Thread the eyepiece tube back into the instrument body. OpticalPlus uses three N size alkaline batteries. While not as common as AA batteries the N size battery can be obtained from Radio Shack, AIT, and most electronics stores. To change batteries unscrew and remove eyepiece tube, unscrew and remove three cover screw, carefully lift the cover and remove battery holders using pliers or a screwdriver. **DO NOT PULL ON THE WIRES. DO NOT BEND WIRES AT SOLDER JOINTS. THE WIRES ARE EASY TO BREAK.** Please note the wire arrangement so that OpticalPlus can be re-assembled in the same order. Replace batteries noting the polarity indicated inside each battery holder. Place both battery holders back into the instrument body in the same orientation as noted during disassembly. Push wires with rubber tubes on them into channels to keep wires from coming loose while placing the cover on OpticalPlus. Replace cover and tighten three cover screws. Thread the eyepiece tube back into the instrument body.

If you break wires and would like to attempt to repair them yourself or if you are unsure on how to put the battery holders back into the instrument body please see a document labelled Wire Repair Instructions in the Products section of our website in the Optical Plus section. If you do not feel comfortable attempting to repair the wires please send the OpticalPlus in for service.

### 4 Maintenance

OpticalPlus uses acrylic lenses and first surface mirror. Please don't use any solvents on those surfaces. Cleaning is best done with clean compressed air. Dust accumulation should not affect image quality while performing an inspection, even though it might be visible if OpticalPlus is not focused on a surface.

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