

KAMERAKRAFT FSC PRO V2 35MM

LENS TUBE CONFIGURATION GUIDE

This document will explain and show you how to configure your LENS TUBE.

The LENS TUBE has been designed to adapt to most macro photography lenses and allows you to forget your old cumbersome reprography camera stand. The main idea is quite simple: every lens has a different focusing distance for reaching the 1:1 macro ratio (aka full frame) that will allow you to digitalise your 35mm frames using almost all of your sensor surface area.

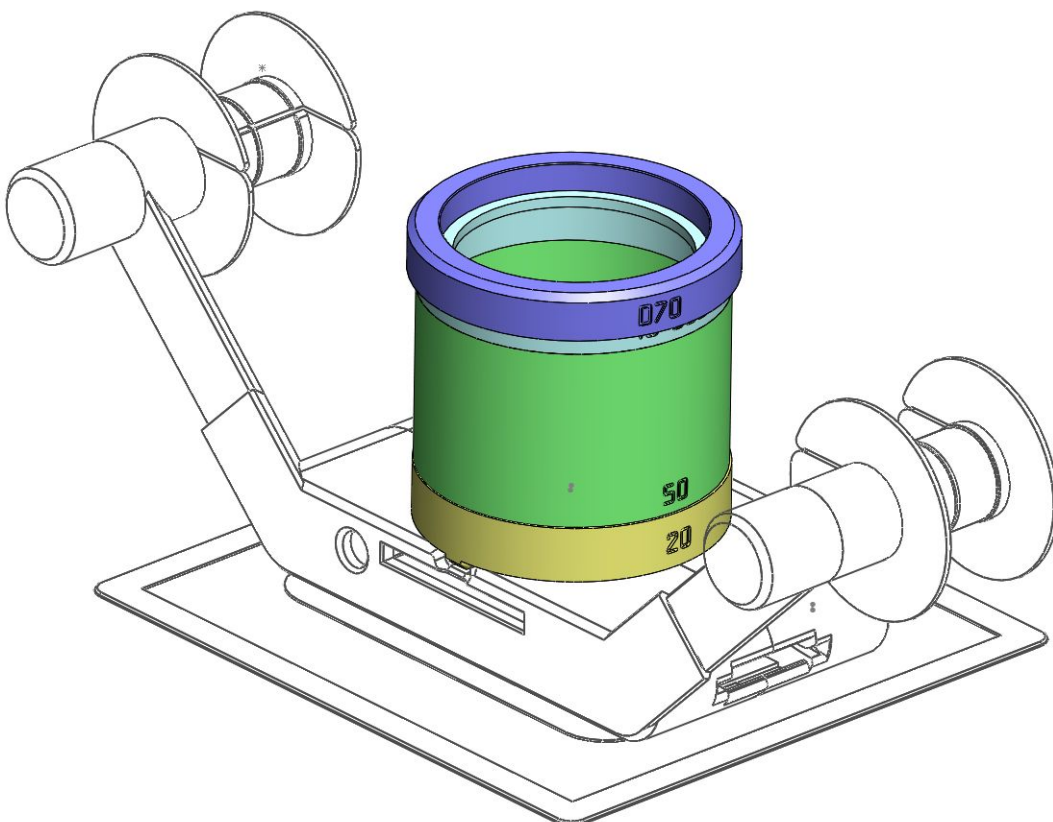
The preset files available when you are either purchasing a printed kit or raw files for printing includes all lens tubes parts. Most of them won't be necessary for you. It is not necessary to print them all. We will see how to determine the dimensions needed for your lens and see how to choose and select lens tube components you really need to print.

Parts list

The lens tube is composed of the following elements:

- a **BASE** that is used to link with the FSC body. It has a fixed height of 20mm.
- tube **EXTENSIONS** of various heights.
- a **TOP** with various inner diameters (d) and a fixed height of 10mm.
- a **HAT** with various inner diameters (D).

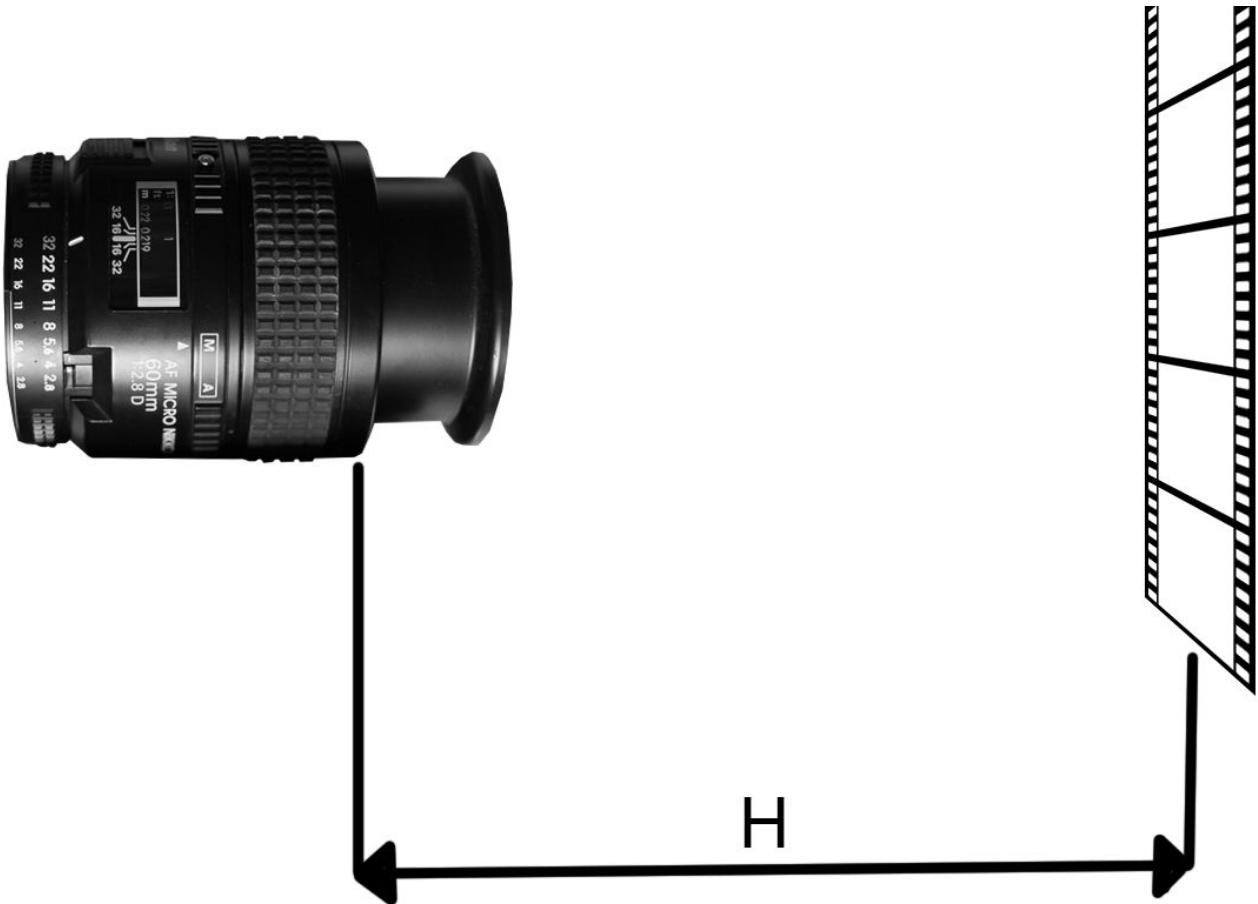
Usually, you will need one **BASE**, several **EXTENSIONS**, one **TOP** and one **HAT**.



Determining the required height "H"

What is this "height" we are talking about? It is the actual distance between the film plane and a fixed surface on your macro lens you will use to position your camera. Some lenses have moving elements when you focus down to the minimum ratio, do never use a moving surface to sit your lens on.

Here is an illustration of that height H with my Micro-Nikkor 60mm AF lens that has a moving a protruding group:



As you can see, I don't take into consideration the front moving group as I cannot use it for sitting my camera on it. To measure that dimension, sit your camera on a flat surface like a table and bring a stable object into focus in front of your lens with 1:1 ratio. Use a ruler to measure the distance between the focused surface to the lens surface you want to use.

Rule of thumb: for determining a correct H value, always add at least 5mm to it to be certain that 3d printing errors won't lead to a too short distance that would result in a blurry picture. Having a slightly farther distance is not an issue as you can always refocus farther.

Determining the required inner diameters “d” and “D”

The **TOP** part is used to sit your lens on it. It must let any moving element through it, so it is important to select the “**d**” diameter so that it is small enough to stable sit your lens on it, and big enough so that moving front elements can go through it.

The **HAT** part is used to center your lens. The diameter “**D**” shall be slightly bigger than the diameter of the lens.

How to determine it? Here are direct measurements on my Nikkor lens:



These are precise dimensions. To determine “**d**”, I need to add a bit more to these 65mm so that I can insert the moving part in it, but it **MUST** be smaller than 69mm so that I can sit my lens on its fixed surface. To determine “**D**”, it needs to be slightly bigger than 69,1mm.

Here are my chosen dimensions for that lens:

- **d = 66mm**
- **D = 70mm**

Using "H", "d" and "D" to configure your lens tube

Now that you have measure H, d and D, you can now start playing with lens tube parts.

For calculating the height H:

Some elements of the tube have fixed height that cannot be changed: **BASE** (20mm) and **TOP** (10mm). They must be taken into consideration to find which **EXTENDERS** to choose. We will use the example of the height needed for my nikkor: around 94mm.

If we remove the height of BASE and TOP, the remaining height is $94 - 20 - 10 = 64\text{mm}$.

How to get to 64mm with the extenders?

$64\text{mm} = 20\text{mm extender} + 20\text{mm extender} + 10\text{mm extender} + 14\text{mm extender}$

So I will need to add two 20mm extenders, one 10mm extender and one 14mm extender to reach my 94 total height target.

Let's use another random example. Let's imagine my length needs to reach a total height of 148mm.

If we remove the height of BASE and TOP, the remaining height is $148 - 20 - 10 = 118\text{mm}$.

$118\text{mm} = 50\text{mm} + 20\text{mm} + 20\text{mm} + 15\text{mm} + 13\text{mm}$

So I will need to add one 50mm extender, two 20mm extenders, one 15mm extender and one 13mm extender to reach my 148mm total height target.

How to select TOP and HAT?

Simply select parts that have slightly bigger diameters. In my example above, I measured $d = 65\text{mm}$ and $D = 69,1\text{mm}$. So my selected TOP and HAT dimensions are:

TOP $d = 66\text{mm}$

HAT $D = 70\text{mm}$

You now have all keys to understand and choose your lens tube components.

In the Treastock quantities page (the first one after you clicked on the BUY button of my website), you can adjust each lens tube parts quantity to meet your own needs and delete the components you don't need. Do not print all parts as it will cost A LOT.

A last good rule of thumb: if you are not sure about your measurements, you can always order one more part or two to be sure. For example, if your height measurement is not too precise, always round your value up, and allow you the possibility to exchange an EXTENDER with one slightly higher in case it would be too short.