Ultimate Scope Shader Setup Guide

First of all, thank you for choosing Ultimate Scopes and Red Dot Shaders. **As a small creator, your patronage makes a big difference.** If you're a fan of the system, **I would also greatly appreciate a review on the asset store, as they help me out a ton :)**

Notice: This guide is for the legacy 1.0 version of the package. Please use this if you are using version 2.0: Link to the 2.0 guide

Guide Summary:

- Importing the package
- Important terms and nomenclature
- Scope Setup Walkthrough
- Red Dot Setup Walkthrough
- Contact info

Importing the Package:

1) Import the package via the package manager. If you are reading this, you have likely already done this.
2) If you are on BIRP, make sure you install shadergraph through the package manager.
3) If you are on URP or HDRP, install the respective packages, ScopesPackage/UltimateScopes-URP or ScopesPackage/UltimateScopes-HDRP.

Important terms and Nomenclature:

This package aims to create the most competent scope shaders on the market. For this reason, many of the features use real-life terms for the components and features. Unless you are an optics nerd, it's unlikely you will know what many of the terms mean. The diagrams on the next page can be used as reference for these terms.

- Scope Shadow: A black ring on the rear lens that obstructs view if not looking through the scope with the correct distance and angle
- Eye Relief: The distance the shooter's Eye should be from the rear lens. Scope shadow will obscure more of the sight picture with more distance from eye relief.
- Eye Box: A zone behind the rear lens the shooter must position his eye to peer through the scope. The scope shadow will become uncentered from the rear lens if you do not peer through it straight.
- Inner Tube: Scope shadow is not the only black ring you will see when peering through a scope. You will also see the inner scope tube as a sharper, black circle.

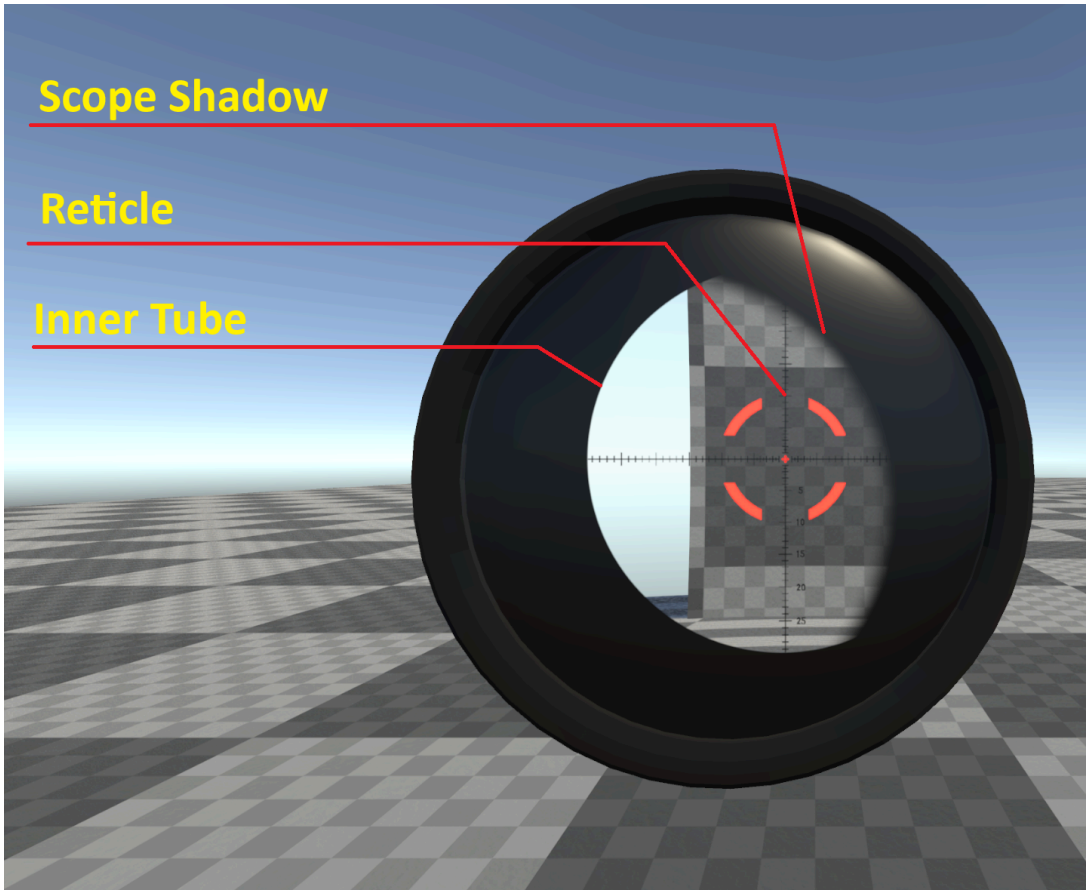


Diagram 1: Scope shadow, reticle, and Inner tube

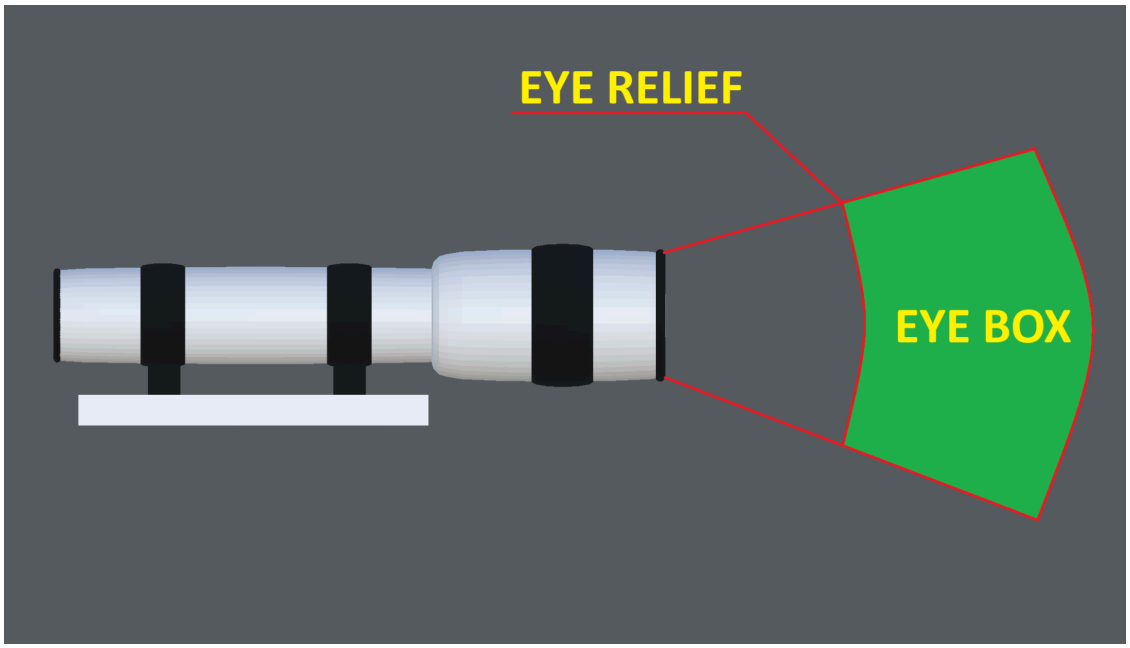


Diagram 2: eye relief and eye box

Setting up your scope:

Step 0) Initial setup

0.1: Create a new material for your scope. Assign it the ”Ultimate Scope Shaders/Scope” shader

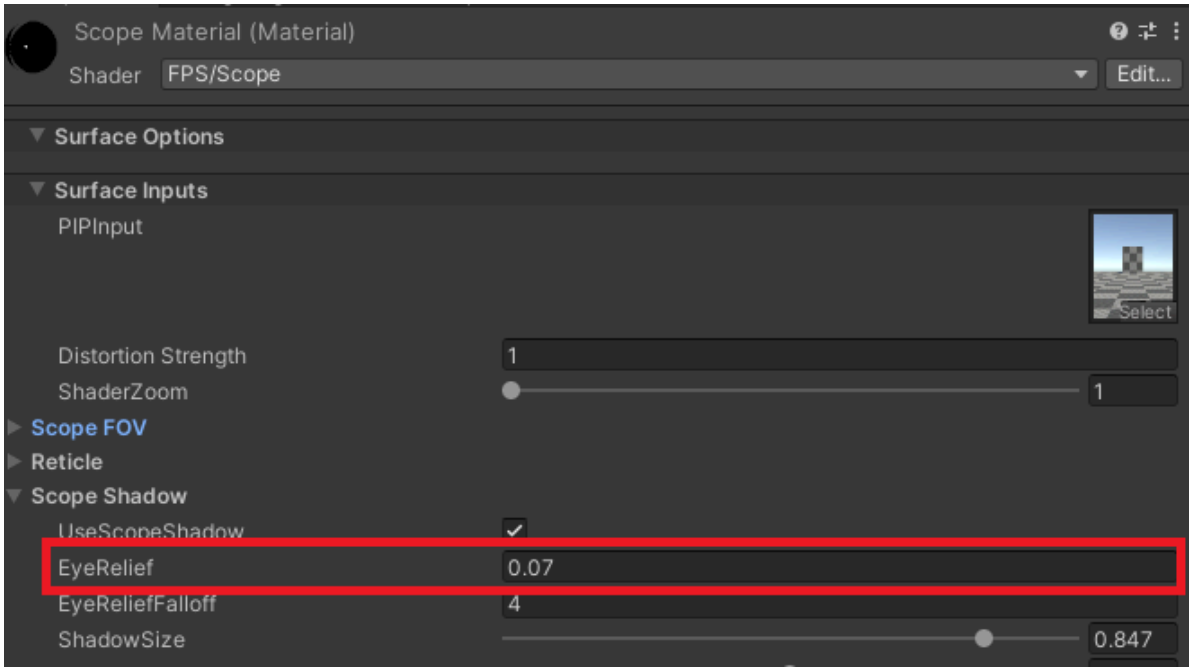
0.2: Create a new instance of the “Dual Render Scope Effect” prefab. Position it inside your scope model, towards the rear. This new object will be your scopes lens.

0.3: Assign your new scope material to the “Sight Picture” renderer

0.4: Create a new render texture. Assign it to the “Scope Camera” “Target Texture”. On your new scope material, assign the render texture to “PIP input”. You can re-use the same render texture for every scope in your project.

Step 1) Set Eye Relief

Determine how far away the player's camera will be from the scope (using unity units). Input that value into the scope material.



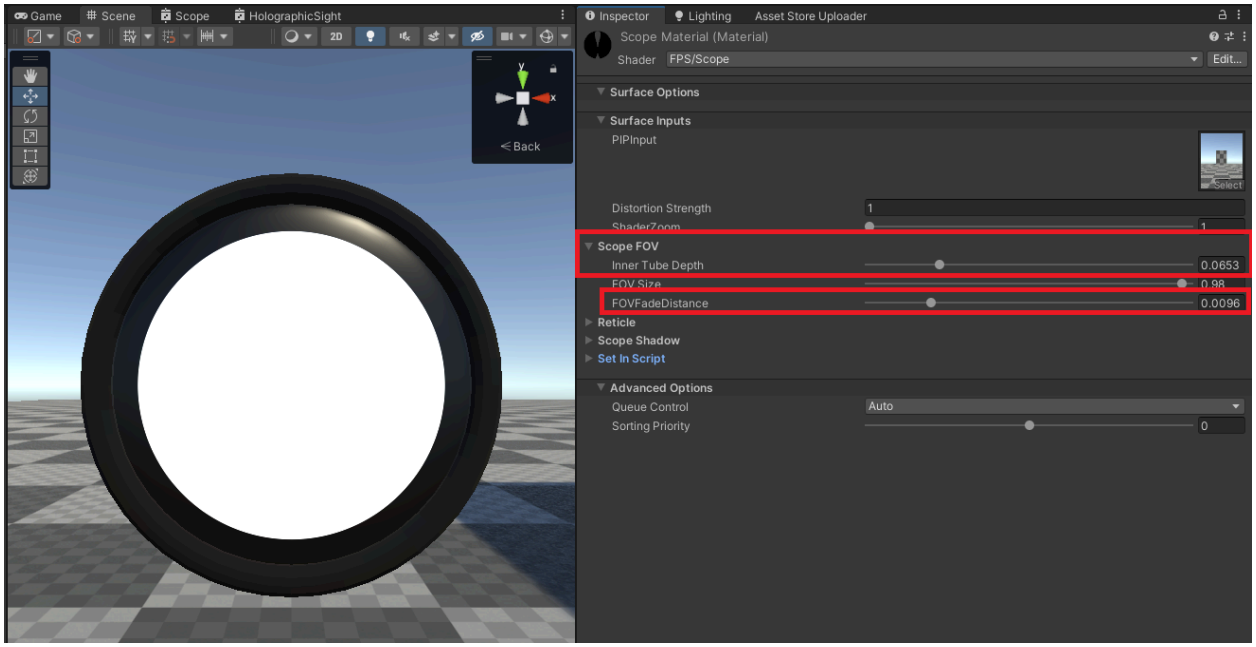
Step 2) Set Inner Tube Depth:

2.1: disable “Use Scope Shadow” on the material

2.2: Position the camera behind the rear lens, with a distance of eye relief

2.3: Adjust the “Inner Tube Depth” slider, until the scopes tube is in the desired position.

2.4: very slightly increase FOV Fade distance, which helps reduce jagged lines on the inner tube projection



Step 3) Reticle

3.1: Assign the desired reticle texture to “Reticle”. Alpha is used for transparency.

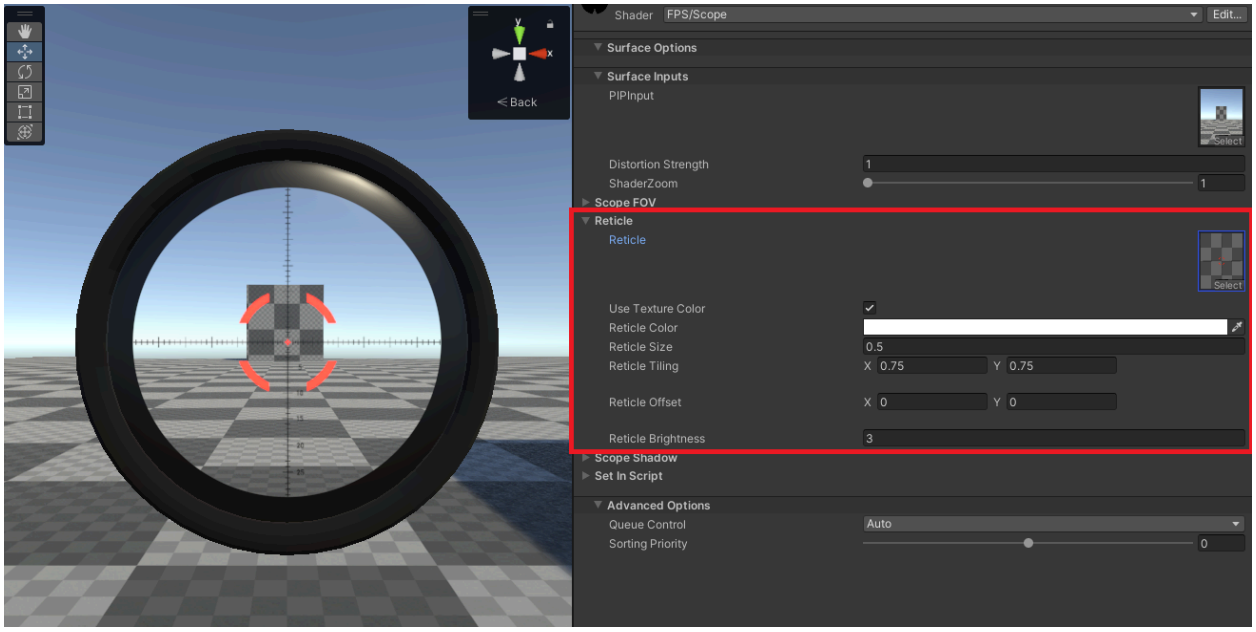
3.2: Determine if you want to use texture color, or color override. If you want to use the reticle texture just for its alpha channel, and use a solid color for the reticle, uncheck “Use Texture Color”

3.3: Assign the desired reticle color multiplier.

3.4: Set your reticles tiling and offset

3.5: Adjust the “Reticle Size” field until the reticle is as large as you want it at 1x magnification.

3.6: adjust “Reticle Brightness” to your liking



Step 4) Scope Shadow

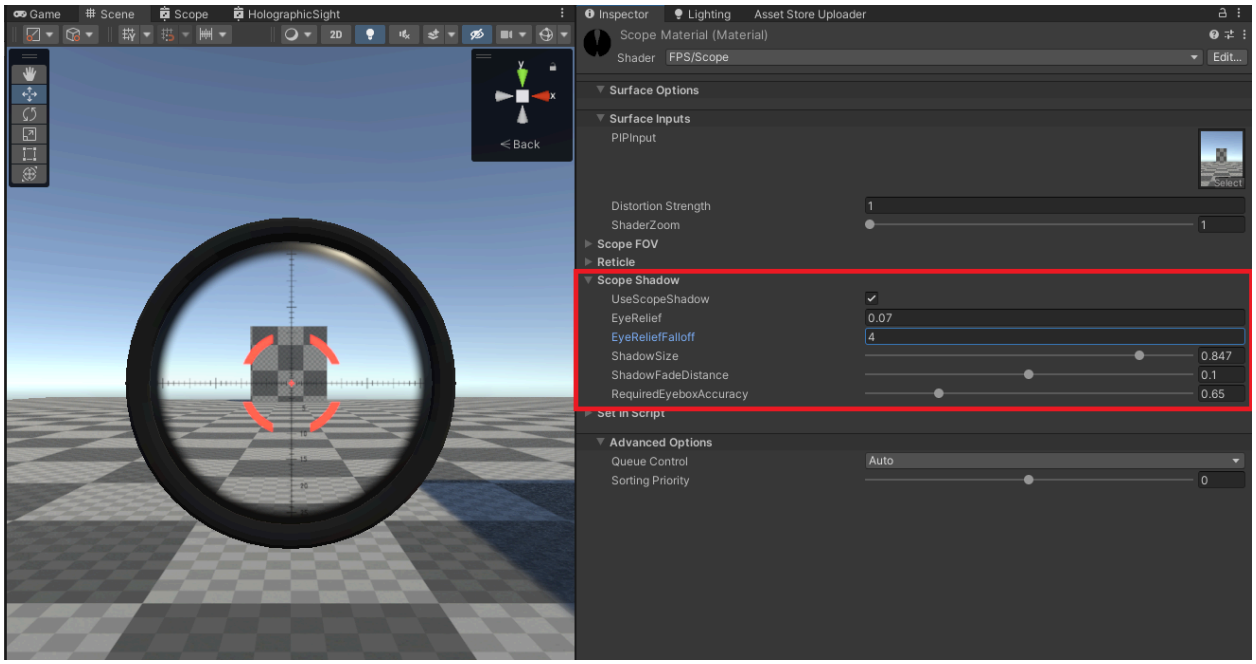
4.1: Re-Enable the “ Use Scope Shadow” tickbox

4.2: Adjust the “Shadow Size” slider, until the scope shadow is at the desired size. Typically, you should see either no scope shadow when the camera distance is at eye relief, or very little (as artistic choice)

4.3: Adjust the “Shadow Fade Distance”. This controls the softness of the scope shadow

4.4: Adjust “Required Eyebox Accuracy”. At a value of 0, Scope shadow will always be 100% centered. As you increase this value, the scope shadow will move more when the scope isn't centered relative to the camera

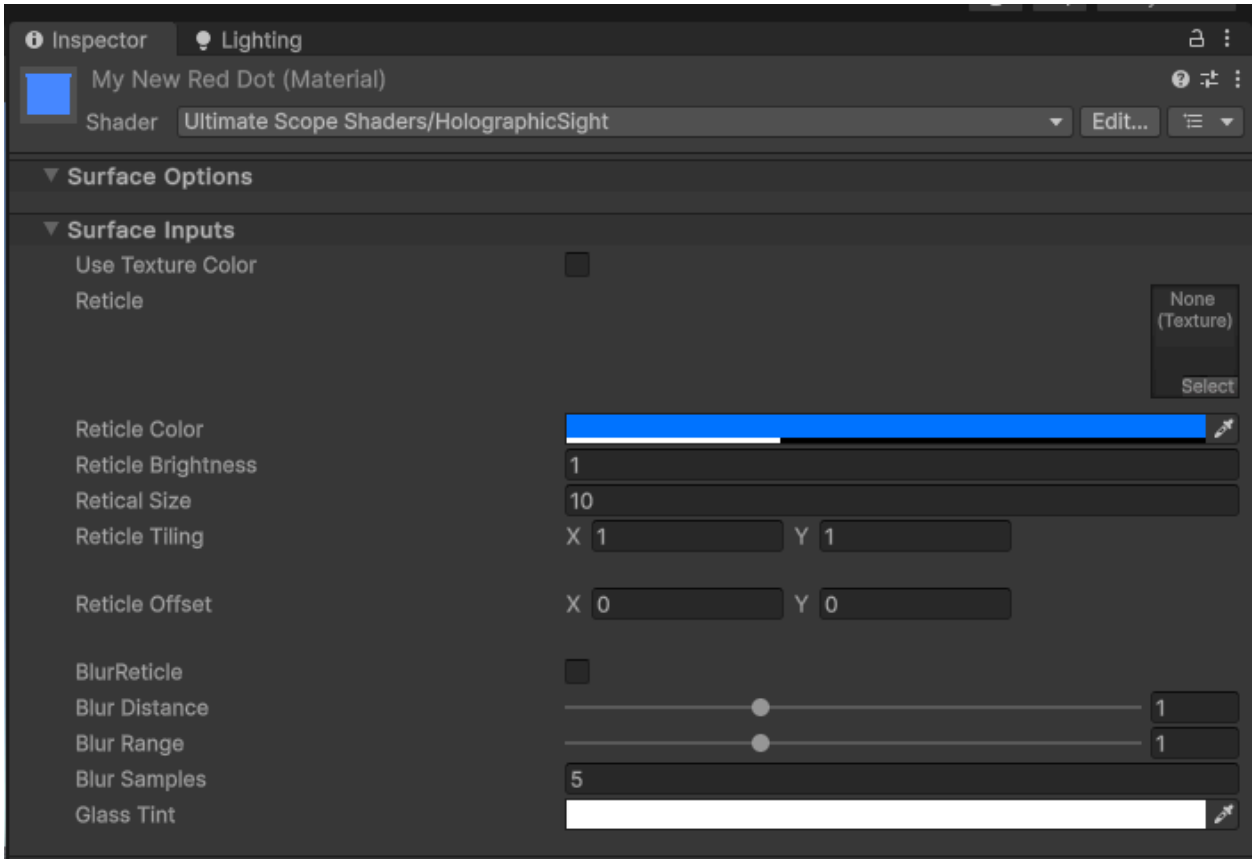
4.5: Adjust Eye Relief Falloff: This value controls how fast the scope shadow size increases when the cameras distance to the lens is not equal to eye relief. Lower values make eye relief more lenient, where higher values require more accurate camera distance to the eye relief.



Setting up your Red Dot:

Step 0) Initial setup

0.1: Create a new material. Assign the shader “Ultimate Scope Shaders/HolographicSight”.



Step 1) Glass Tint

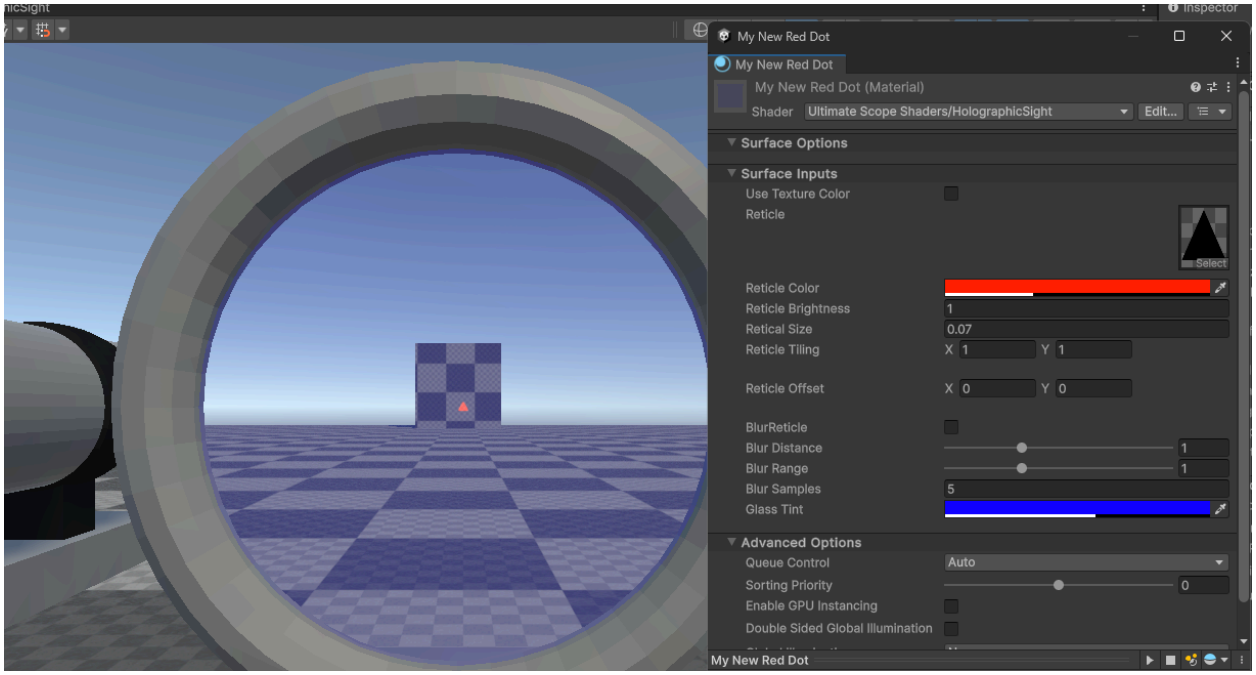
Set the materials Glass Tint value to transparent, use any opacity or color desired. (note: if you are on URP, this value will be pure white with no transparency by default. This is fixed for patch 1.01)

Step 2) Reticle

2.1) Assign any reticle texture you desire to the “Reticle” surface input. (the alpha channel is used for transparency)

2.2) Adjust the “Reticle Size” field until you are happy with the result. It is likely that you will have to reduce it quite a bit.

2.3) You can choose to either use the textures color, or override the reticles color by selecting “Use Texture Color” and changing the “Reticle Color” field



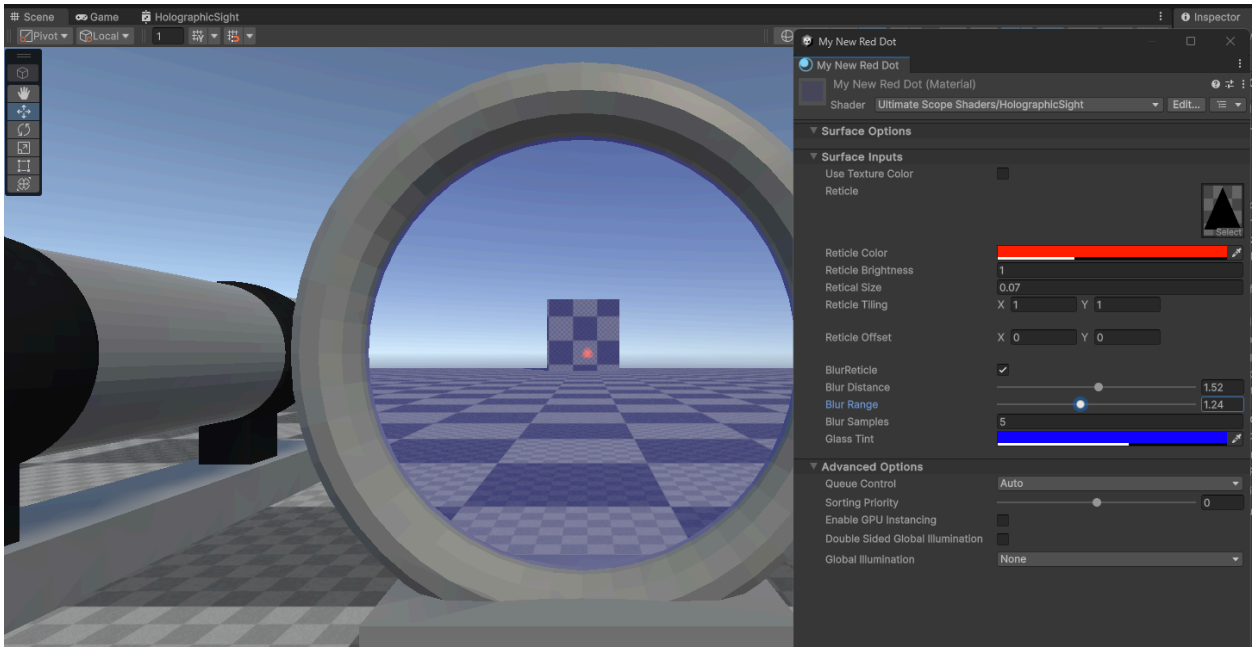
Step 3) Reticle Blur

Most Red dots on the market in real life dont give a perfect crisp dot, the way that many games show them to have. You can simulate that using this shader.

3.1) Enable the “BlurReticle” checkbox on your material

3.2) Adjust the number of blur samples. (dont go overboard, you will likely never need anything higher than 15)

3.3) Adjust the Blur Distance and Blur Range. Blur Distance controls how far each blur sample will be from the center, and Blur Range controls how much variation Blur Distance can have.



Additional Help (contact me):

- Join the discord (fastest response): https://discord.gg/KSedK9UDn4