

# How to assemble square hole type sliding iris diaphragm

This sliding iris diaphragm is similar to a [shutter mechanism](#). The shape is similar to Chinese ancient copper coins-it has a square hole inside a circle. The blades in the center square hole can open or close gradually. If you have got the files and manufactured parts with a laser cutter (or CNC router), this tutorial shows you how to assemble parts together. If you 3D printed these parts, resin material is preferred. You can get STEP and DXF files on [cgtrader.com](#) or [twothreed.com](#).

In this tutorial, we assume you manufacture parts using wood plates that are 3 mm thickness. And the part's quality is an important factor to make it run well. This tutorial is based on the mechanism-[SL4BLSH40A](#).

Before assembly, you can [watch the video on Youtube](#).

## What material you need to assemble the sliding iris diaphragm

Besides the parts you manufactured with a machine, you should prepare the following materials.

1. Metal Screws-M3x8(>4pcs);
2. Metal Hexagon socket head cap screws-M3(>4pcs);
3. Metal pins-diameter 2mm,length 5mm(>56 pcs);
4. Metal pins-diameter 2mm,length 8mm(>20 pcs);
5. Reducing wear PE film tape-3M5423(optional, but recommend);
6. Allen Wrench;
7. Glue for wood.

Refer to the BOM(bill of material) in the package you received.

## Instruction of the square hole sliding iris diaphragm

The whole mechanism can be divided into 6 sub-assemblies. The first step is to assemble all the 6 sub-assemblies with materials listed above, and then assemble them together.

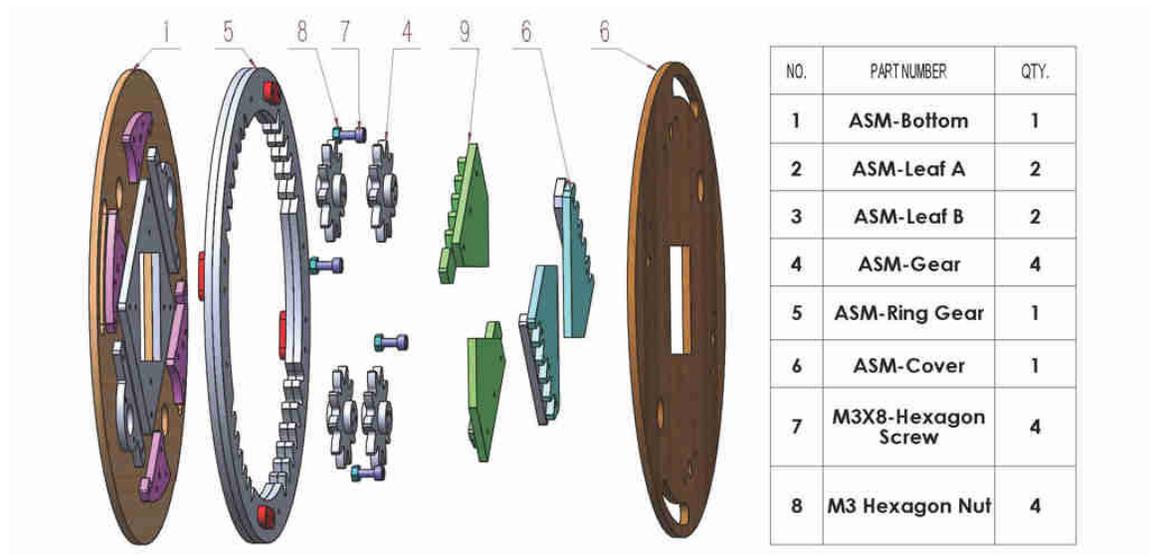


Figure 1

## Steps to assemble the square hole sliding iris diaphragm

### Step 1. Assembly the sub-assembly “ASM-Bottom”

There are 8 plates. First, you need to check the thickness. If plates' thickness is thinner than 3 mm, it is best to add some material. Add glue between plates and insert D2L5 pins to locate parts in the right position. On the side surfaces A, B and C, you can add some film tape to reduce wear. Refer to Figure 2

### Step 2. Assembly the sub-assembly “ASM-Leaf A” and “ASM-Leaf B”

Add glue between the two parts, insert D2L5 pins. Refer to Figure 3 and Figure 4.

### Step 3. Assembly the sub-assembly “ASM-Gear”

There are 3 parts in this sub-assembly. Add glue between parts, and insert D2L8 pins into the small holes. The total thickness should be 8~9 mm. (It cannot be more than 9 mm.) Figure 5.

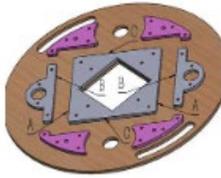


Figure 2



Figure 3

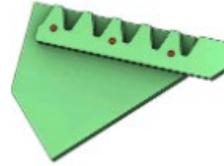


Figure 4



Figure 5

#### Step 4. Assembly the sub-assembly “ASM-Ring Gear”

Add glue between the two “Ring Gear” parts, and locate the to the right position by inserting DL5 pins; Assemble two “Driving Button” onto one surface by using D2L8 pins, and two “Driving Button” onto the other surface with D2L8 pins. Refer to the following image when you do that. Figure 6.

#### Step 5. Assembly the sub-assembly “ASM-Cover”

Add glue between the part “Cover Support” and “Cover Plate”, and insert D2L5 pins into the small holes. The dimension “H” in the following image should not be less than 3mm. On the side surfaces A, you can add some film tape to reduce wear. Figure 7.

Until now, the sub-assemblies are ready. Now assembly the whole mechanism.



Figure 6

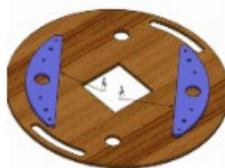


Figure 7

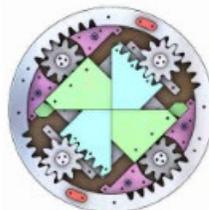


Figure 8



Figure 9

## Step 6. Assembly all the sub-assemblies together

Put the “ASM-Bottom” onto desk (put 4xM3 nuts into the hexagon holes first) , then put “ASM-Leaf A”, “ASM-Leaf B”, “ASM-Gear”, “ASM-Ring Gear” into the correct position (refer to Figure 8). Check the mechanism to see if it can run smoothly by rotating the “Driving Button”. If it cannot move smoothly, try to repair some parts or try to use film tapes(3M5423).

After it can run smoothly, put the “ASM-Cover” on the top, and assembly them together by M3X8 screws. Move the “Driving Button” again, if the mechanism cannot run smoothly, loose the screws, check the dimension H in step 5 or adjust the screws to make them a little loosen.

After the mechanism works well, add a bit glue onto the screw and nut.

### Note:

If you cannot ensure if your parts can work well, don't use glue before you ensure that.

If you fabricate the parts with a laser cutter, usually it is not smooth (refer to Figure 9). We suggest you to make some change on the DXF files before manufacturing, for example, offset some lines, and then there is enough material for you to sand. And it is best to prepare reducing wear PE film tape too!

Newest version tutorial:

<https://www.tanerxun.com/assemble-square-hole-type-sliding-iris-diaphragm/.html>

Cgtrader shop: <https://www.cgtrader.com/monk3947>

Etsy shop: <https://www.etsy.com/shop/tanerxun/>

Youtube channel: <https://youtube.com/c/DTomsen>