

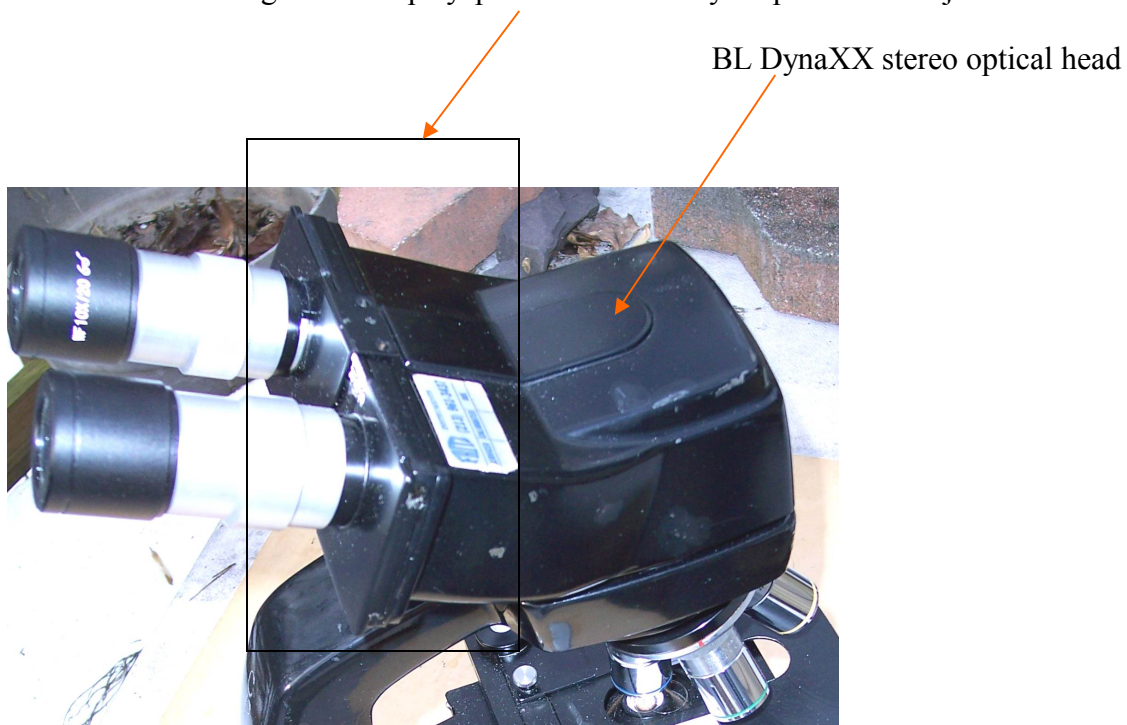
## Introduction

This note is an attempt to document my early experience trying to repair DynaOptic BL microscopes. It is true that many of the parts are interchangeable between various Dyna Like microscopes as I discovered. However I wish to expand upon repairing those microscopes being sold “as is” for repair that probably sat in extreme weather where the grease lubricant hardened to the point it is difficult to operate the manual knobs and sliding optical adjustment During my early experience many of the microscopes were being sold on eBay at a price I was willing to pay. Many of these were a great challenge to me. It became obvious to me after working on these that many of these manual adjustable optics were FORCED to move; damaging the optical adjustment mechanism. What I wish to describe here is what I learned in the process ; and what to look out for when first attempting repair. Although the DynaOptic Flat field and DynaZoom are in my opinion classic; and were well designed (except for perhaps for the manual eye stereo separation mechanism). If certain precautions are not taken ( grease freeze at stereo eye separation) then damage to this mechanism is in my opinion very likely!!

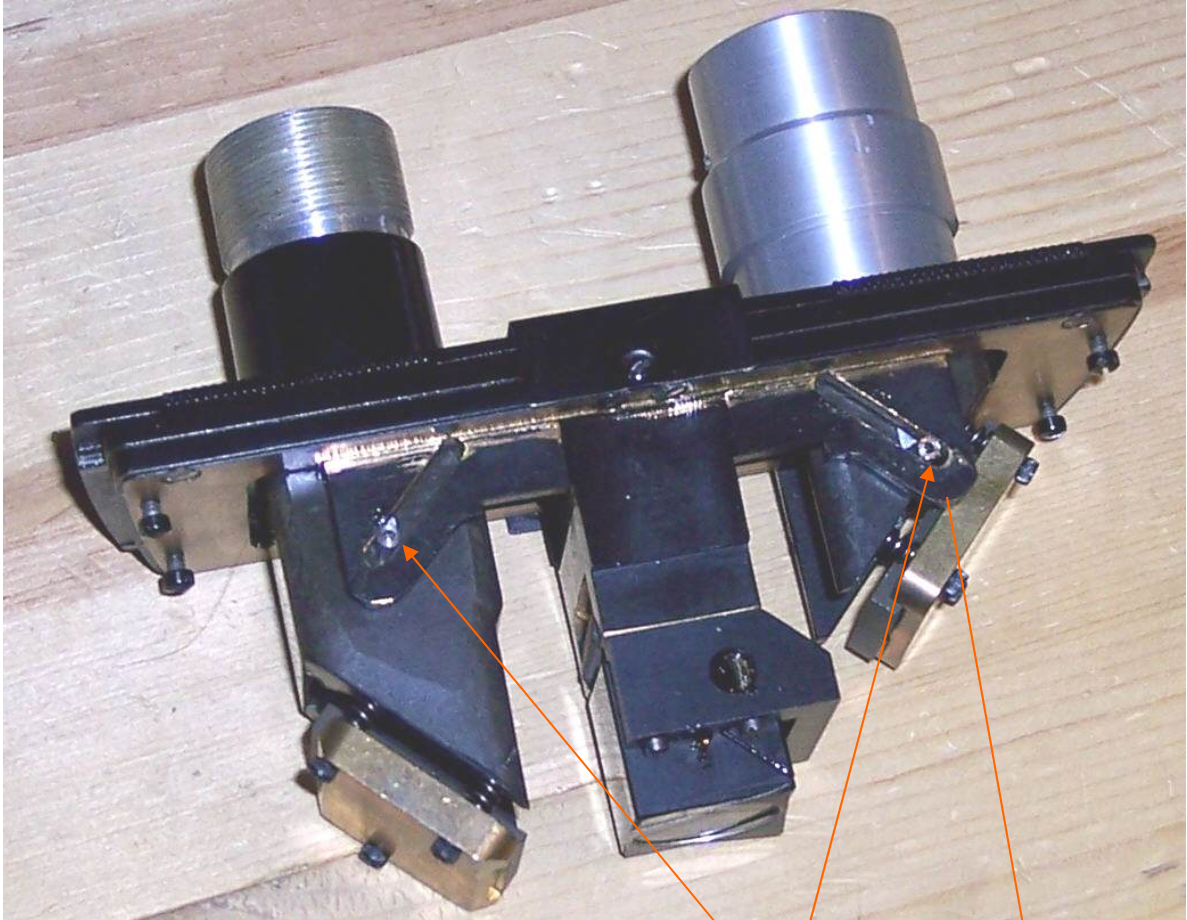
## Purpose

My purpose is first show photos of the problem areas’ what to look out for!! Second to give a rough description of repairing ; not necessarily to 100% factory. My purpose is to rough describe what I did; however is not necessarily the correct procedure. I could not find a BL DynaXX microscope service or repair manual on the Web; probably didn’t use the proper search engine words. AO microscope collector and repair Web pages had much user support ; repairing; I tried to find the same for BL dynaXXX for similar support; didn’t seem to find nearly as much as for AO microscopes.

Regarding the BL DynaXX stereo optical head ( not sure of the proper term is) is specifically the left right and center prism assembly including the eyepiece tubes manual eye separation adjustment and other optical repair issues. This mechanism designed to keep eyepiece in focus as eye separation is adjusted.

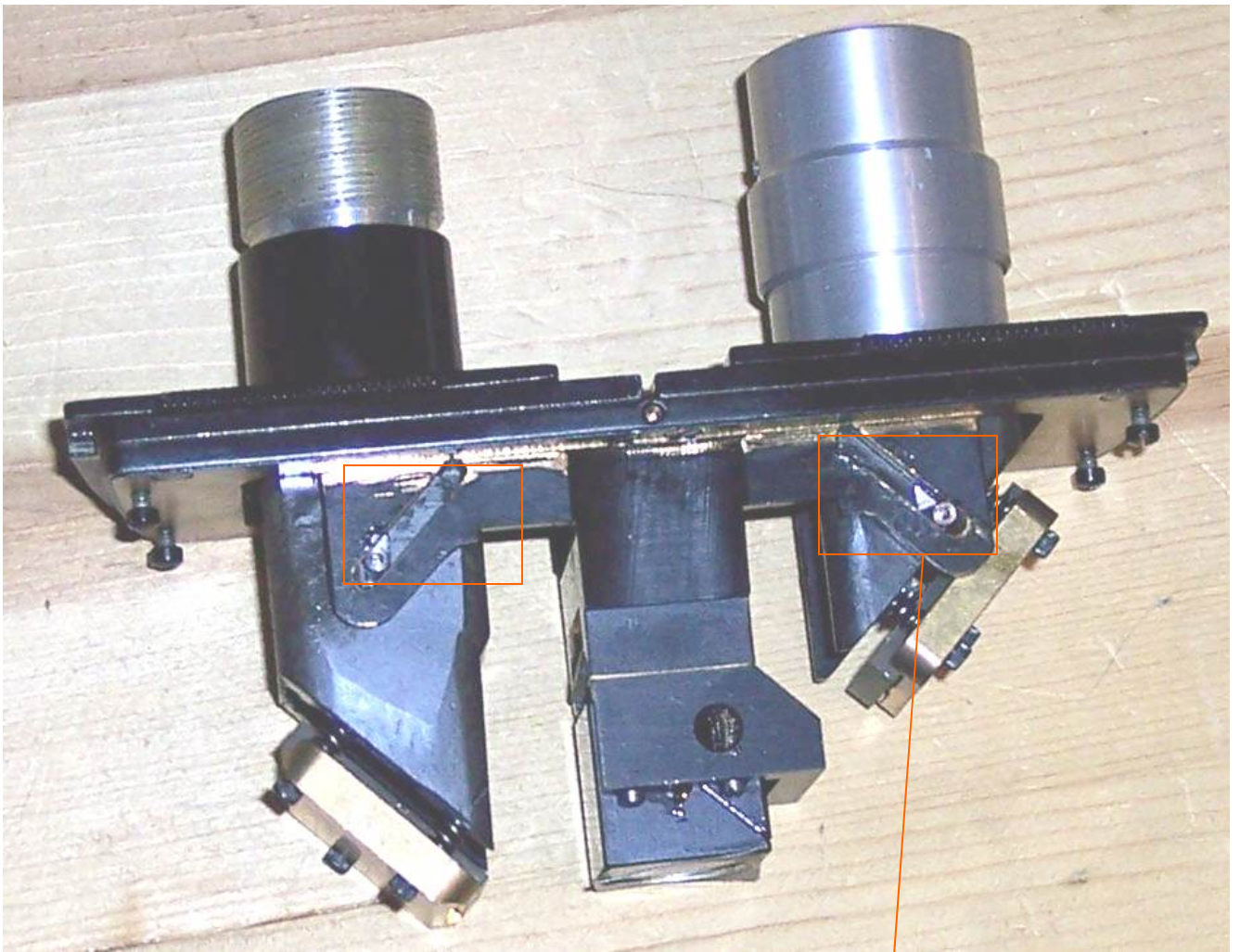


Top View



Note Specifically These PINS !!!



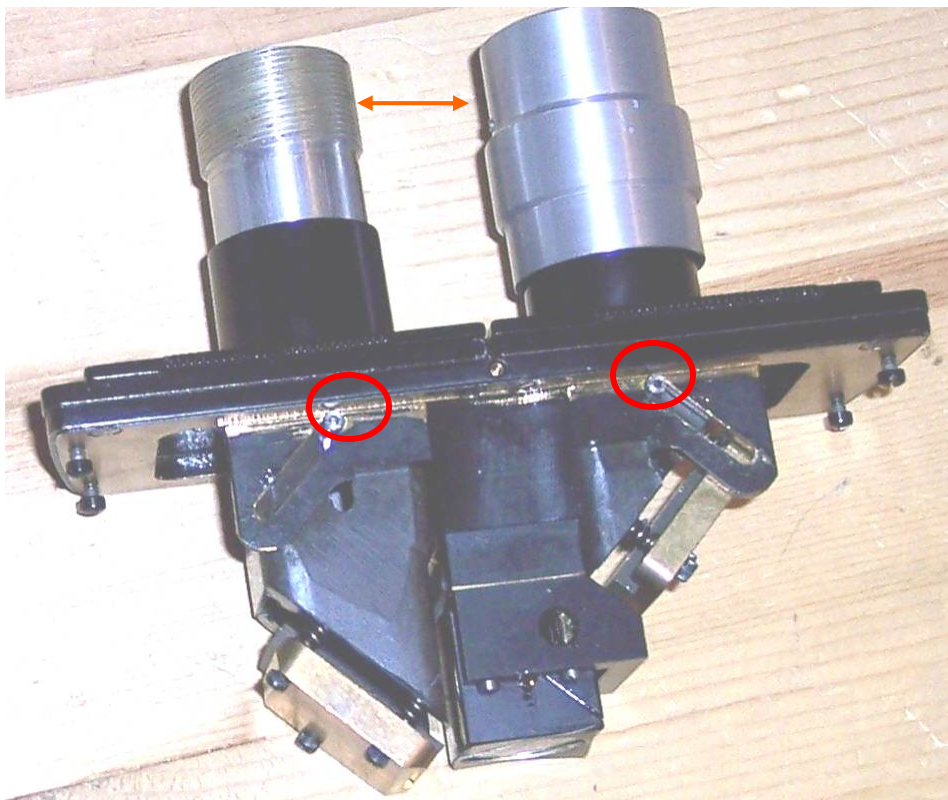
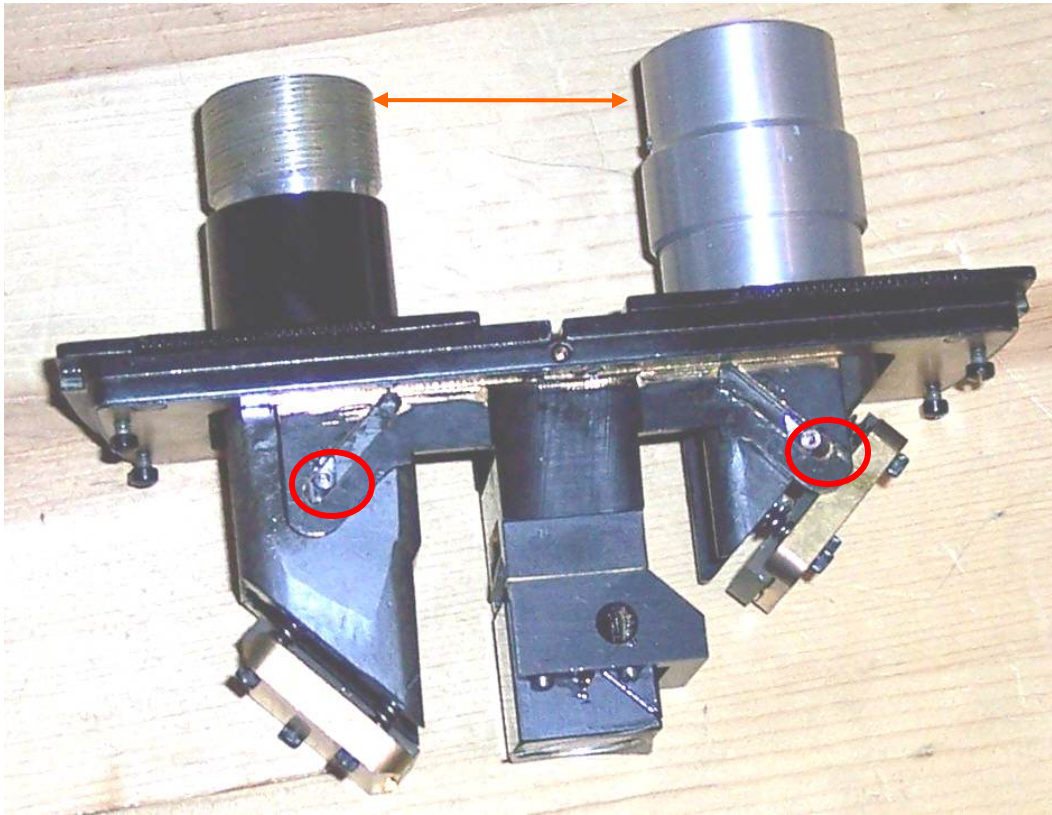


pin

Pin slides up and down channel



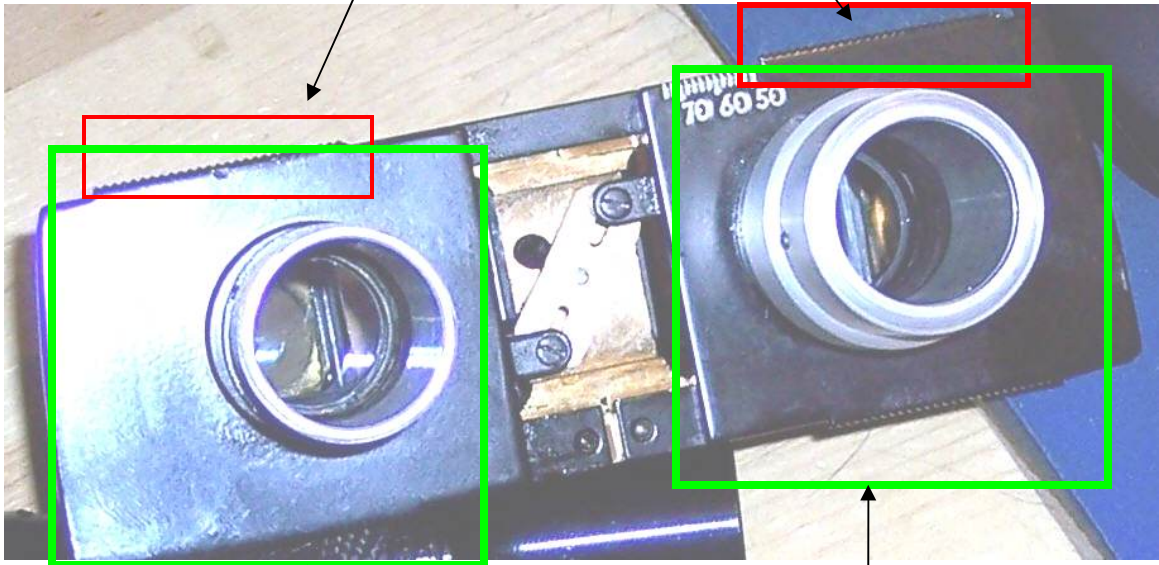
# EYE SEPARATION & PIN POSITION IN CHANNEL



# Mechanism Making This Happen

How eye separation is ( as I understand it) to me manually adjusted

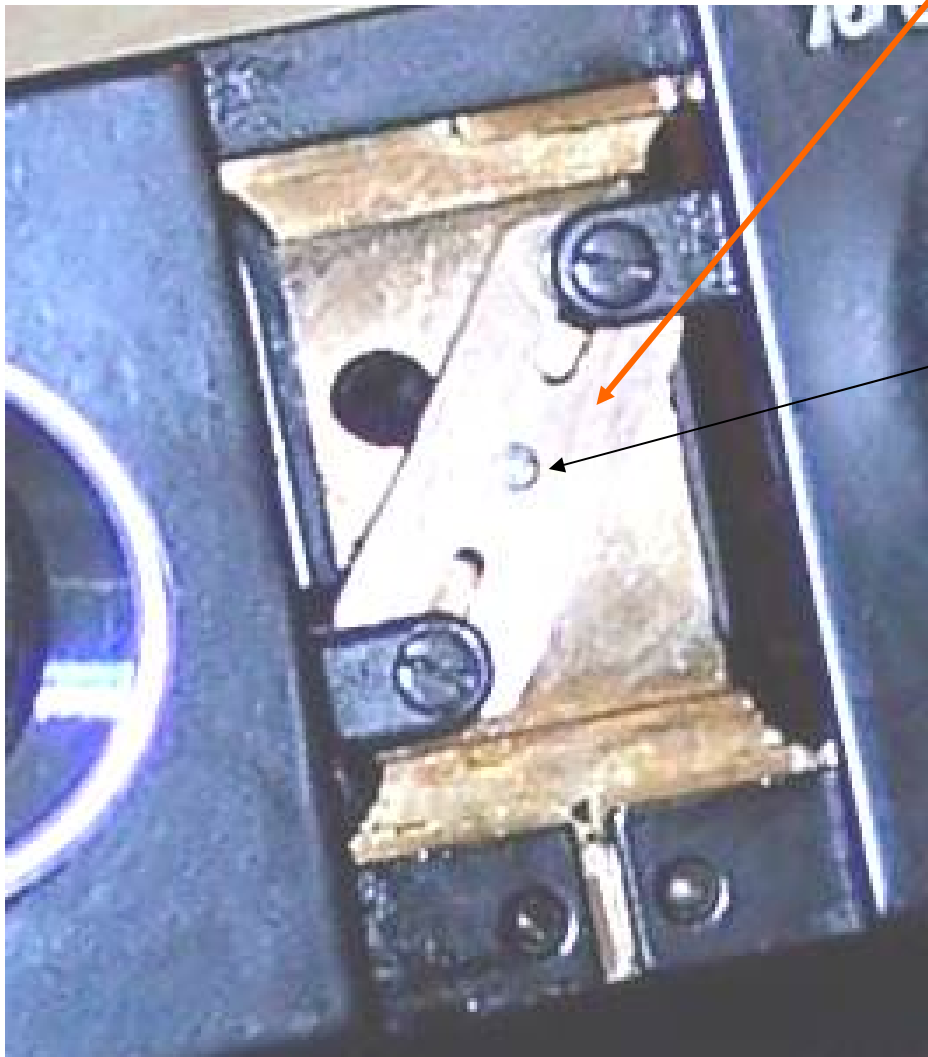
Fingers grab these areas to manually adjust eye separation



These green roughly area move along red arrow



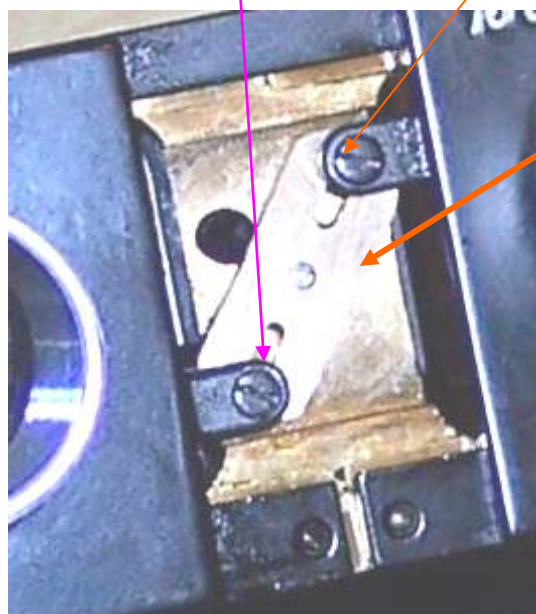
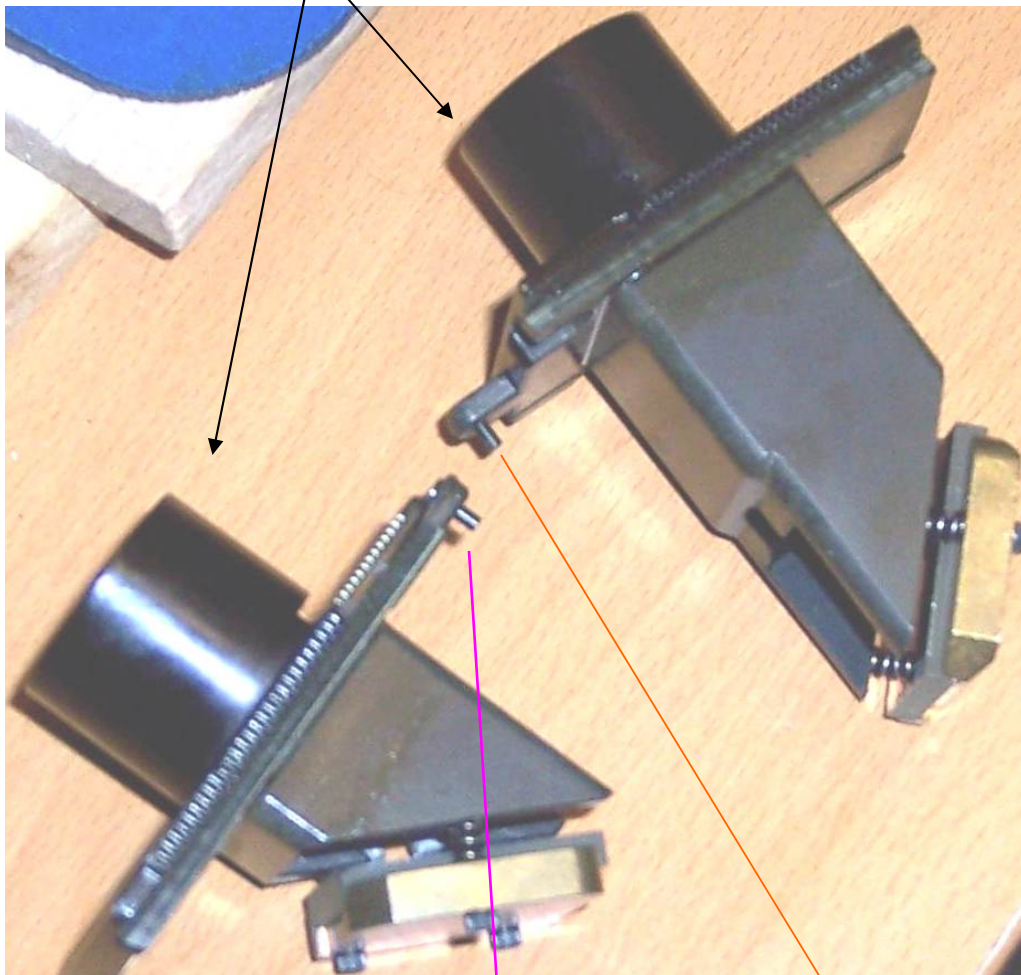
When manual adjusted this fulcrum rotates



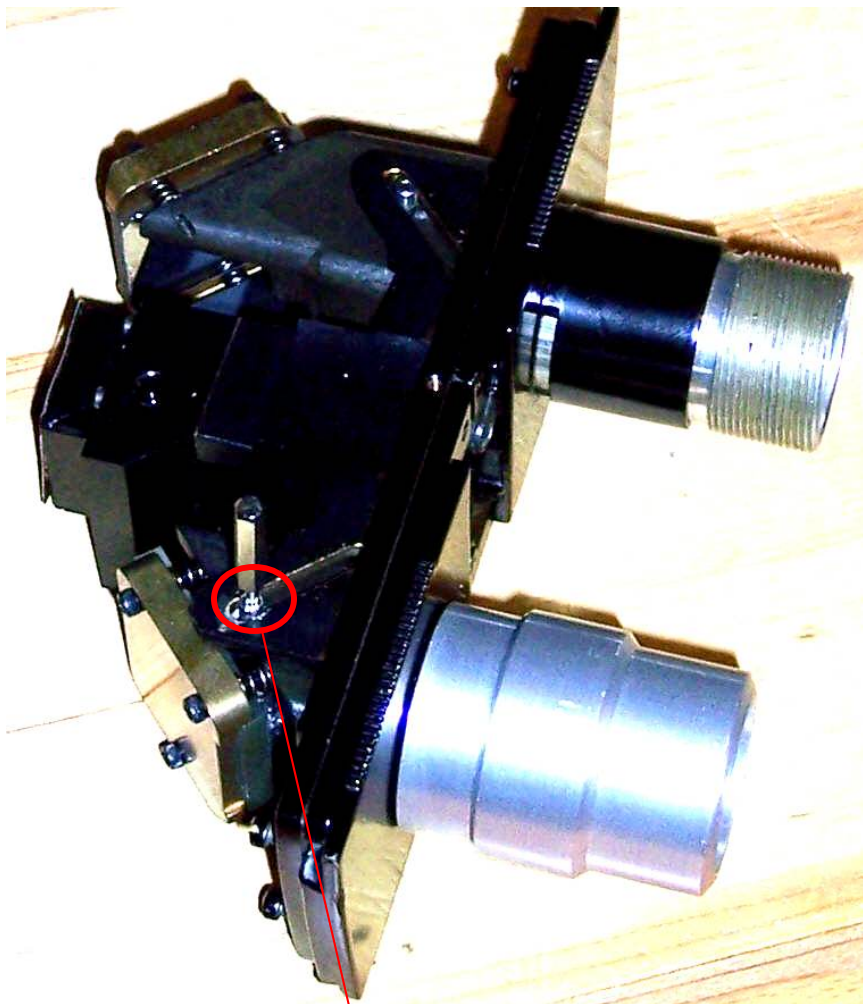
About the center



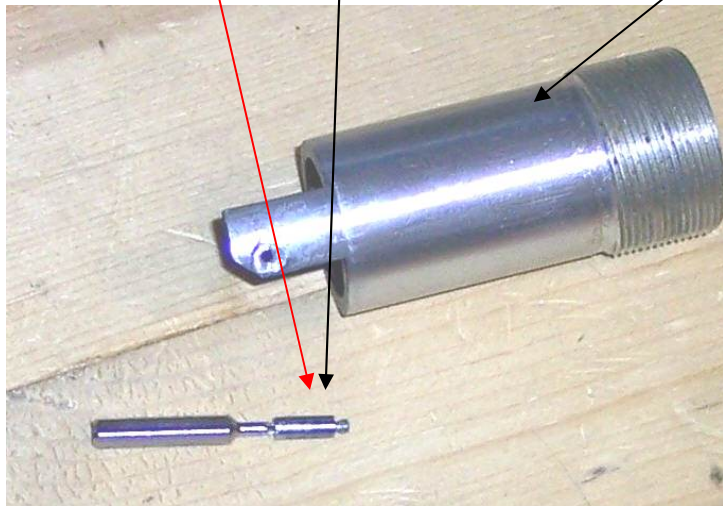
Left/ Right Eyepiece Prism Assembly



Keeps LR prism assembly aligned

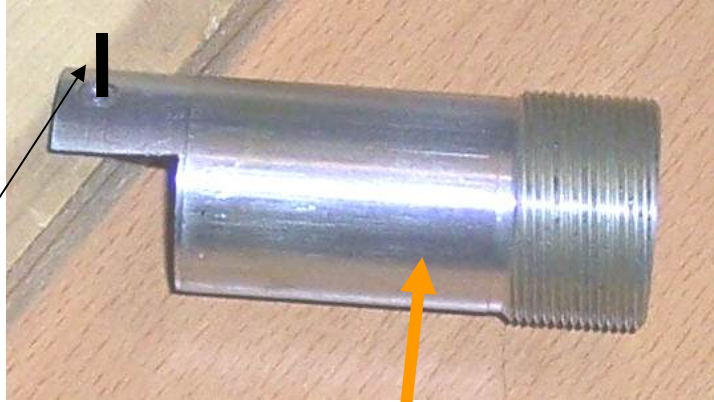


Pin removed from eyepiece cylinder holder





For simplicity assume bottom = Left @ top = Right eyepicce inserts



Assume these are the missing pins

Manual adjustments cause these to change relative distance



Eyepiece holder moves up and down

Manual adjustments cause these to change relative distance

Slide along track

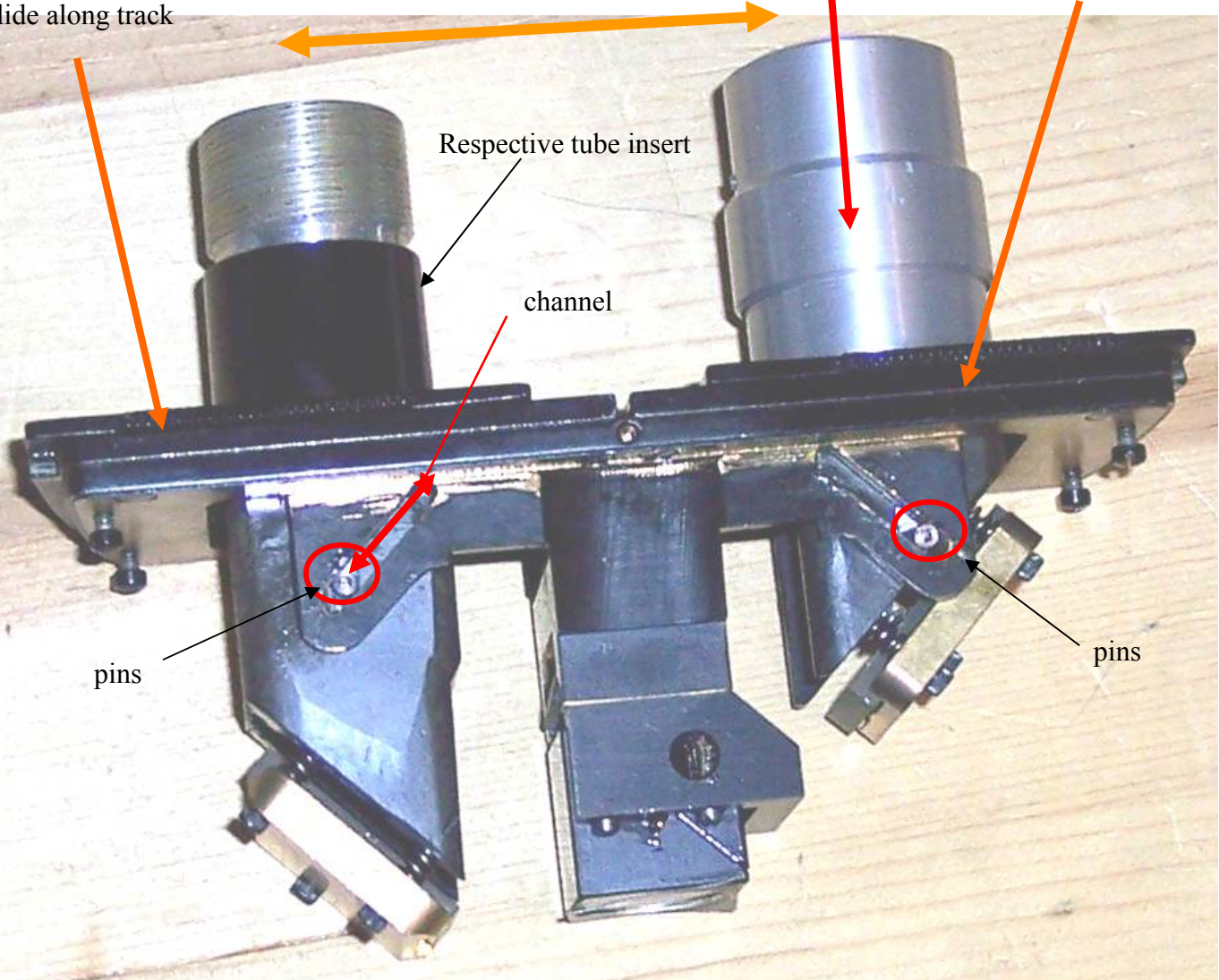
Slide along track

Respective tube insert

channel

pins

pins



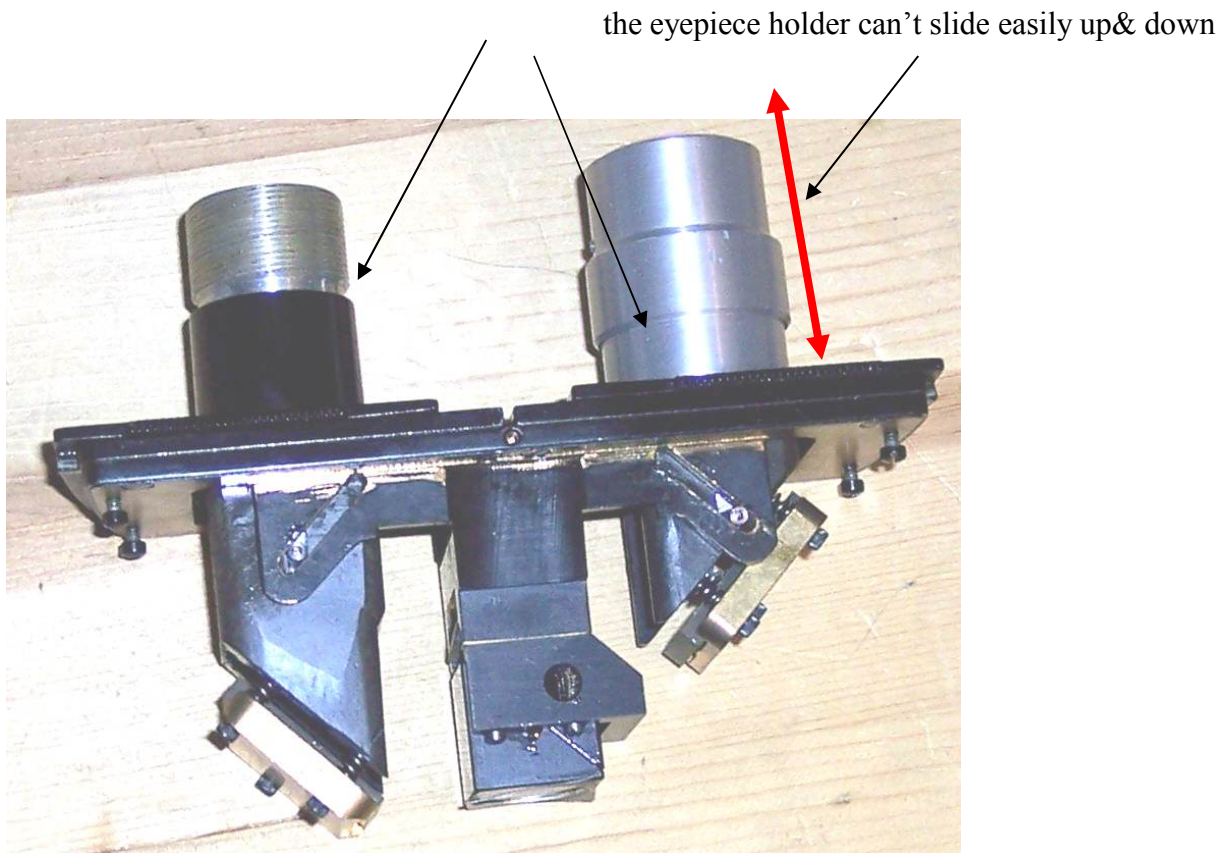
In the process of the eyepiece holders changing their respective separation; the pins are guided along the channel set at an angle to cause the eyepiece holders to move up and down within their respective tube insert

Now having given an outline, as best that I could, I can now explaining the problems areas; what to look out for . When the grease is hardened sever critical components are not free to move



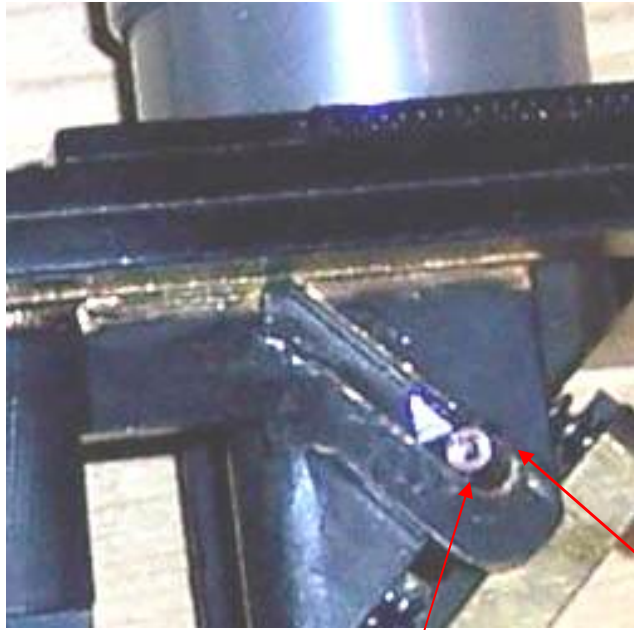
Here sliding track

Here between eyepiece holder and the cylinder that it inserts into;



the eyepiece holder can't slide easily up& down

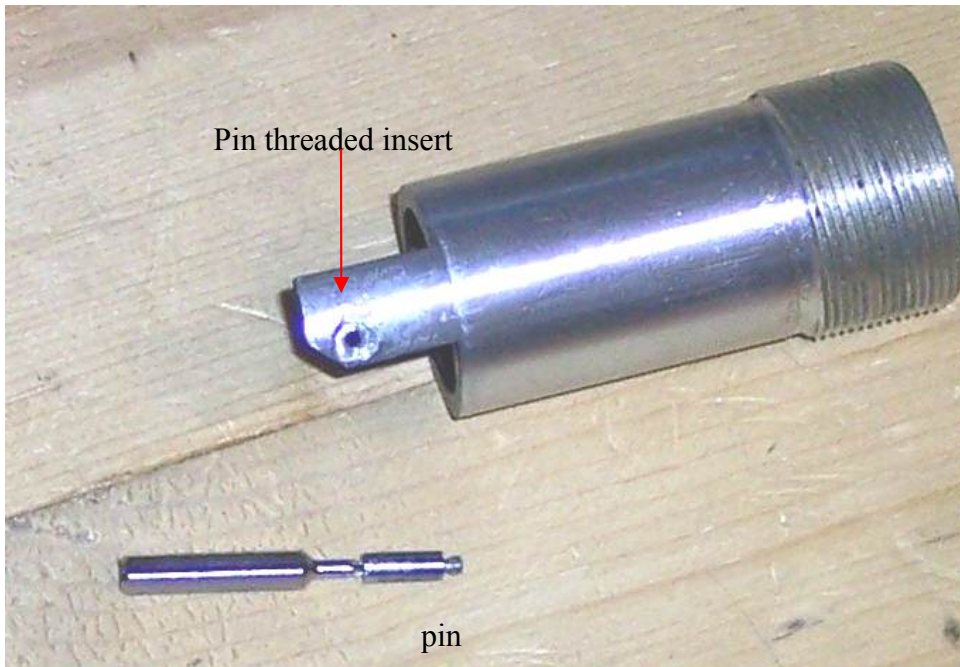




When this happens great force is placed upon the pin

Portions of the guiding channel become deformed

The pin thread insert gets damaged ( see photo ) ; the pin wiggles; can't do its job



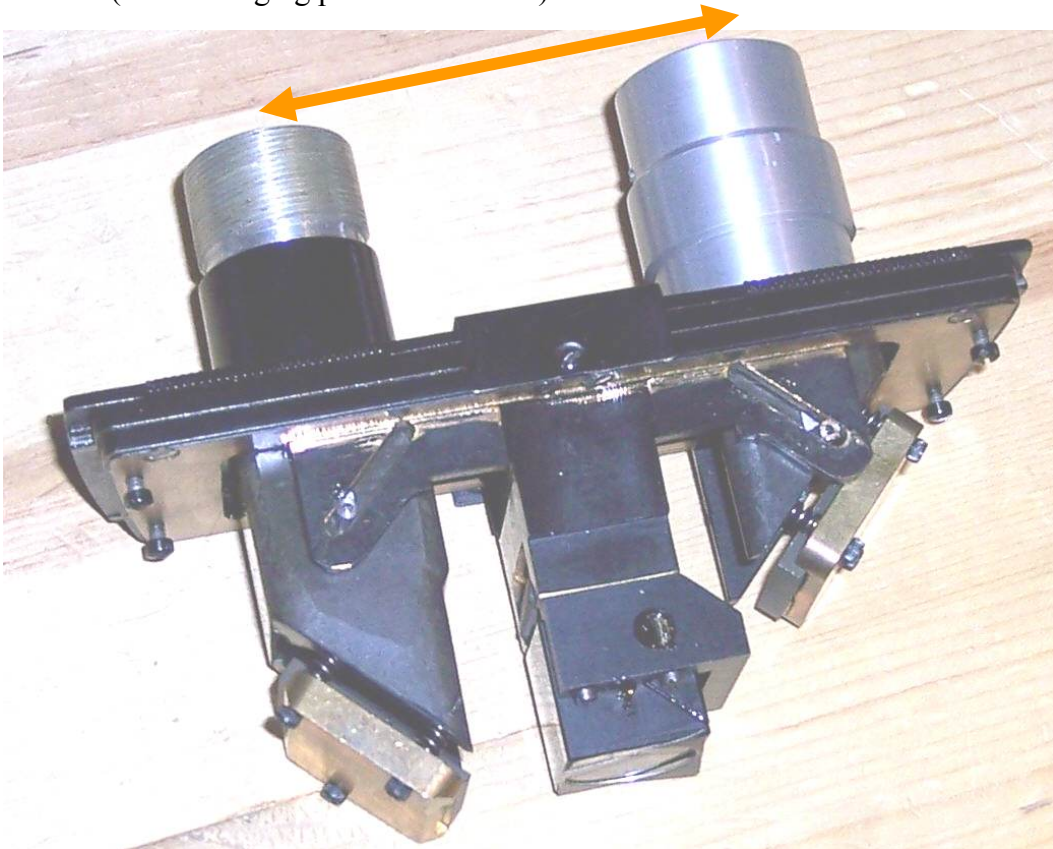
When the hardened grease is cleaned and replaces at the required spots; the mechanism sometimes ill function as intended ; even if all grease and lubricant is refurbished; IF the pin's threaded insert is damaged and the pin wiggles; the mechanism will not work properly.

I have been able to restore these to near fully function ( provided the mechanism is intact) after replacing the lubricant I have use microscope repair kit grease even with some thinning and everything can more or less slide; I still have problems with the pin ( even when threads are in good condition) . I have had them after cleaning and re greasing seem to work more or less OK ( that is when manually adjusting as intended); but after while the mechanism would seem to get caught ( wouldn't move). All sliding mechanisms seemed nicely lubricated; so I don't believe this was the issue; I realized for some reason the pin seemed to get caught in the channel ( resisting sliding up and down the channel at the extreme position). So I guess I am saying that I have not been able to restore the mechanism to its original condition; only partially); could be wear on the sliding channel. I have a feeling that this may have been problematic for BL microscopes; I haven't investigated this in BL manufacturing history.

For my collection I have about 8 BL dyna XXX type microscopes; generally once I set the eyepiece separation it seems to stay fixed; in general not a problem for me; so I am very happy with them.

#### NOW FOR THE CAUTION : ADJUST THIS WAY!

Be very gentle about manually adjusting as intended; if you experience resistance at some pont DO NOT FORCE ( risk damaging pin insert threads)



NEXT PAGE!!

if you experience resistance at some point DO NOT FORCE; at tis point grab the eyepiece insert holder that move up and down when adjusting eye piece separation; you should notice that the eyepiece moves smoothly ( keeps the pin from being damaged).

Generally I don't have to adjust the eyepiece separation very often; sometimes I forget about grabbing at the eyepiece holders experiencing the eventual resistance point; trying to remind myself not to force the intended manual adjustment; the pin is preventing it from sliding properly; but remembering to grab the eyepiece holder; it immediately slides easily.

Not sure how to fix this properly.

