

# Crystalloid structure

Ver2.0 (2017-10-14)

## Contents

|       |                                                |   |
|-------|------------------------------------------------|---|
| 1     | Overall design                                 | 1 |
| 1.1   | Introduction                                   | 1 |
| 1.2   | Basic principles                               | 2 |
| 1.2.1 | 2D-drawing                                     | 2 |
| 1.2.2 | Physical photos                                | 2 |
| 1.3   | 3D drawing                                     | 4 |
| 1.4   | Component list and parameters                  | 4 |
| 2     | Mechanical parts                               | 5 |
| 2.1   | Coils with round plate                         | 5 |
| 2.1.1 | Winding method of coils in round plate         | 5 |
| 2.1.2 | Coils                                          | 6 |
| 2.1.3 | Round plate                                    | 6 |
| 2.2   | Iron core                                      | 7 |
| 2.2.1 | Size and material of iron core                 | 7 |
| 2.2.2 | Position of the iron core                      | 7 |
| 2.3   | Glass plate                                    | 8 |
| 2.3.1 | Size and material                              | 8 |
| 2.3.2 | Distribution of round holes on the glass plate | 8 |
| 2.3.3 | Position of glass plate                        | 9 |
| 2.4   | Metal box                                      | 9 |
| 2.4.1 | Size and material                              | 9 |

|   |                  |    |
|---|------------------|----|
| 3 | Assembly drawing | 10 |
| 4 | Circuit diagram  | 11 |
| 5 | User's guide     | 11 |

# 1 Overall design

## 1.1 Introduction

Crystalloid structures device from Russia. Very high speed model of a metal disc. Inside are crystal structures, in the structures magnetic field change its properties and the strong lift appear. It is powered by 30V 5A power supply and produces even 79kG lift force in shocking high speed.

## 1.2 Basic principles

### 1.2.1 2D-drawing

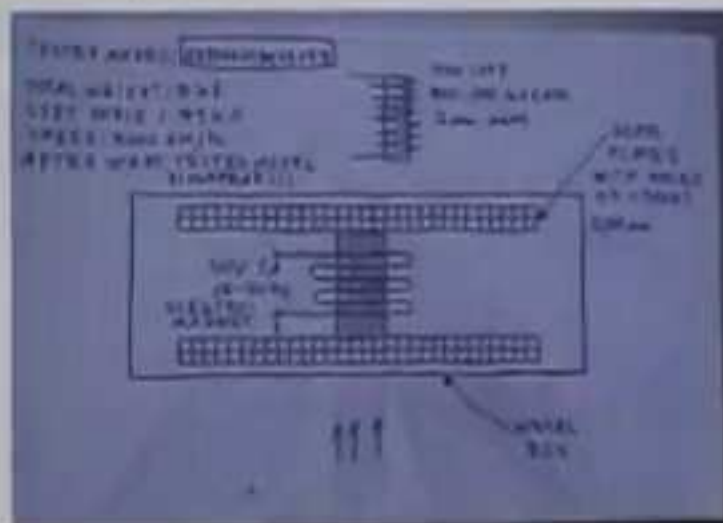
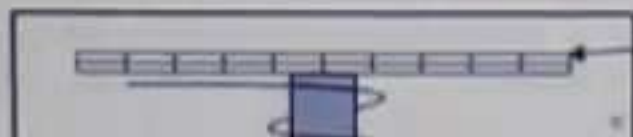


Figure 1 hand-drawing



Glass plates  
with holes or  
cracks 0.01mm

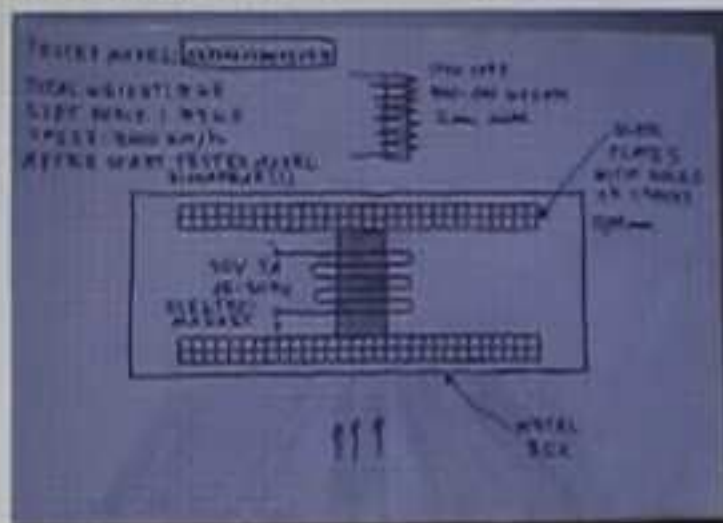


Figure 1 hand-drawing

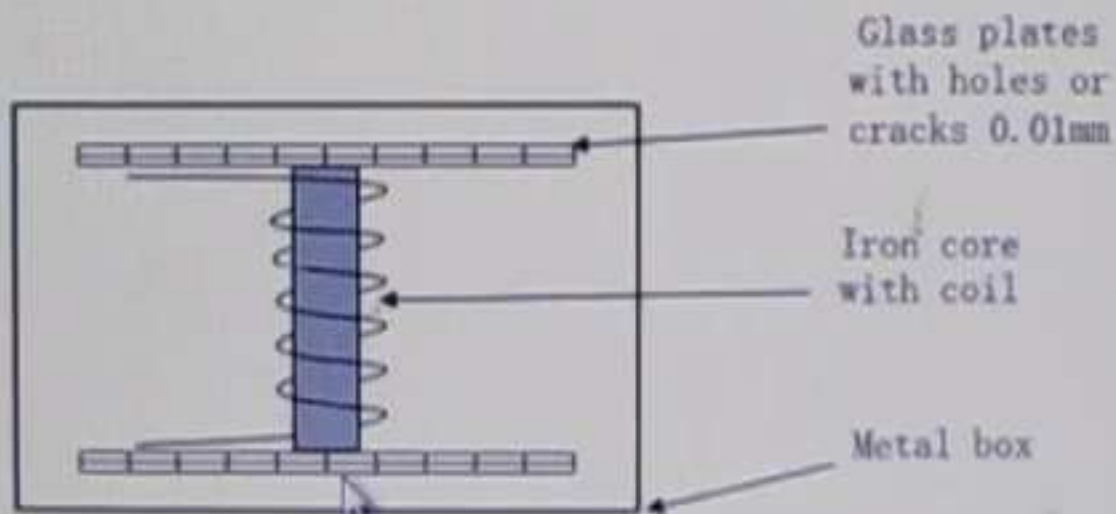


Figure 2 2d drawing

Figure 1 is the hand-drawing. Figure 2 is a 2d drawing.

### 1.2.2 Physical photos



Figure 3 triangle metal plate

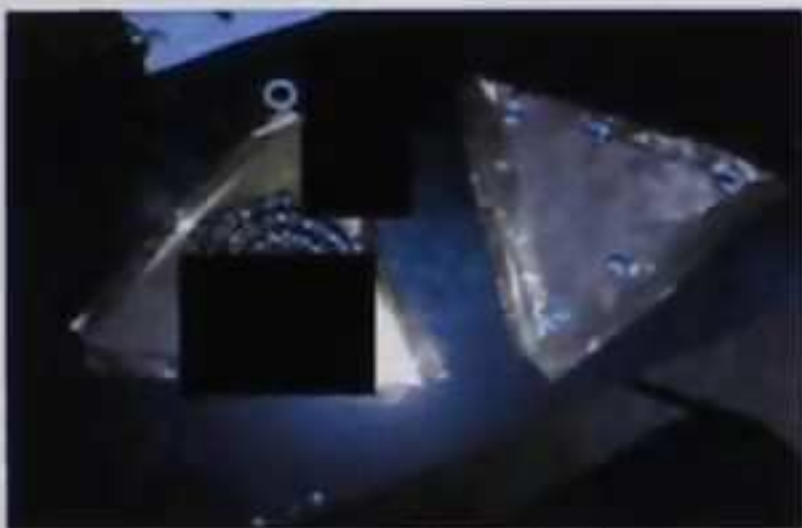


Figure 4 two separated metal plates





Figure 5 Four pictures of device

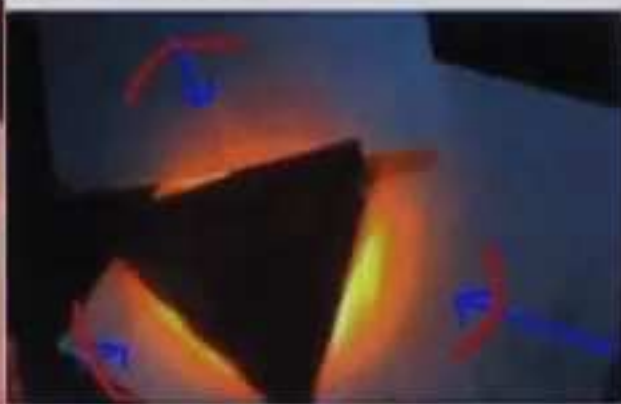


Figure 6 Box with light

## 1.3 3D drawing

top view



left view



3d view



Figure 7 3d-drawing of device with side plate open

As Figure 7 shows, it is a 3d drawing of device and I opened the side plates to make you see more clearly.

## 1.4 Component list and parameters

| Component    | Number | Parameters        | material    |
|--------------|--------|-------------------|-------------|
| Iron core    | 1      | /                 | Soft iron   |
| Magnet coils | 1      | /                 | Pure copper |
| Glass plate  | 2      | /                 | $SiO_2$     |
| Resin plate  | 1      | /                 | Resin       |
| Metal box    | 1      | /                 | Pure copper |
| Power        | 1      | AC:30V 5A 15-30Hz | /           |

## 2 Mechanical parts

### 2.1 Coils with round plate

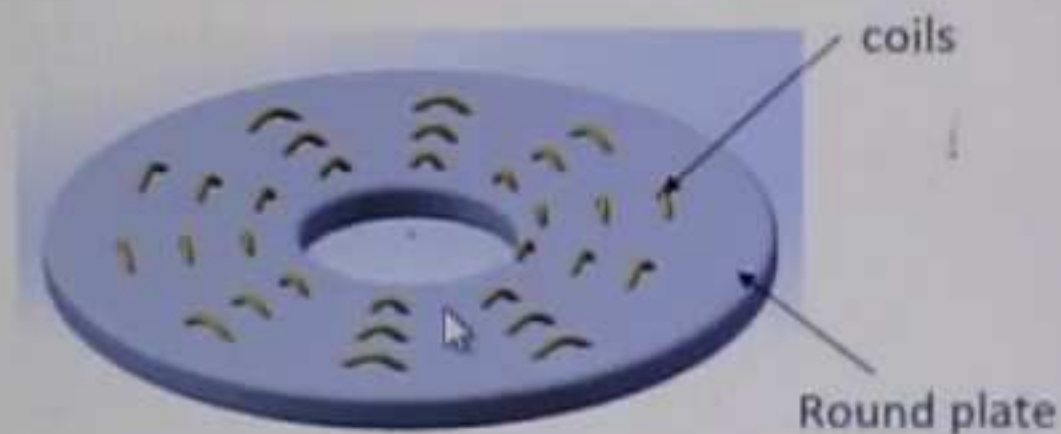


Figure 8 Coils with round plate

## 2.1.1 Position of coils in round plate

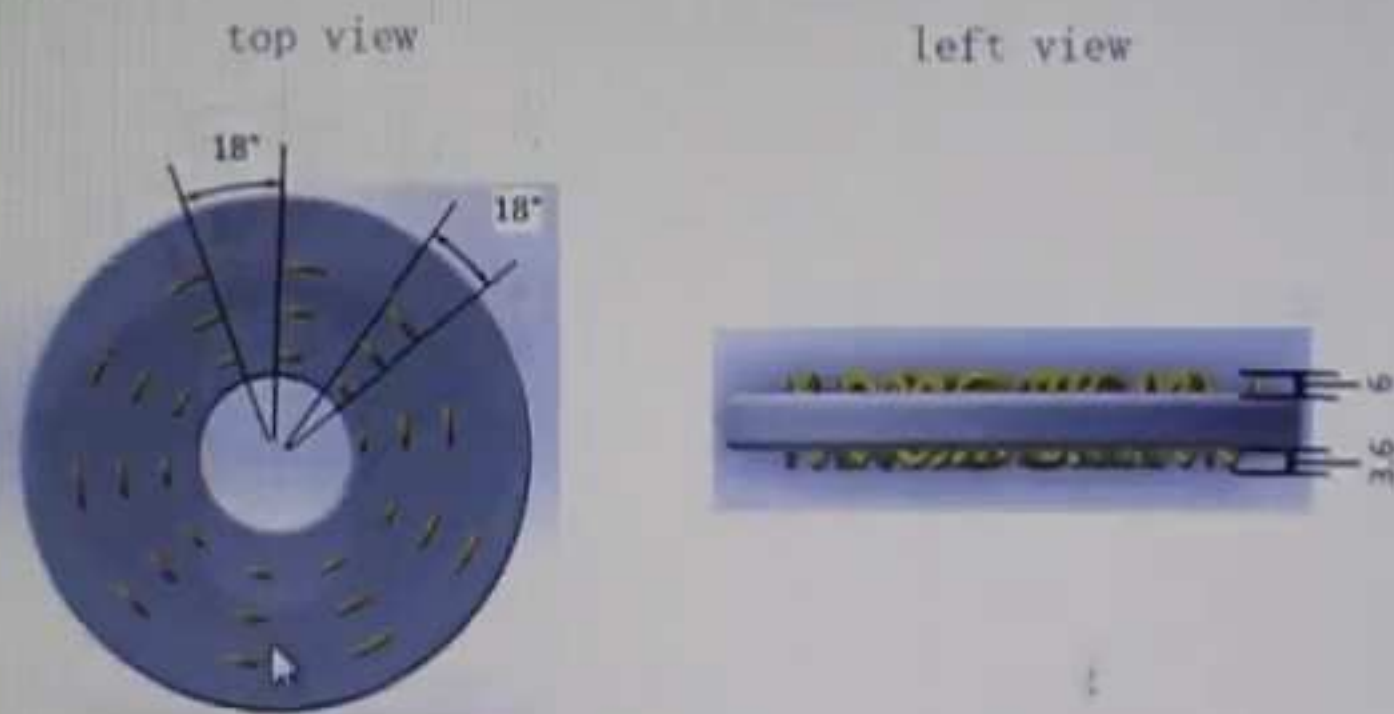


Figure 9 Parameters of coils winding

Parameters of coils winding:

- 1) Degree of blank part:  $18^\circ$
- 2) Degree of coil wire part:  $18^\circ$
- 3) Up height of coil: 6mm
- 4) Down height of coil: 3.6mm

## 2.1.2 Coils

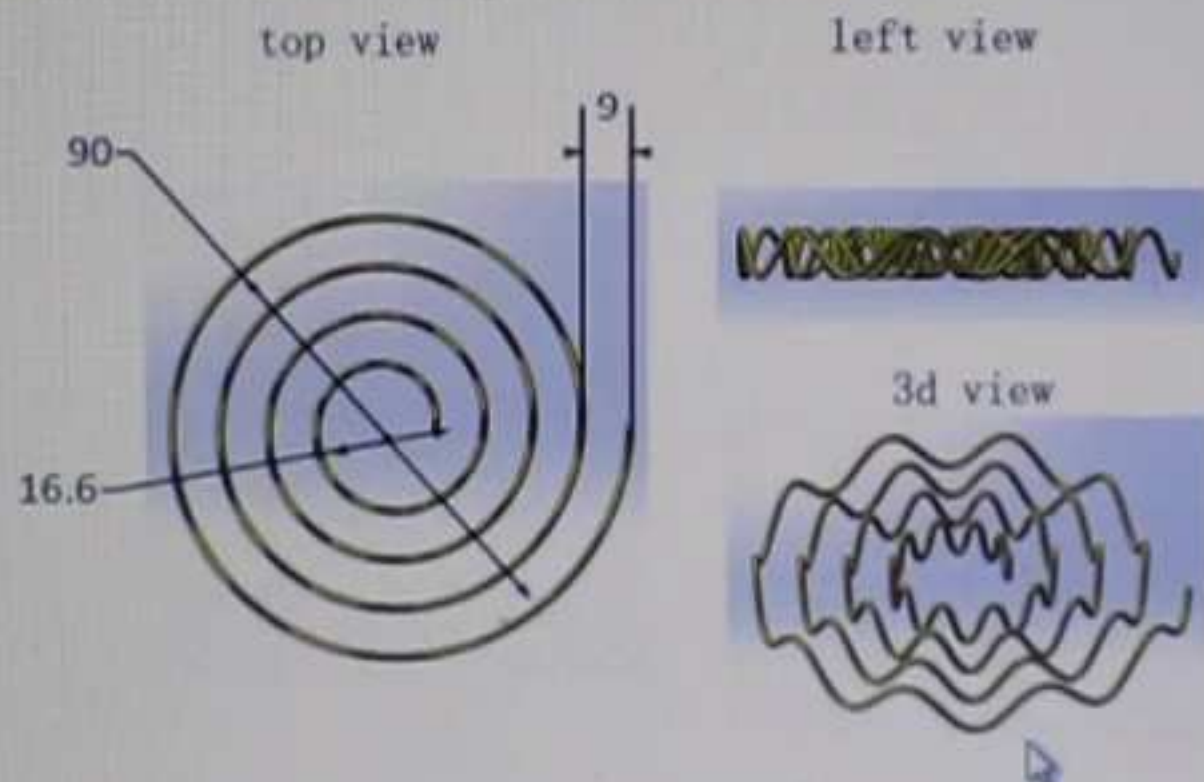


Figure 10 Magnet coils

Size of coils:

- 1) Diameter of outside round: 90mm

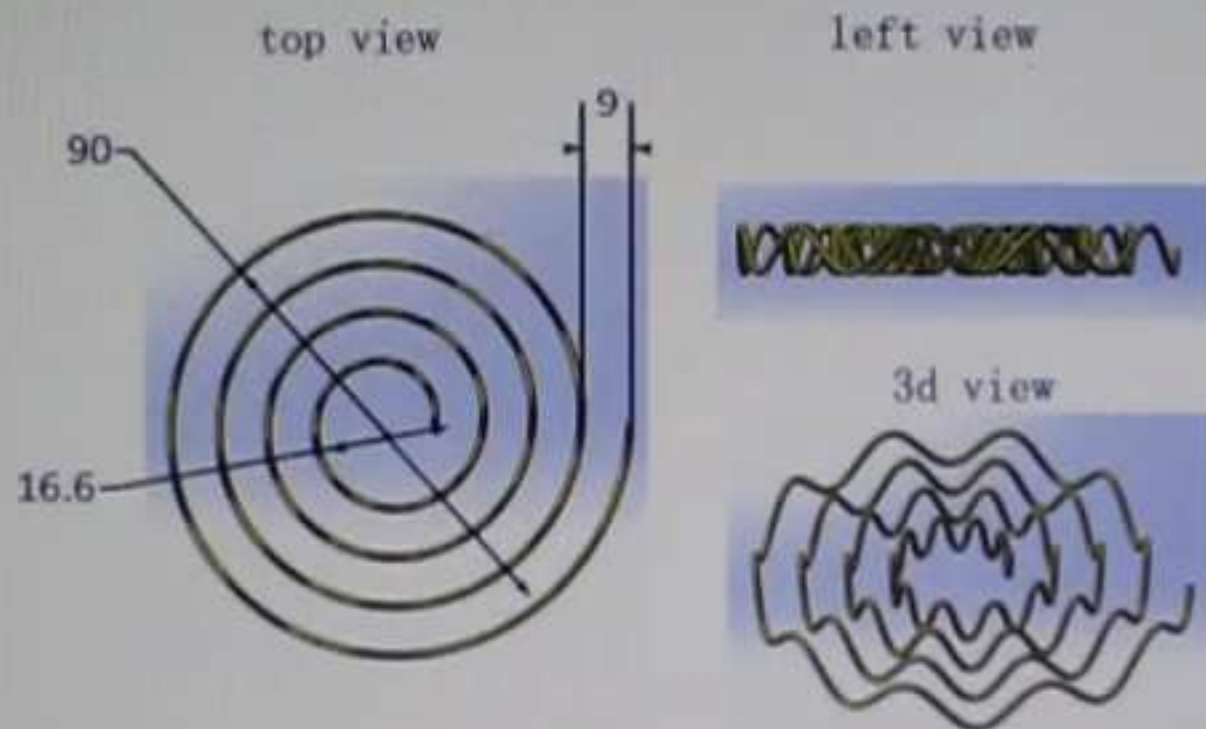


Figure 10 Magnet coils

Size of coils:

- 1) Diameter of outside round: 90mm
- 2) Diameter of inside round: 16.6mm
- 3) Distance of each round: 9mm
- 4) Diameter of copper wire: 2mm

Material of coils:

Pure copper

Figure 10 Magnet coils

Size of coils:

- 1) Diameter of outside round: 90mm
- 2) Diameter of inside round: 16.6mm
- 3) Distance of each round: 9mm
- 4) Diameter of copper wire: 2mm

Material of coils:

Pure copper

### 2.1.3 Round plate

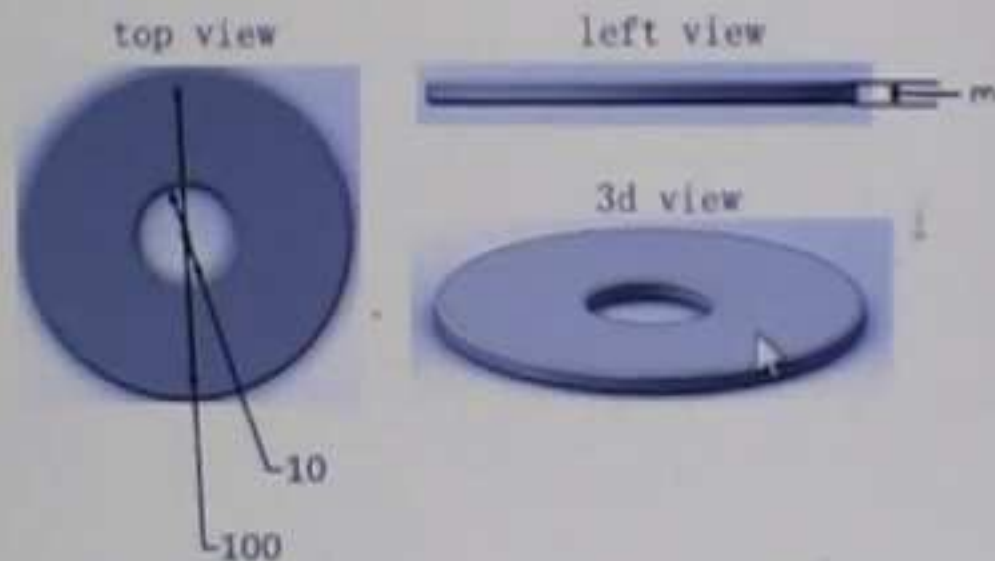


Figure 11 Size of round plate

Figure 11 Size of round plate

Size of coils:

- 1) Diameter of outside round: 100mm

6

- 2) Diameter of inside round: 10mm
- 3) Thickness: 3mm
- 4) Material of round plate: resin

## 2.2 Iron core

### 2.2.1 Size and material of iron core

## 2.2.1 Size and material of iron core

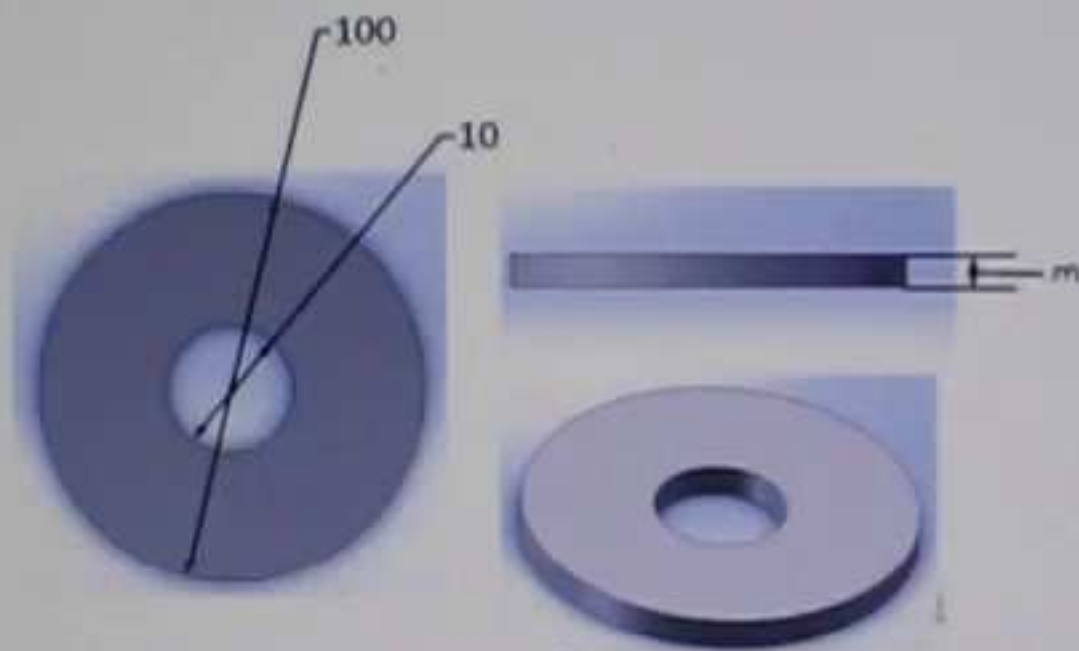


Figure 12 Iron core

Size of iron core:

- 1) Diameter of iron core: 100mm
- 2) Diameter of hole: 10mm
- 3) Thickness of iron core: 3mm
- 4) Material of the iron core: soft iron

Figure 12 Iron core

Size of iron core:

- 1) Diameter of iron core: 100mm
- 2) Diameter of hole: 10mm
- 3) Thickness of iron core: 3mm
- 4) Material of the iron core: soft iron

## 2.2.2 Position of the iron core



Figure 13 Position of iron core

## 2.3 Glass plate

### 2.3.1 Size and material

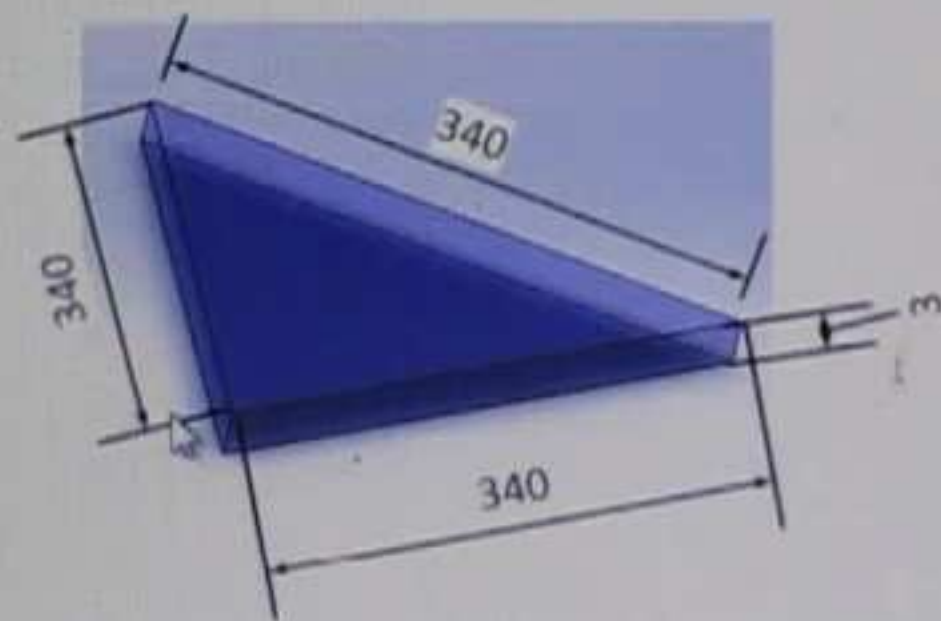


Figure 14 Size of triangle

Material of glass plate: optical glass.

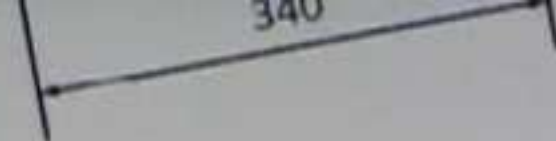


Figure 14 Size of triangle

Material of glass plate: optical glass.

### 2.3.2 Distribution of round holes on the glass plate

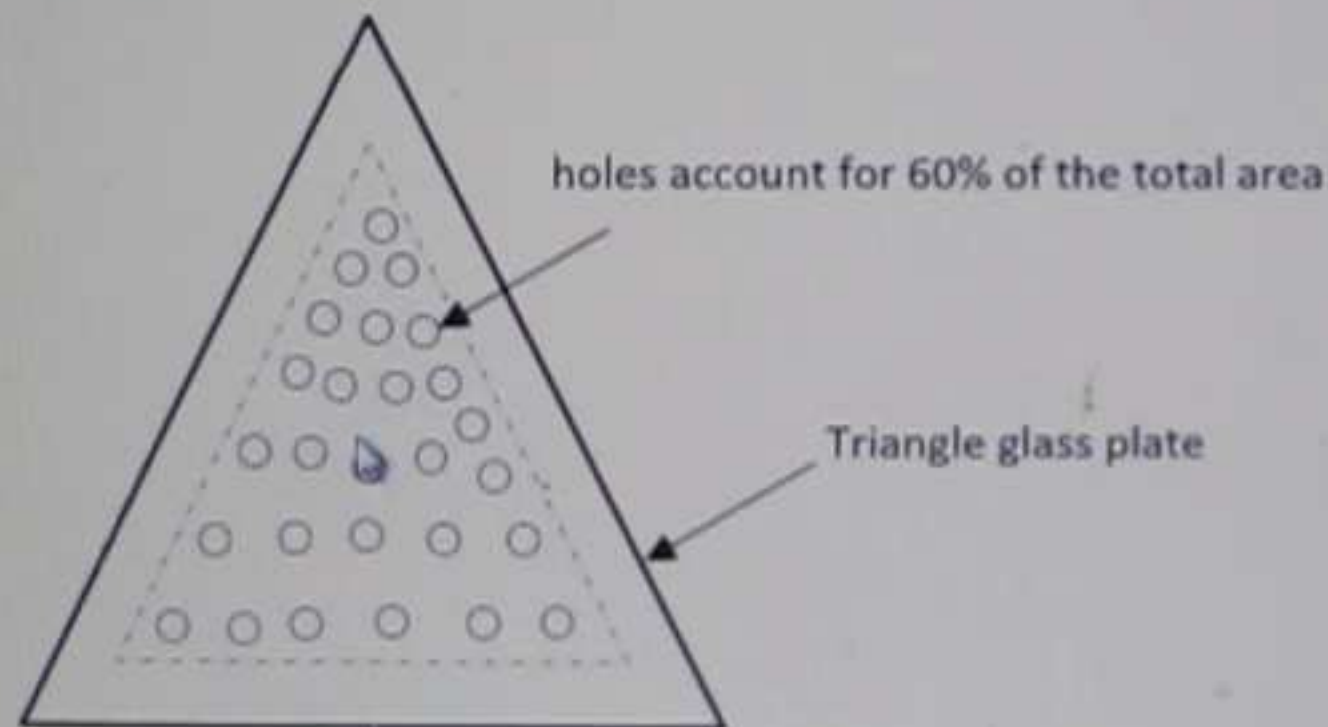


Figure 15 Distribution of holes

Figure 15 Distribution of holes

Parameters:

Diameter: 0.01mm

Type: through-holes

Density of round holes: 300-450/cm<sup>2</sup>

Area of holes: account 60% of the total area

8

### 2.3.3 Position of glass plate

### 2.3.3 Position of glass plate



Figure 16 Position of glass plate

There are two glass plate between iron core and metal box.

### 2.4 Metal box

## 2.4 Metal box

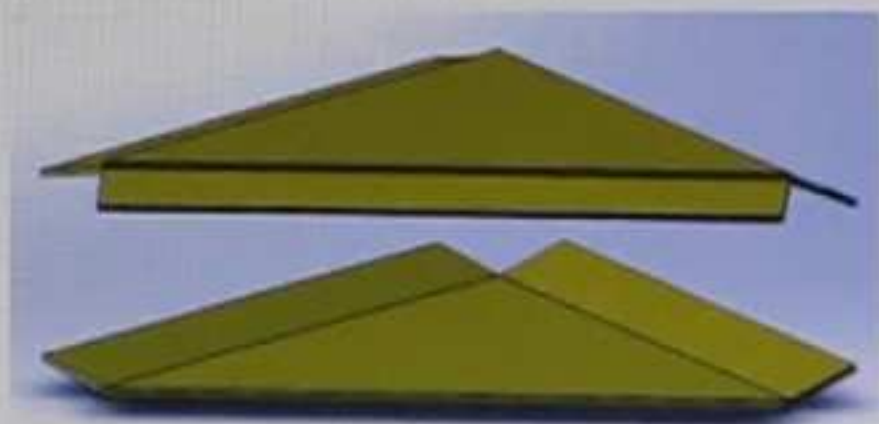
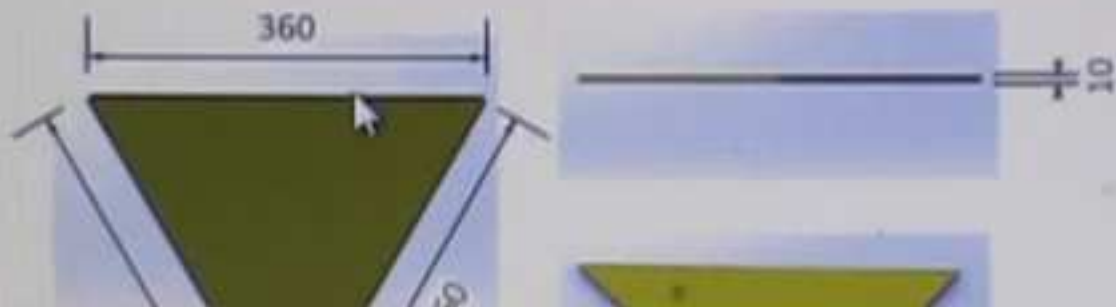


Figure 17 Metal box

Figure 17 is the metal box with opened side plate.

### 2.4.1 Size and material



## 2.4.1 Size and material

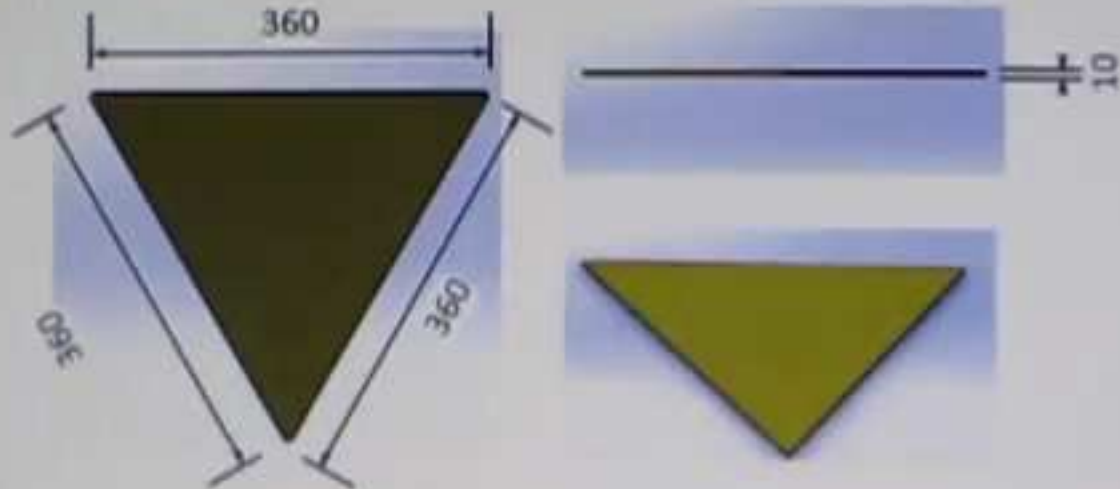


Figure 18 Size of triangle plate

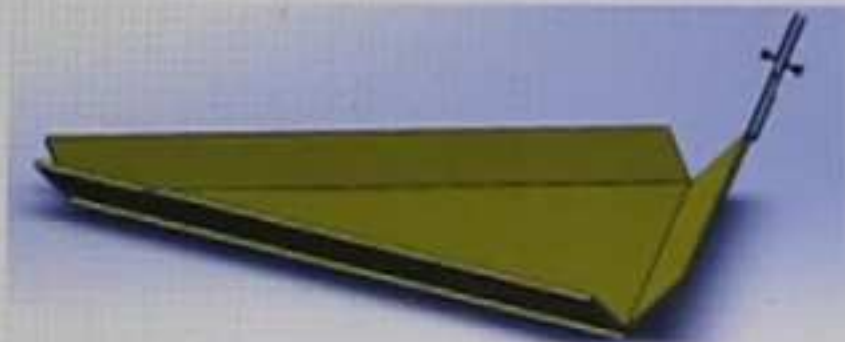


Figure 19 Size of side plate

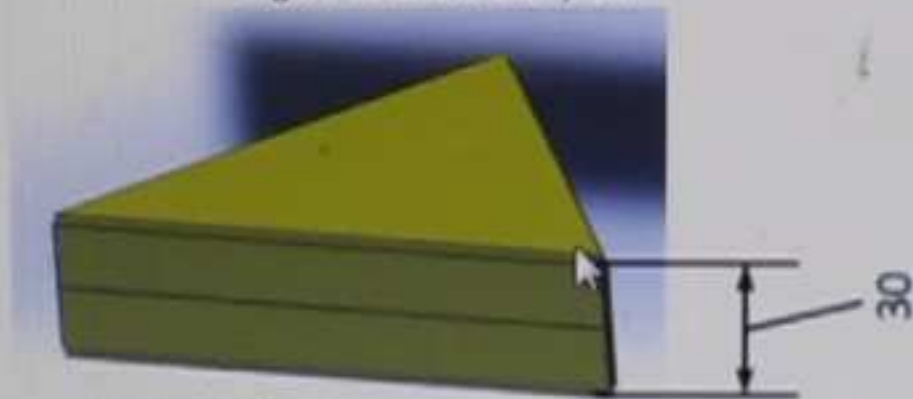


Figure 20 Height of metal box

Figure 20 Height of metal box

Material of metal box: Pure copper.

### 3 Assembly drawing

Metal plates in Figure 27 below are set wireframe to make you see it more clearly.

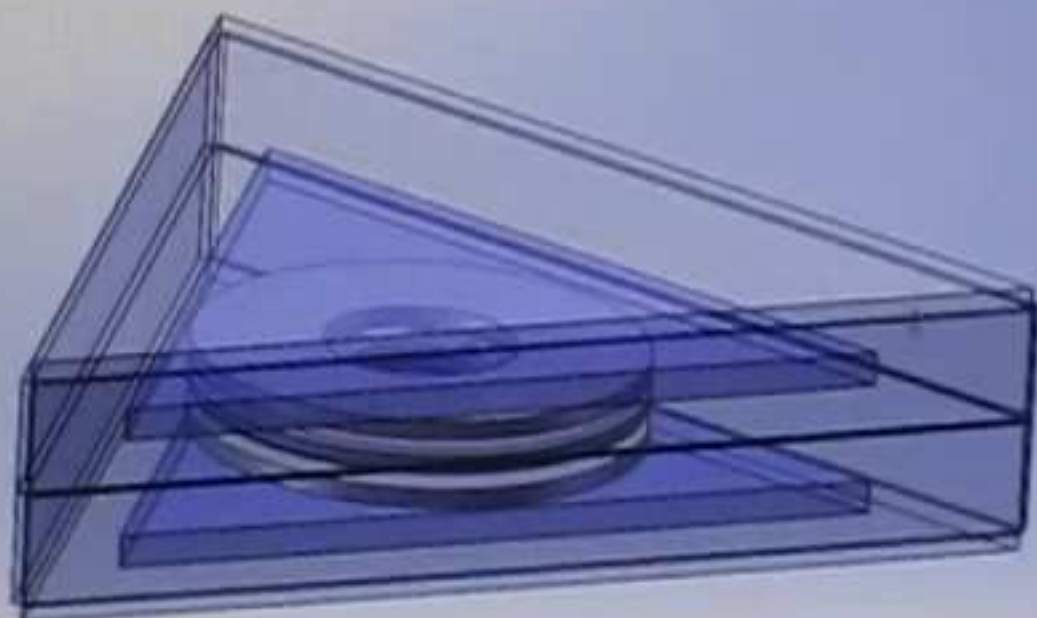


Figure 21 Assembly drawing

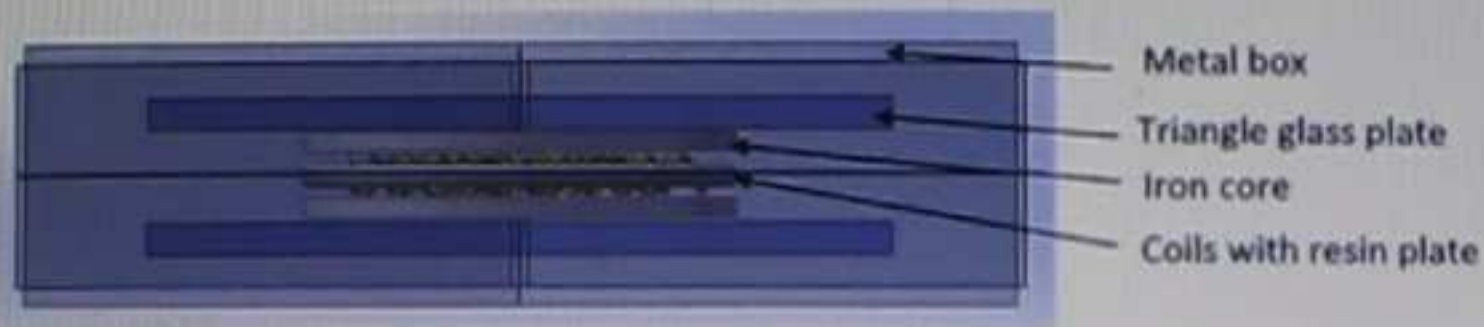


Figure 22 Positions of inside parts

## 4 Circuit diagram

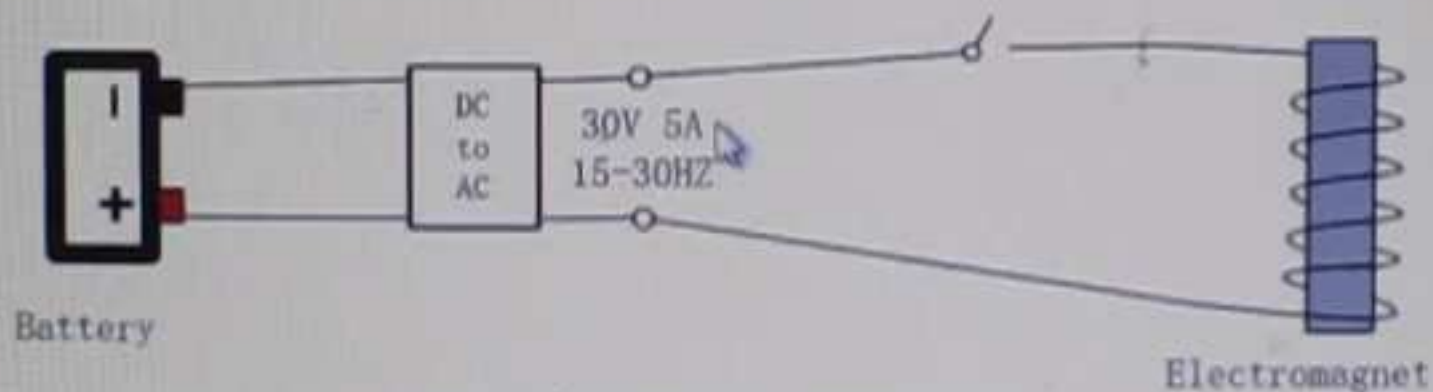


Figure 23 Circuit diagram of the device

Figure 23 is a simple circuit diagram with a battery, DC to AC module, electromagnet and switch.

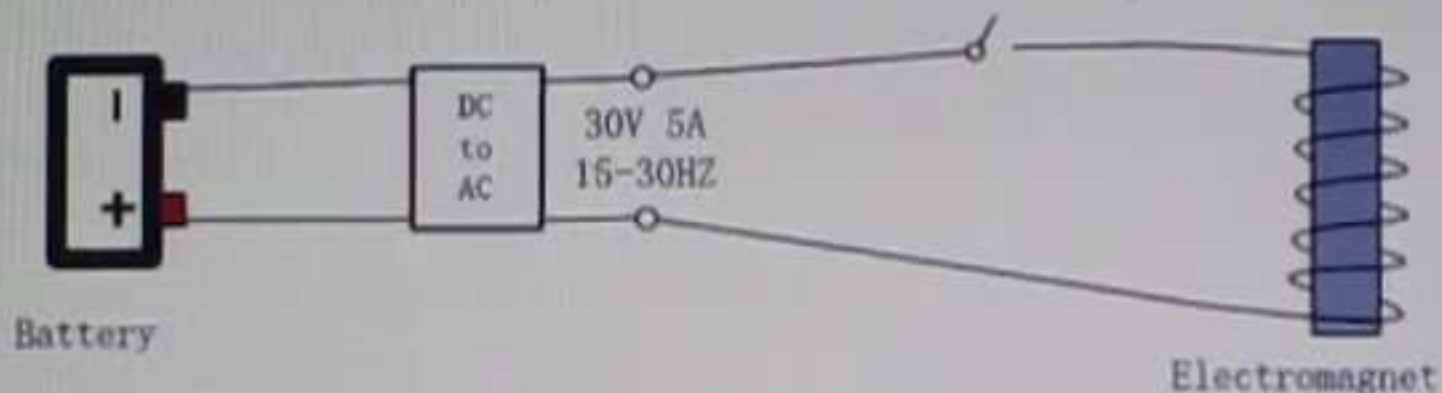


Figure 23 Circuit diagram of the device

Figure 23 is a simple circuit diagram with a battery, DC to AC module, electromagnet and switch.

## 5 User's guide

Parameters of device:

|              |           |
|--------------|-----------|
| total weight | about 7kg |
| Lift force   | 79kg      |
| speed        | 7.00km/h  |

The lift force of this device can be controlled by amperage, but the triangle is very dangerous and the force is very strong.