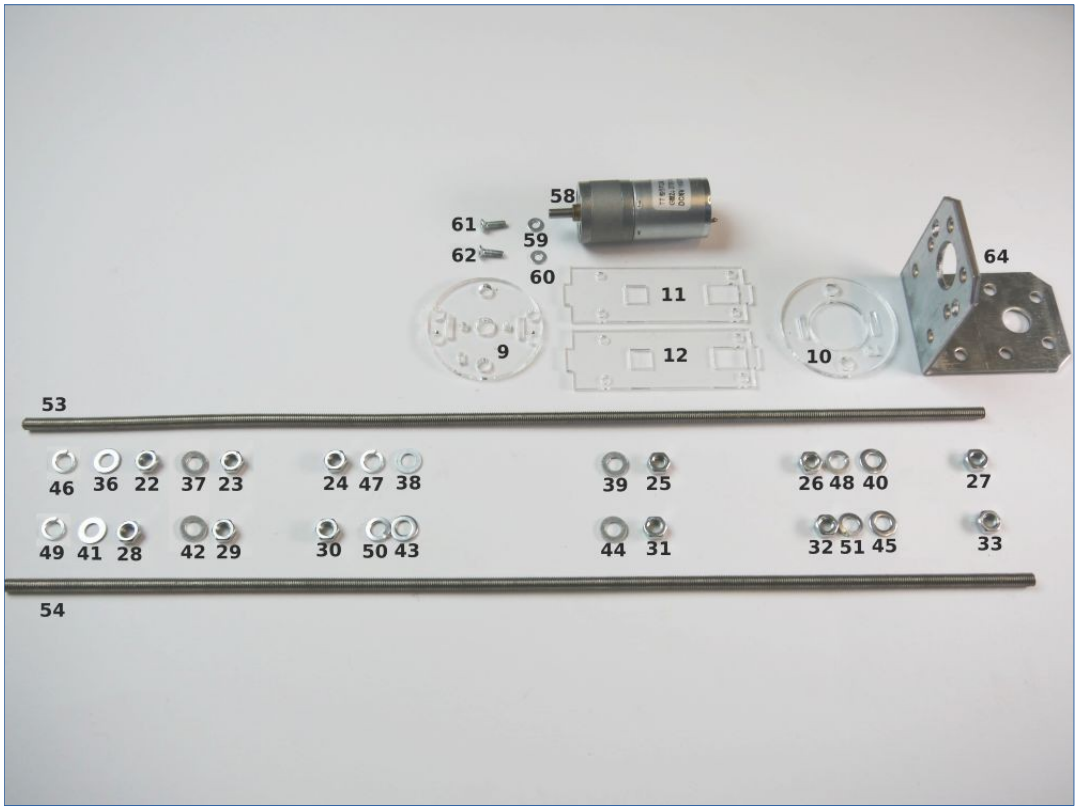
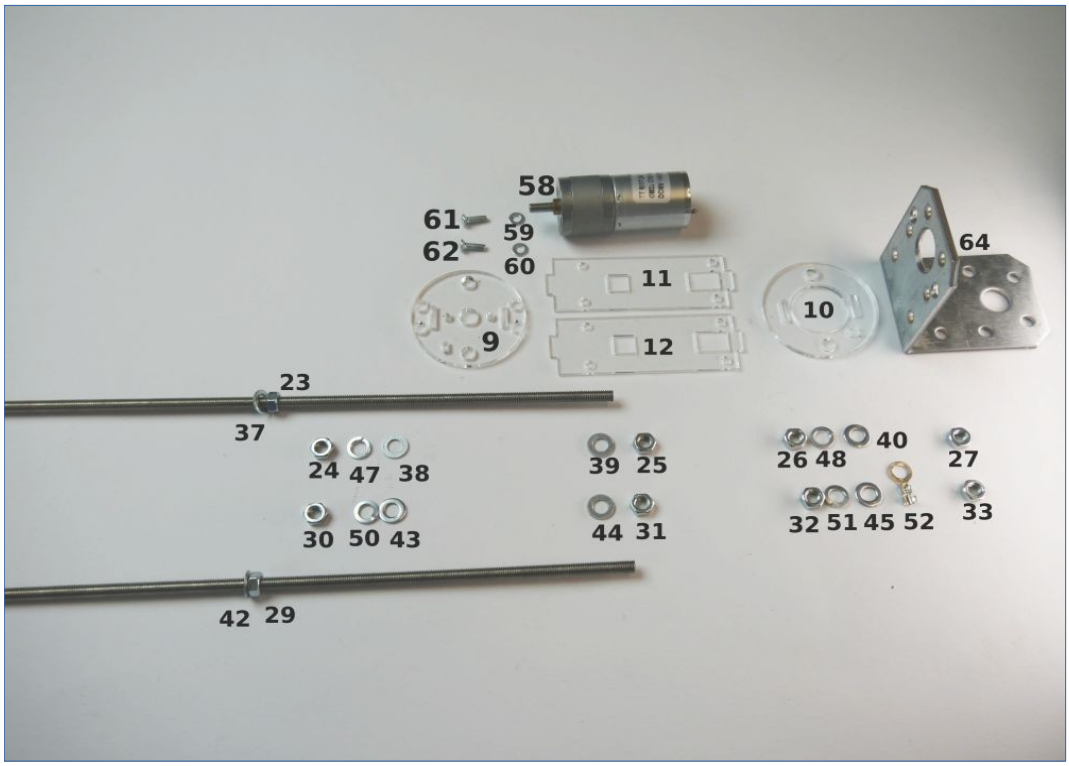
# 59Antennas.com
# DIY kit
## Electric motor antenna

Thank you for choosing the DIY kit (Do it Yourself) kit.
First check whether all components are in the box.
The list is available to print at the end of this description.
This kit is for indoor use only –
using a 50mm gray plastic tube is a protection option
Place the parts as shown in the picture and screw them together.

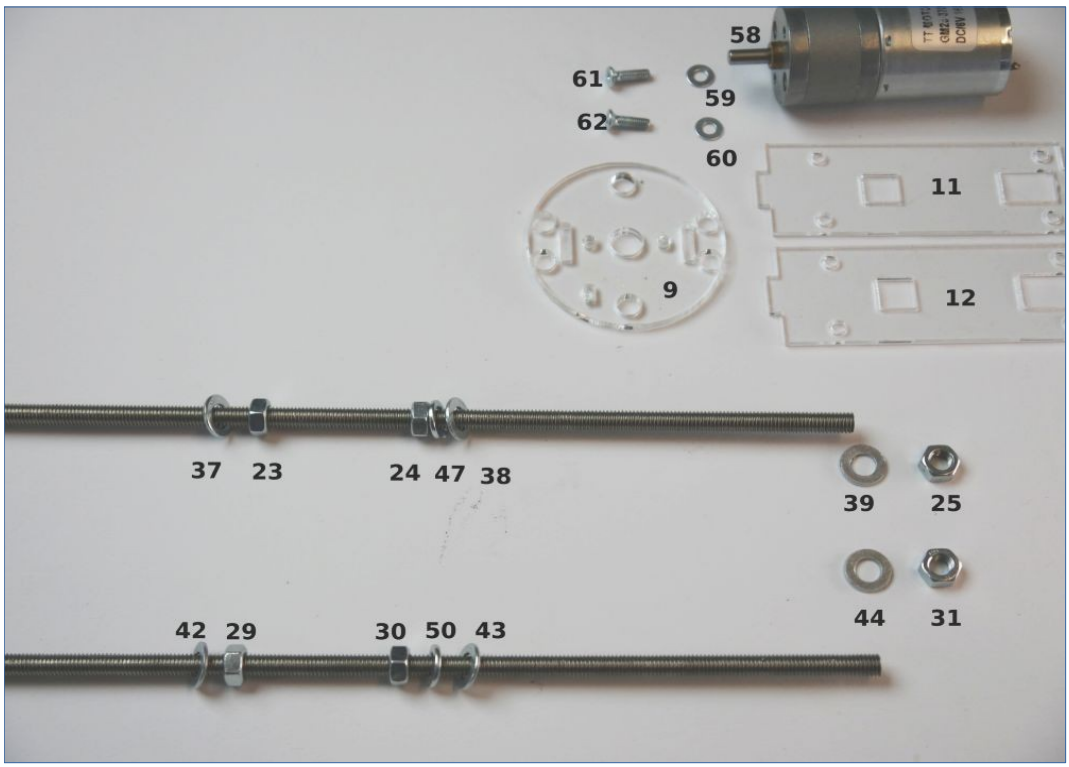



**DANGER!**
**- Do not let small children play with the DIY kit!**
**- Components can be swallowed!**
**- Do not put the DIY kit in the microwave oven!**
**- Do not look into the tip of metal parts!**
- Young people can build the DIY kit at the age of 14.
- Keep an eye on your children as they assemble the DIY kit.
- Motor controller is soldered under ROHS.
- The control voltage 8V, 9V and 11V is on the emitter!

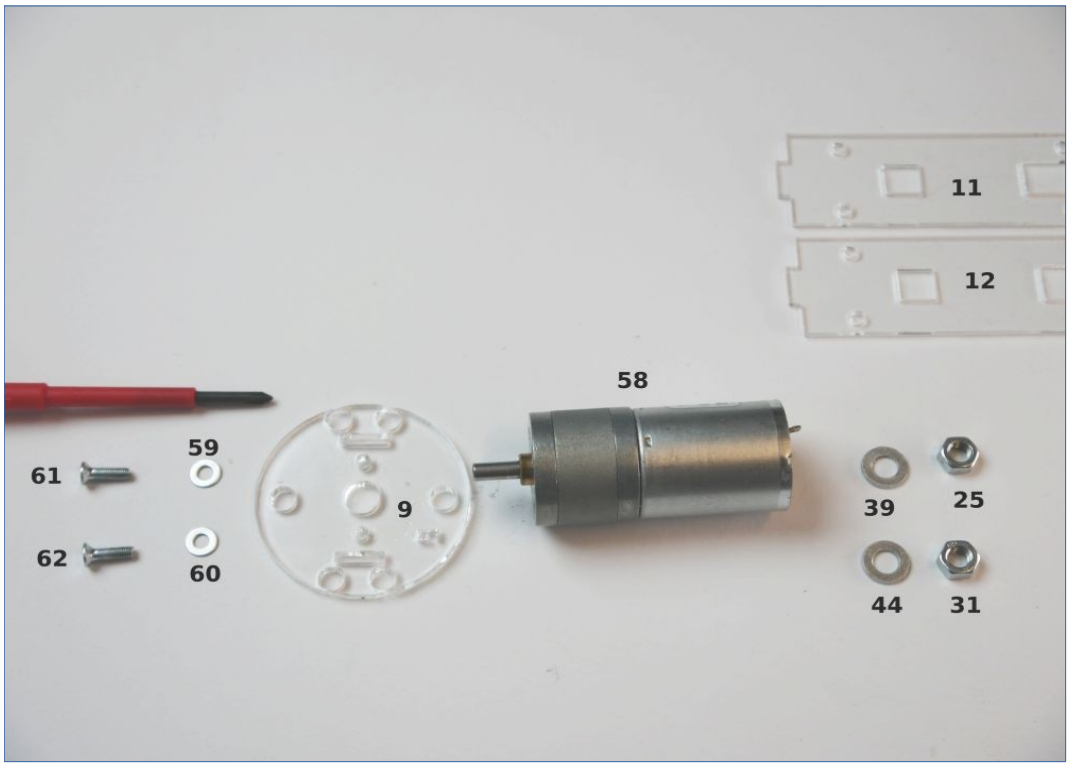
install part 37 23 42 29




install part 24 47 38 30 50 43

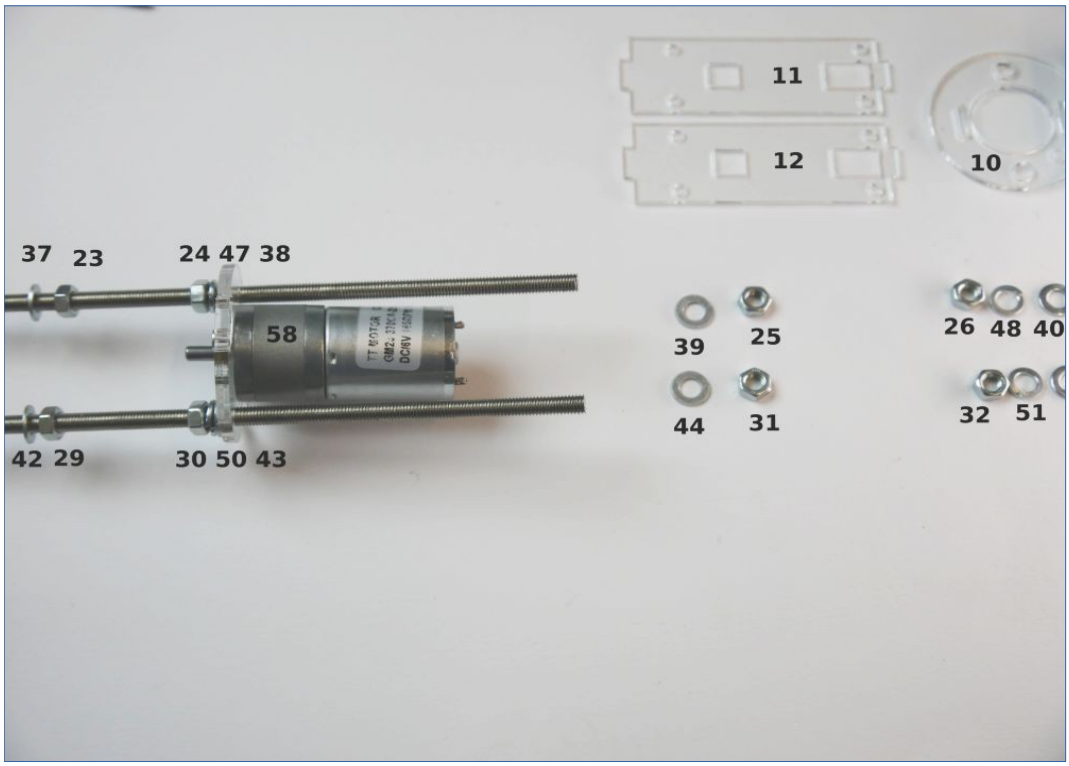


install part 61 59 62 60 9 and 58

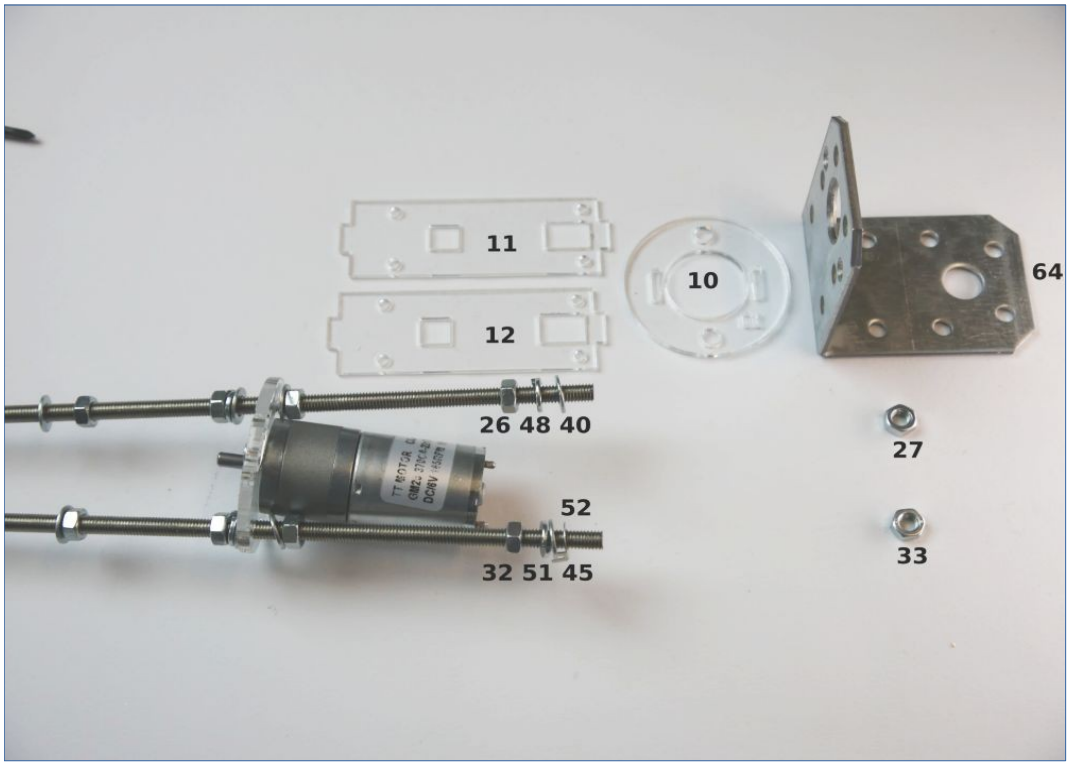



install the engine

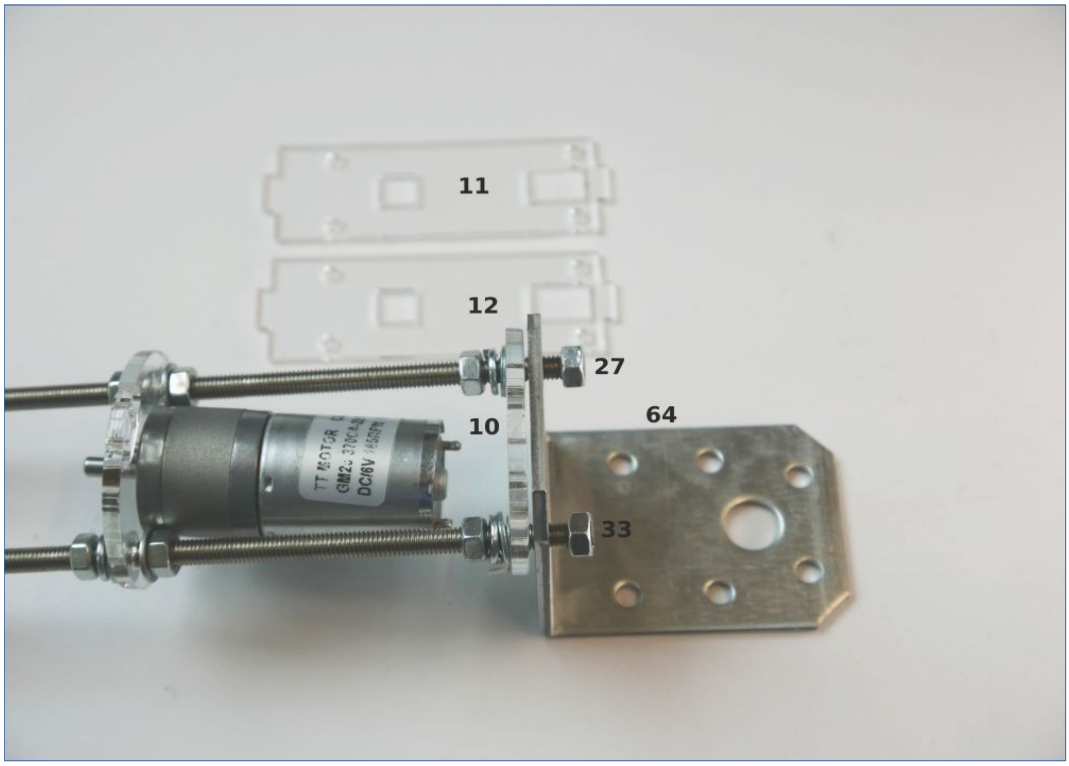
install the motor 58 on the threaded rod



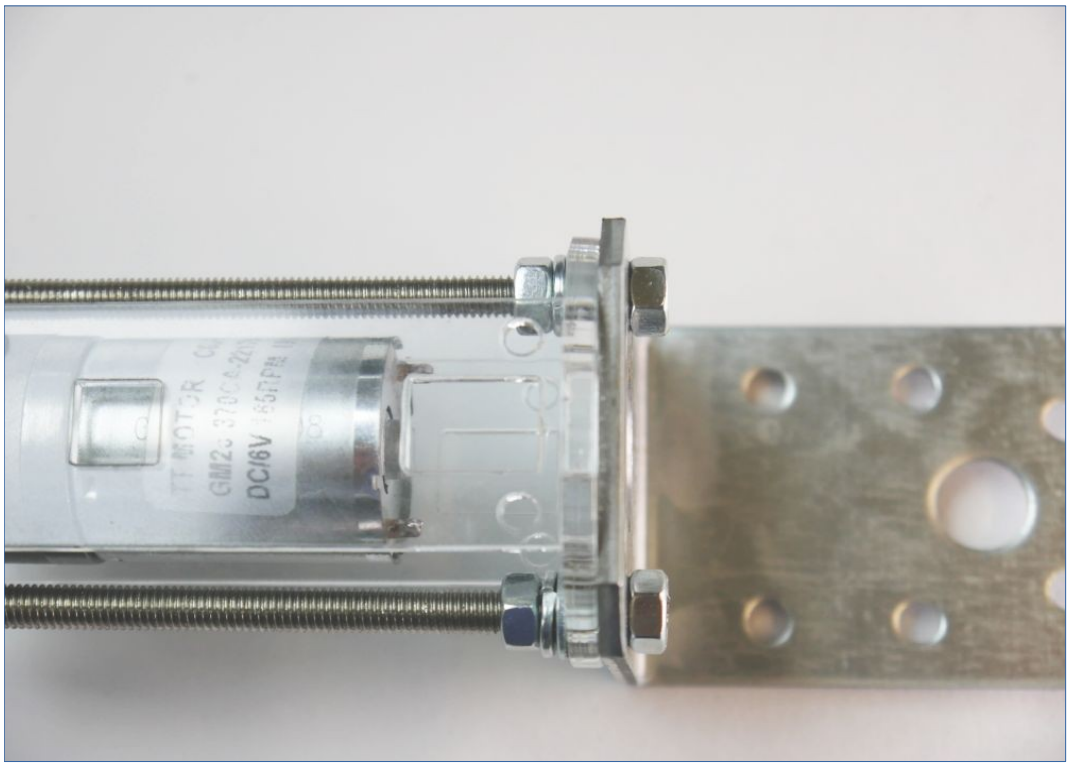

install part 26 48 40 32 51 45 52



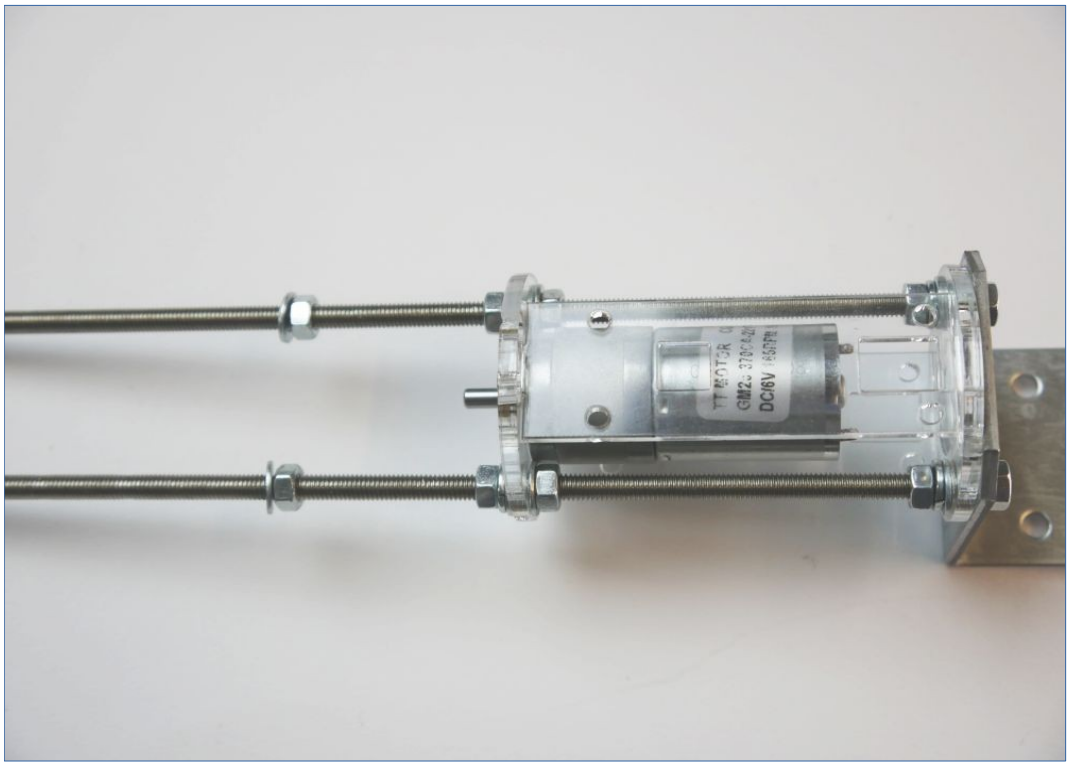
install part 10 64 27 33 11 12



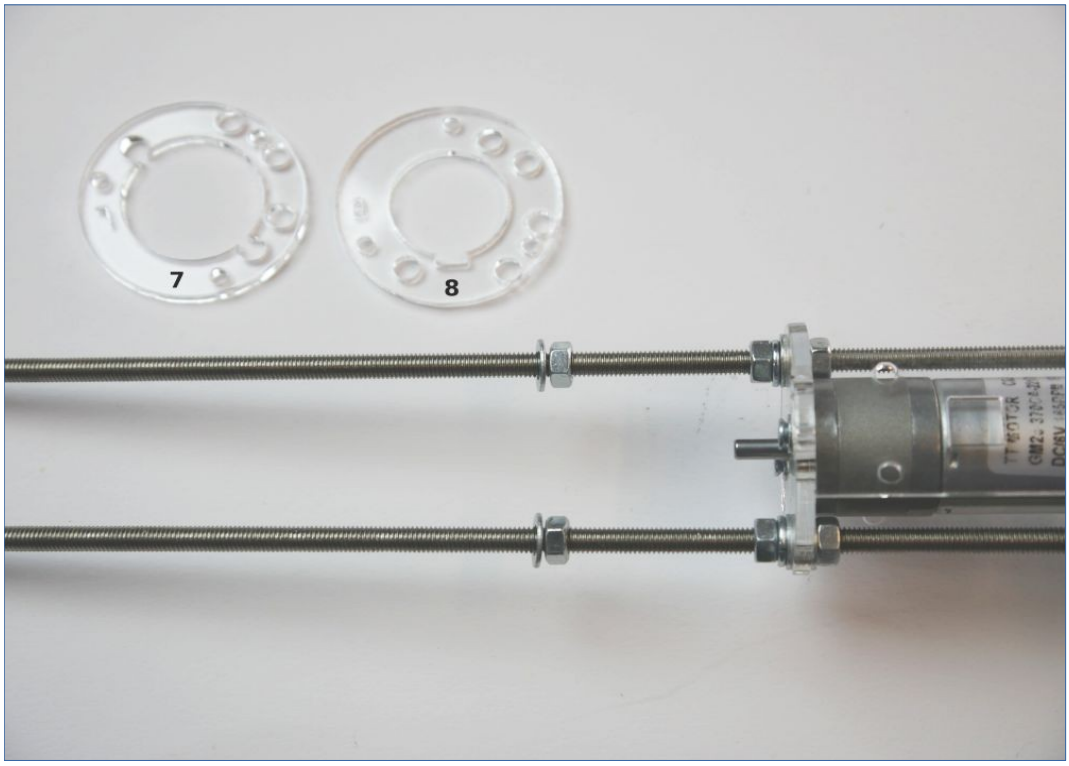

screw the nut on hand-tight.



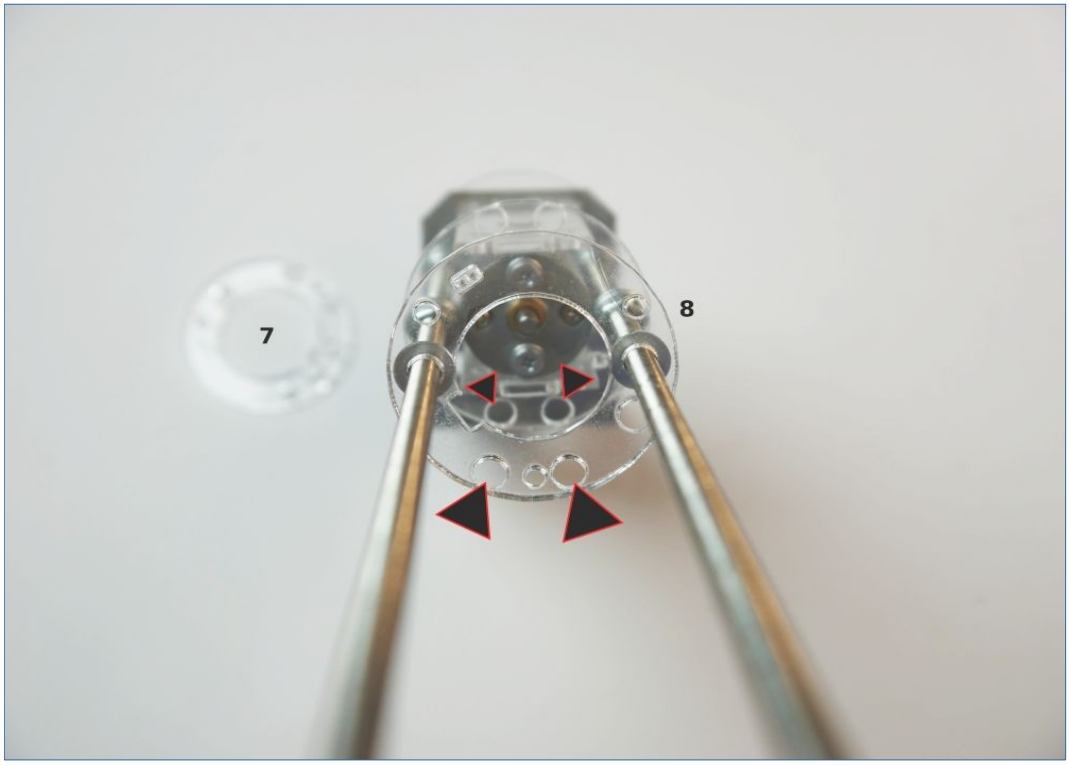
screw the nut on hand-tight



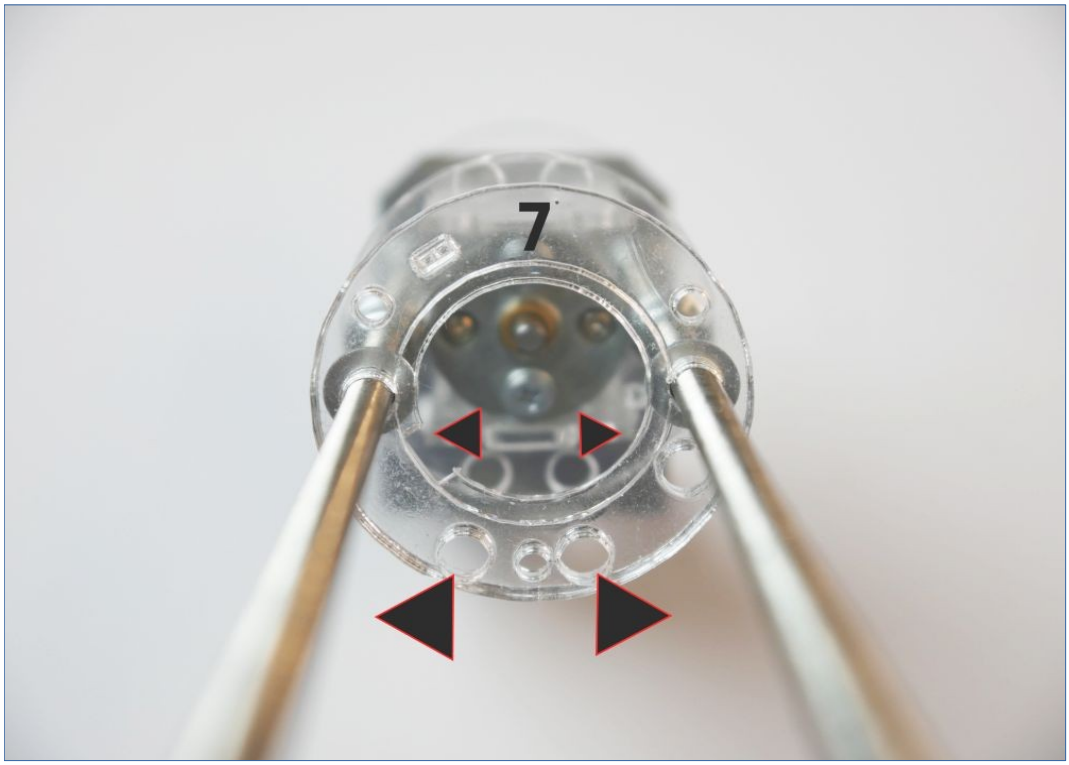
install part 7 8



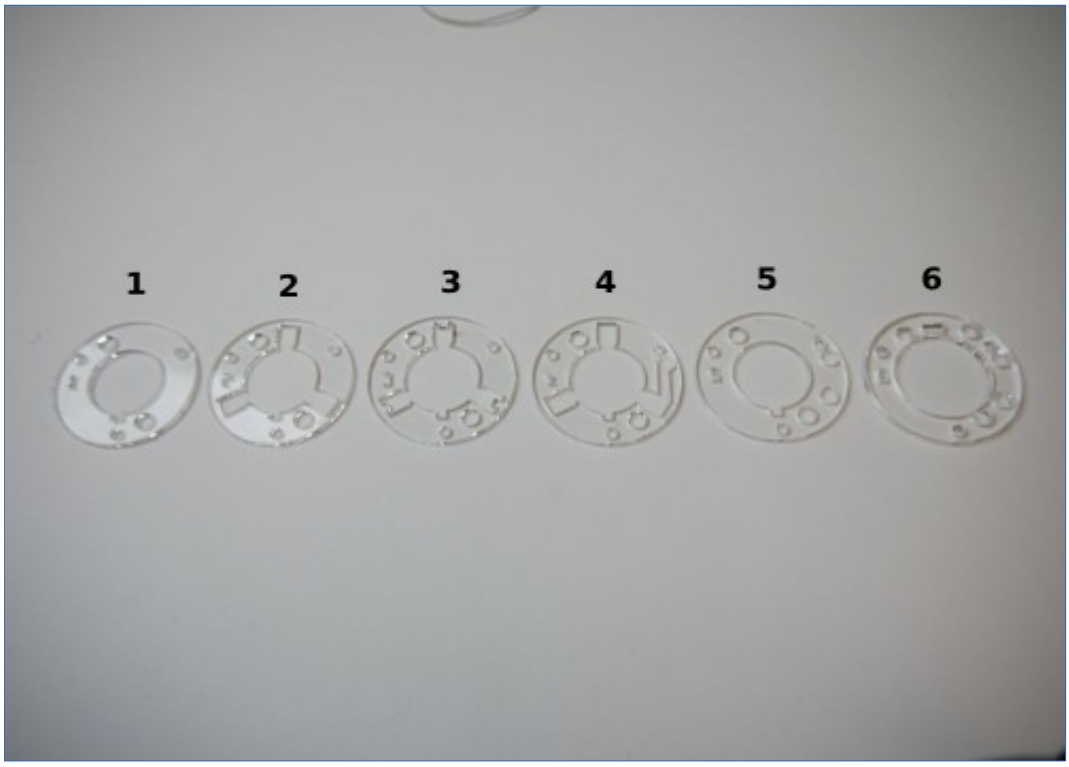
install part 8 Attention the holes should be on the same side. (triangles)



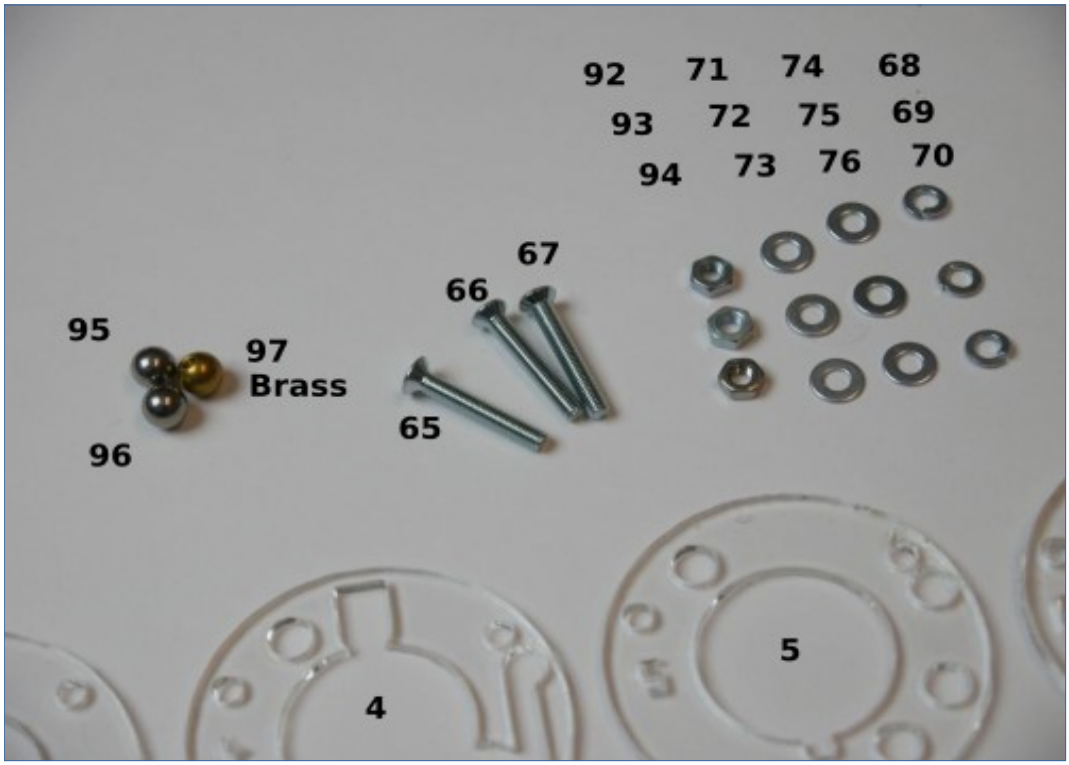

install part 7 the holes should be on the same side. (triangles)



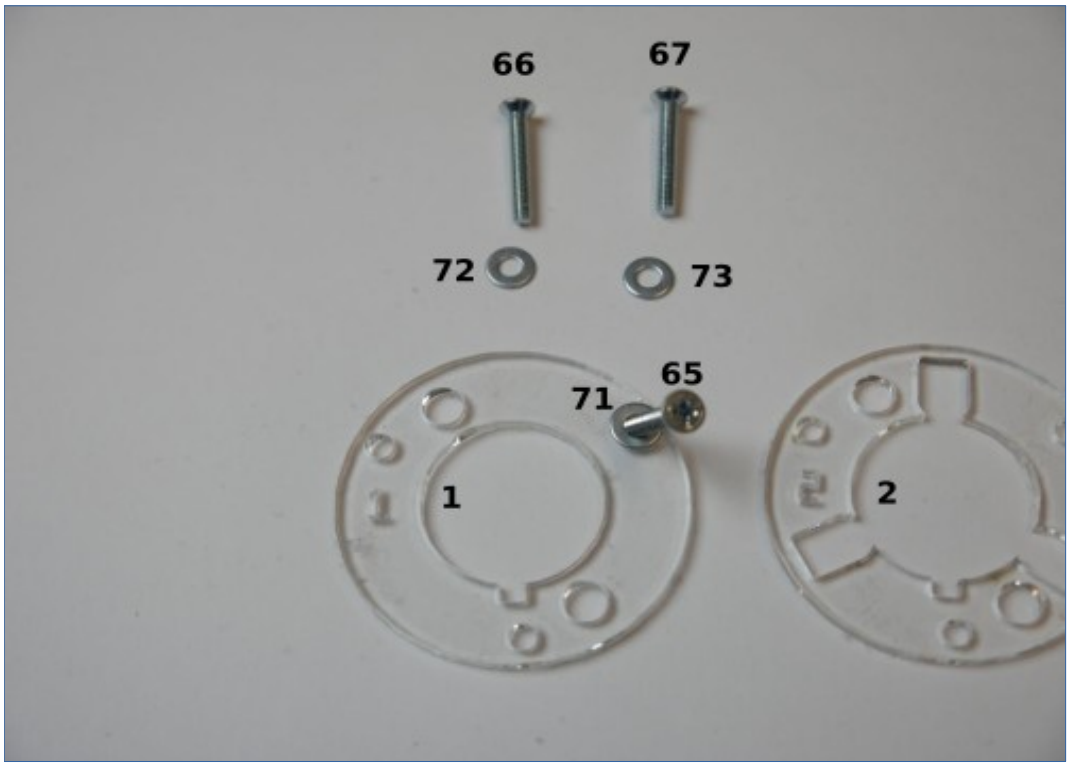
Ball ring install part 1 2 3 4 5 6 – 1 is at the top to part 6 is at the bottom



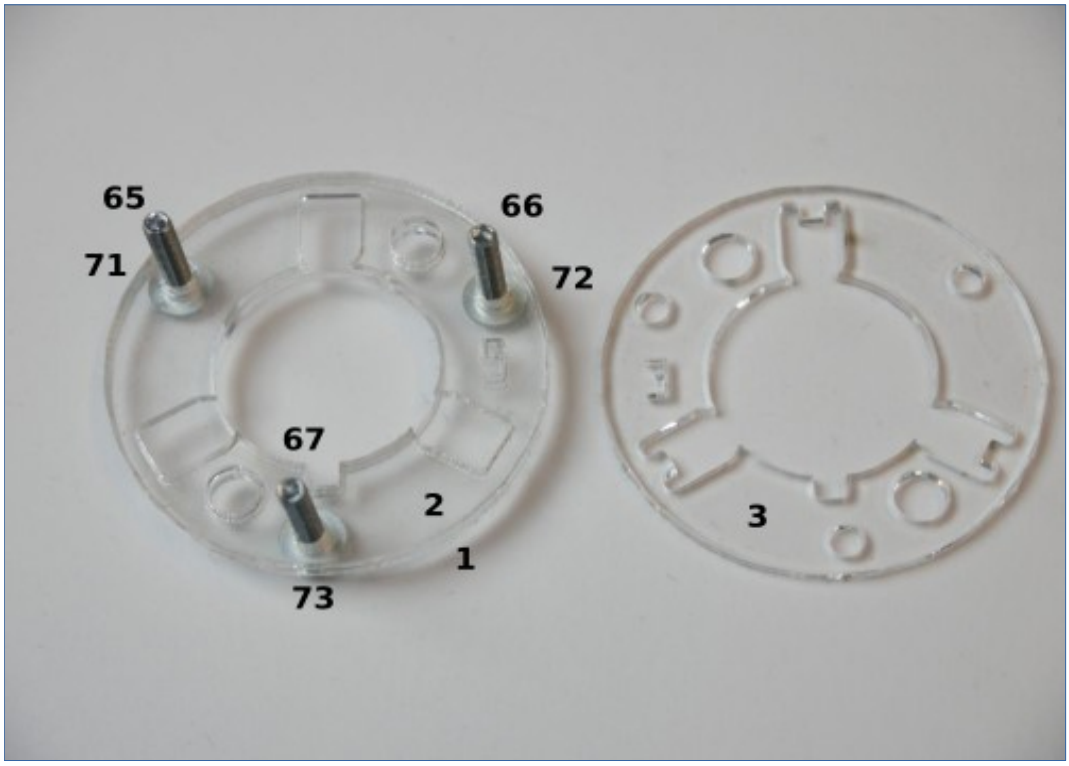

install part 65 66 67 68 69 70 71 72 73 74 75 76 92 93 94, 95 96 97(brass)



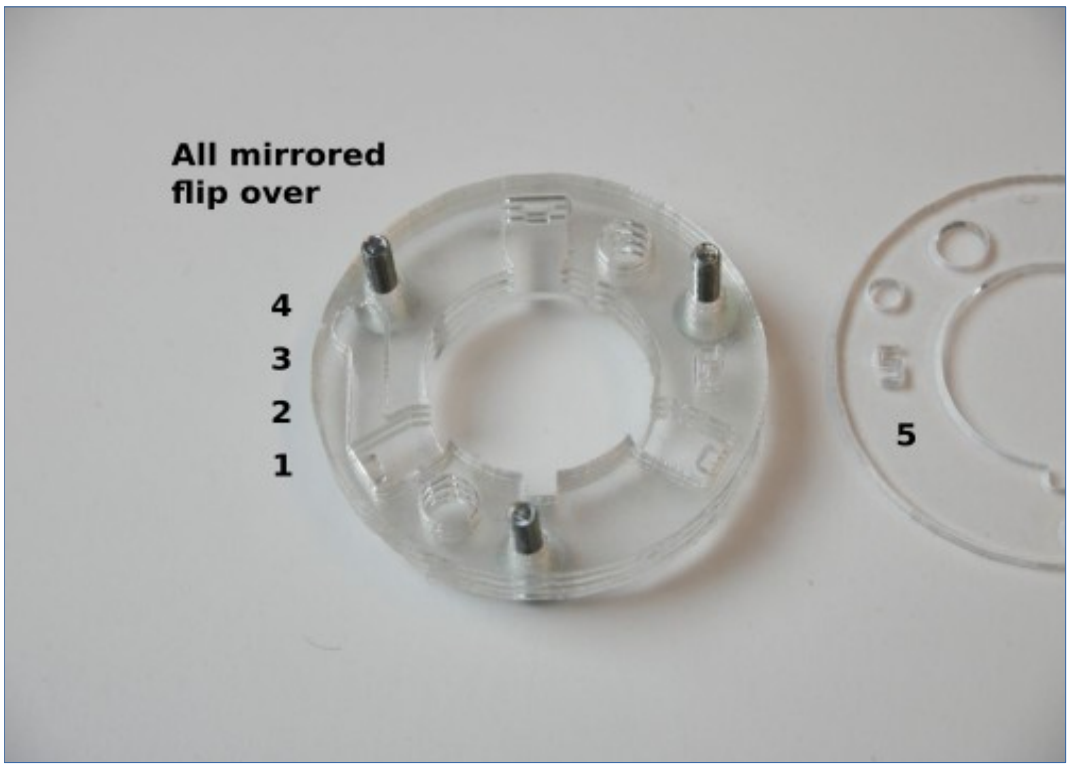
install part 65 in 71 then in 1



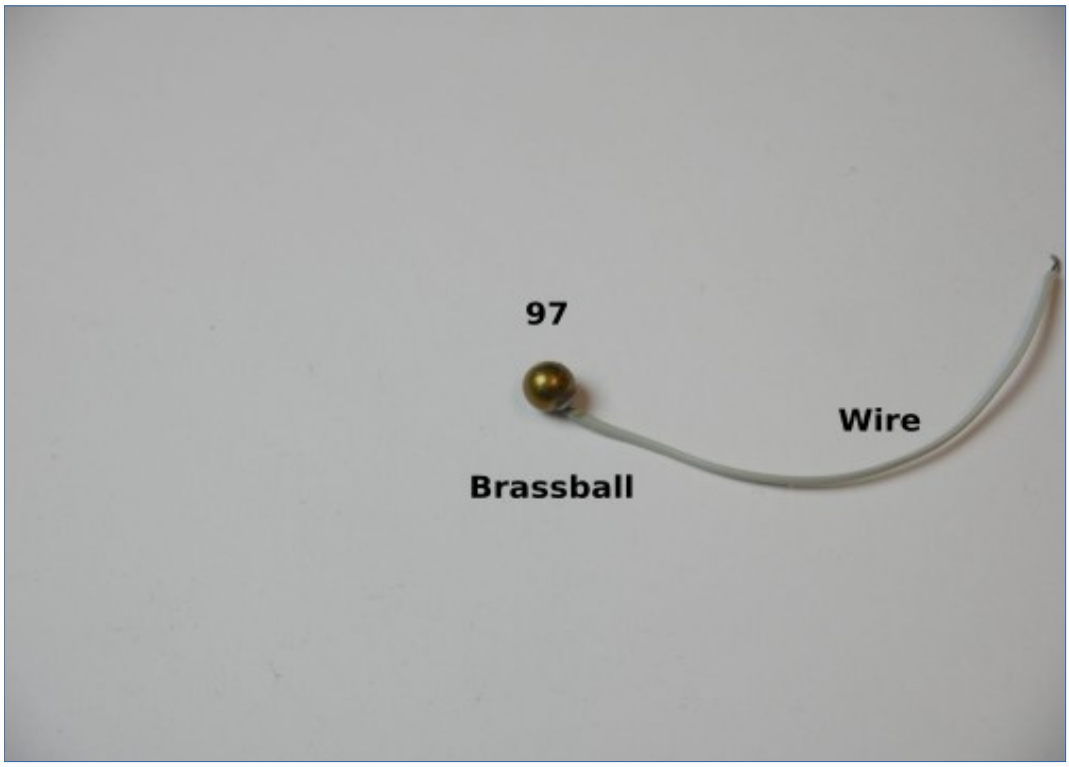

1 turn over (right to left) ; 2 turn over and stack; put 73 into 67
and then into the ring; put 72 into 66



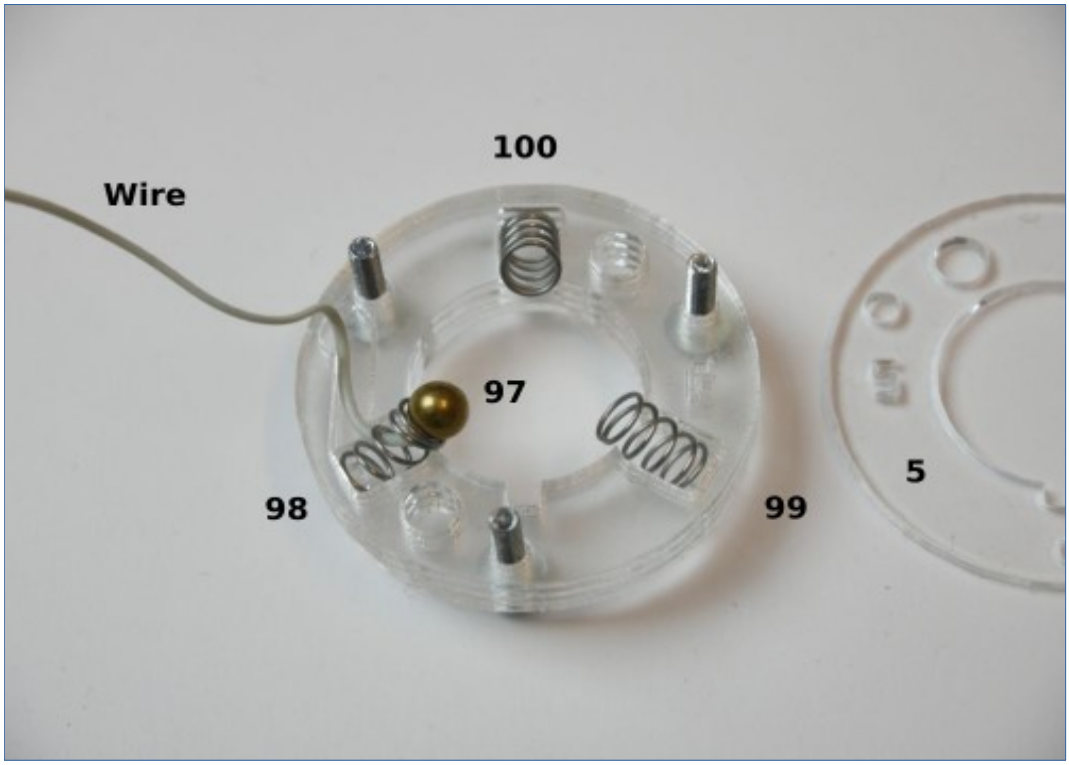
3 (Right to Left) stack 3 on 2;  4 (R-to-L) stack on 3



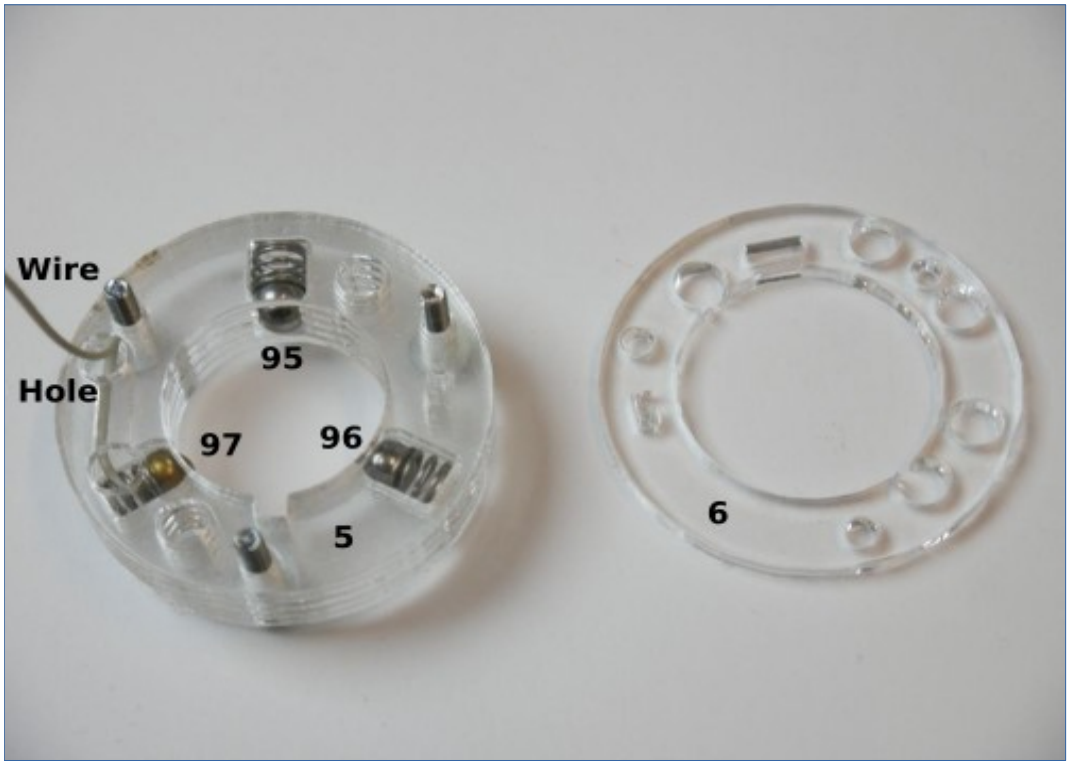

Using a soldering iron, please solder a stranded wire (flexible) into a 97 brass ball with a hole for the HF conn



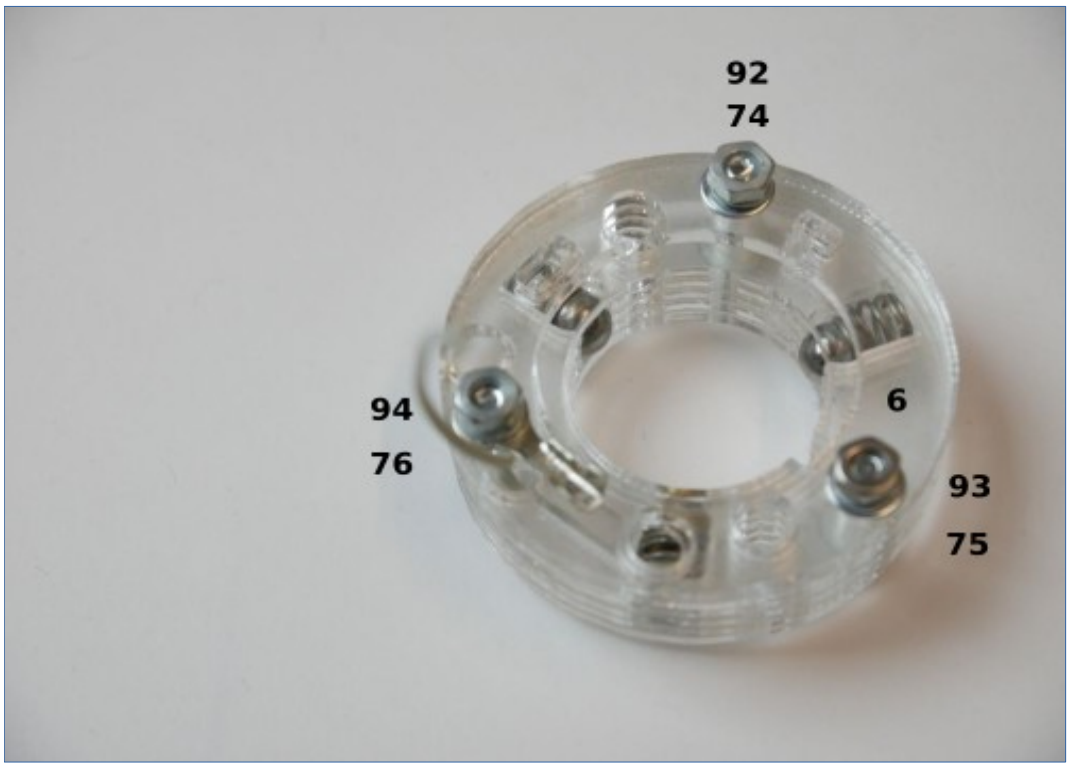
Thread the strand through the spring 98 and through the hole, brass ball 97, spring 99, 100 into position.



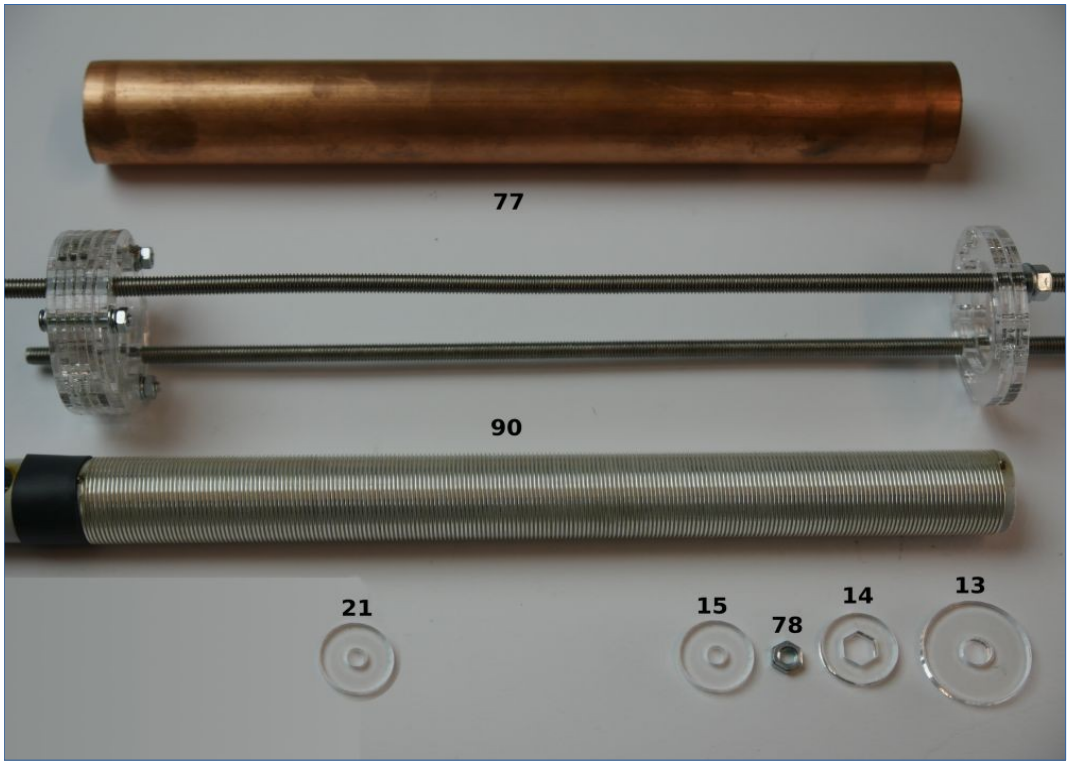

Clamp ball 95, 96 (silver); 5 (right to left) stack on 4 –
The strand must go through the hole in part 5



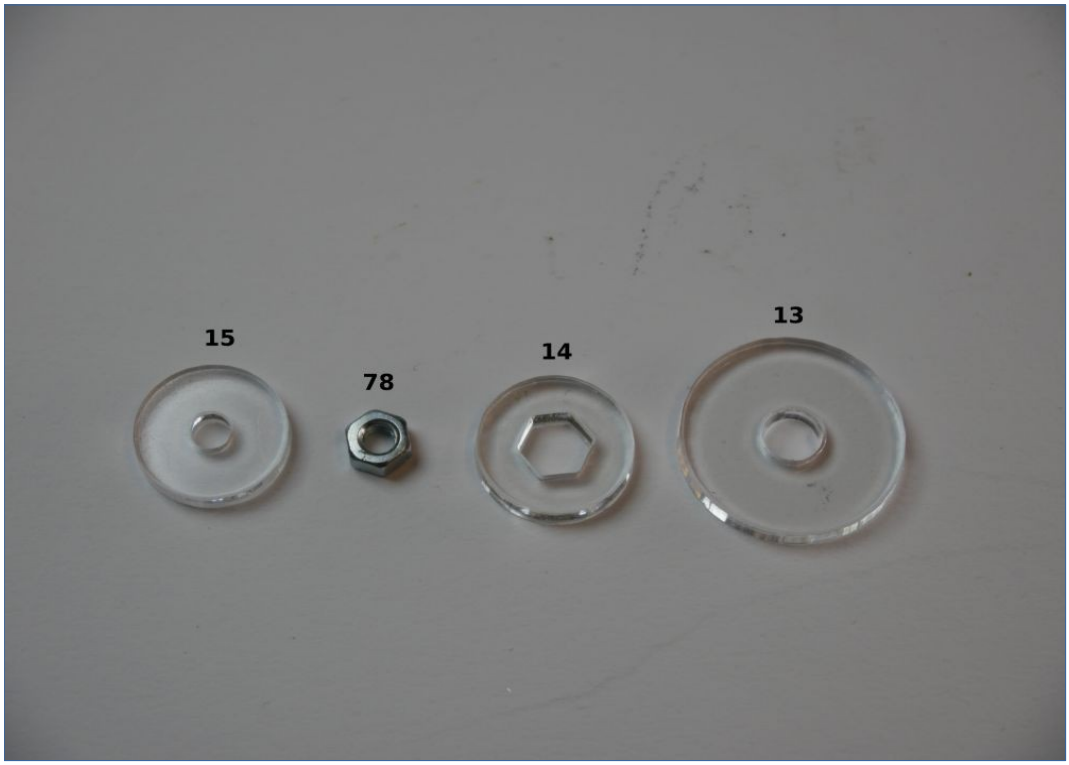
install part 74 75 76 92 93 94 and 32 – solder RF wire to 32



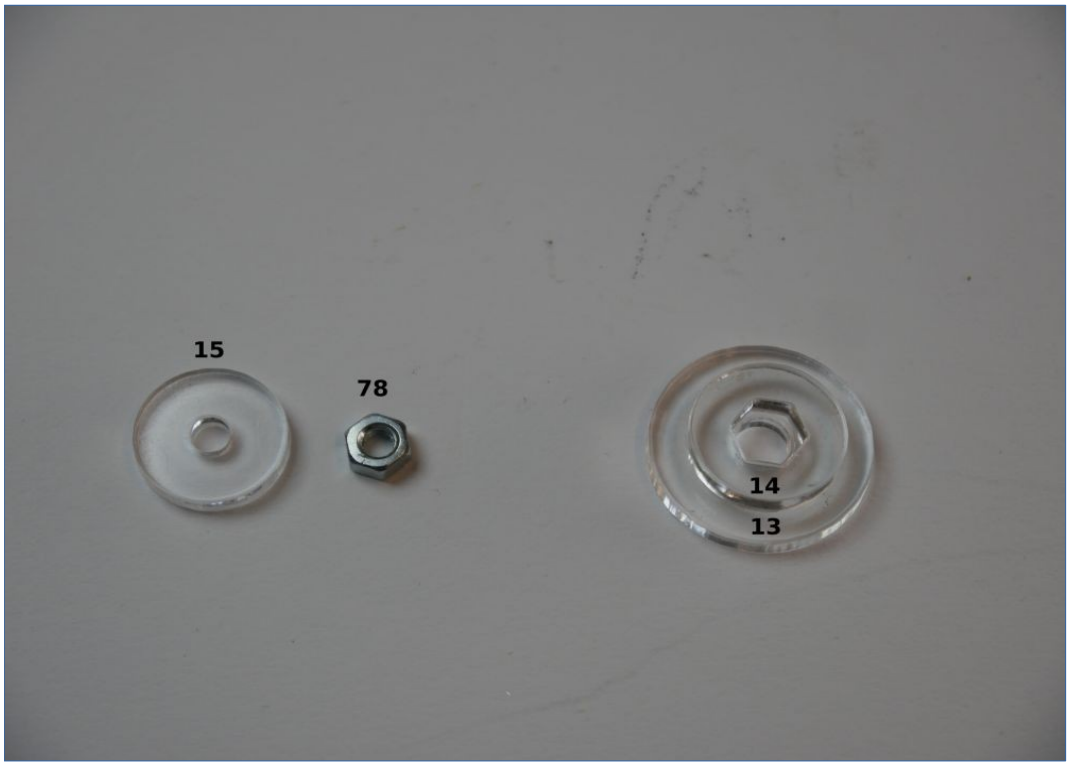

Coil 90 and copper sleeve 77



Coil bottom transport rings – are usually already glued. Otherwise stick together (centric)




Stack 14 on 13 centered - that has to be precise



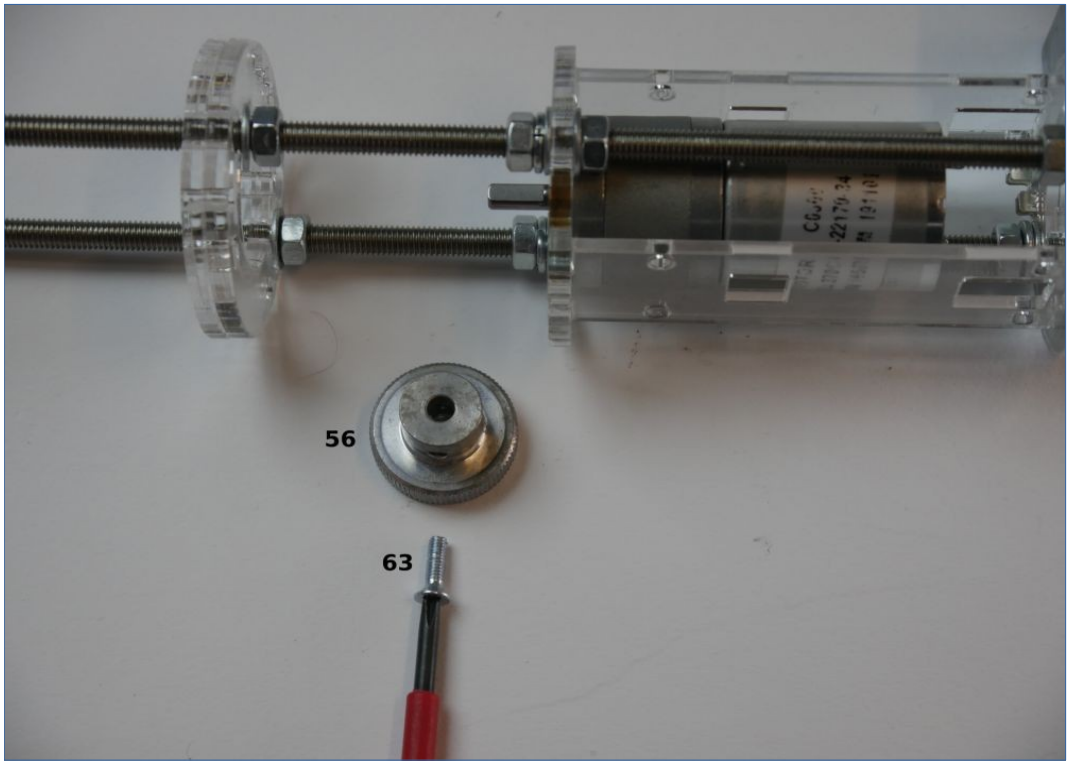
position the M5 nut in the center of the cutout


stack 15 on 14

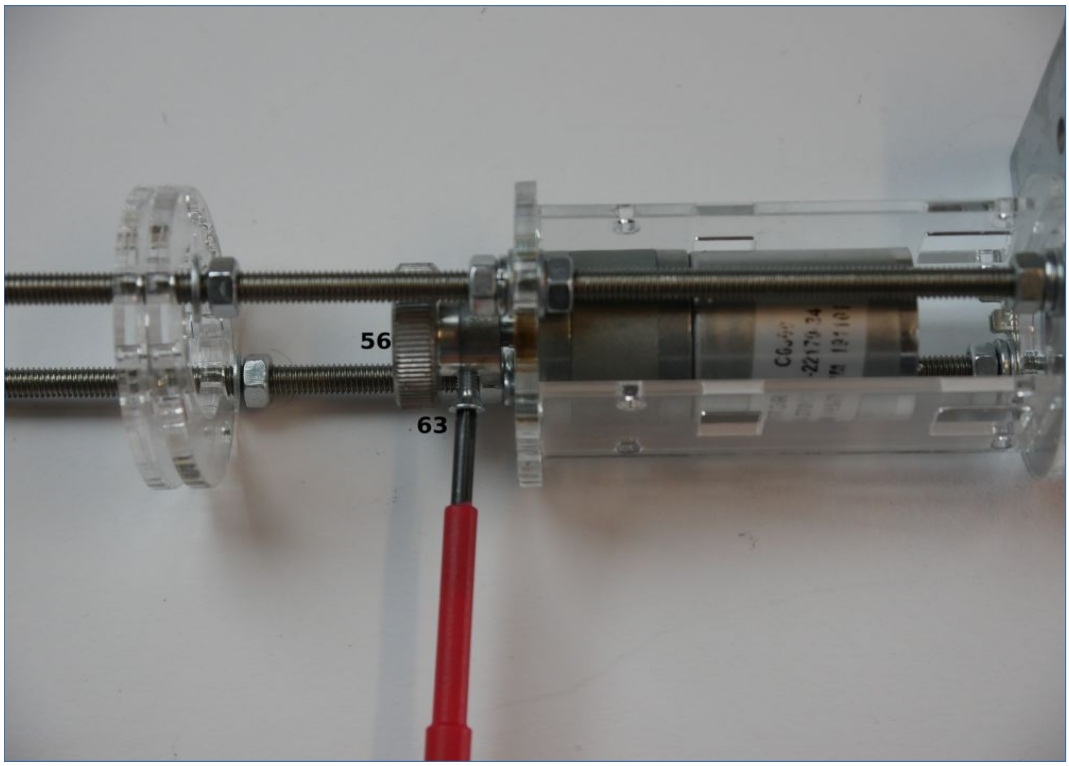
Methylene chloride - Attention this is not included -
But you don't need it because the center ring is already glued.


Glue the center ring (transport) with methylene chloride or acrylic glue

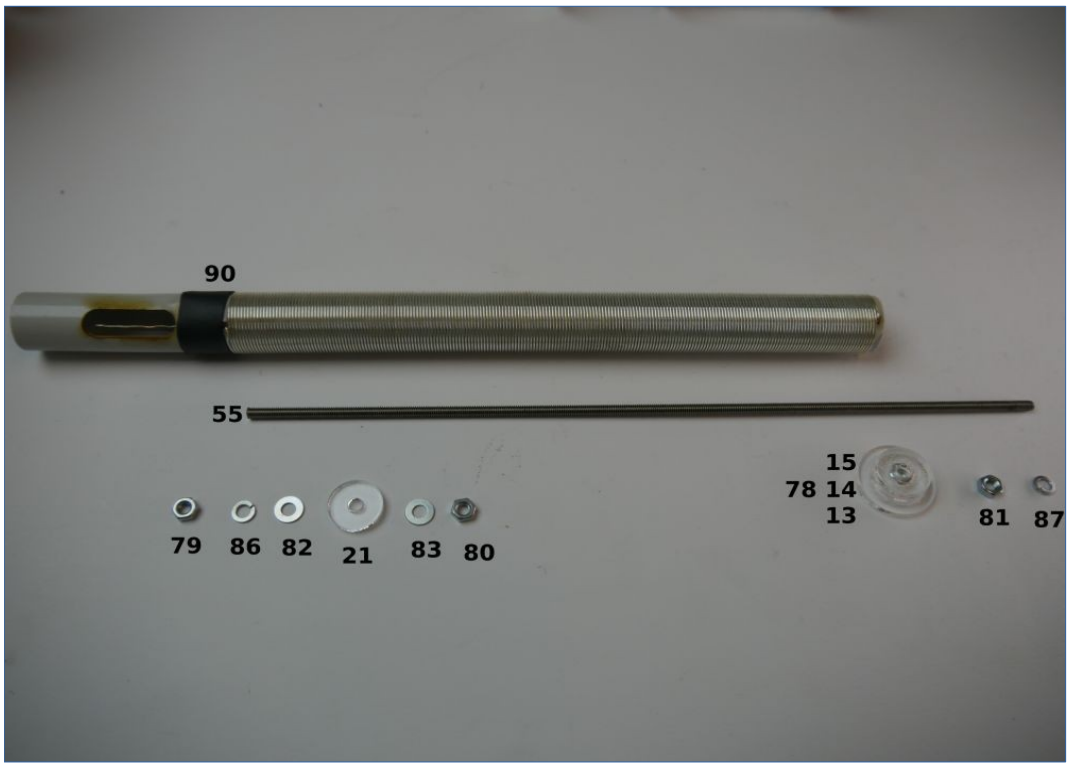
install part motor connection 56 63




install part motor connection on the motor axle



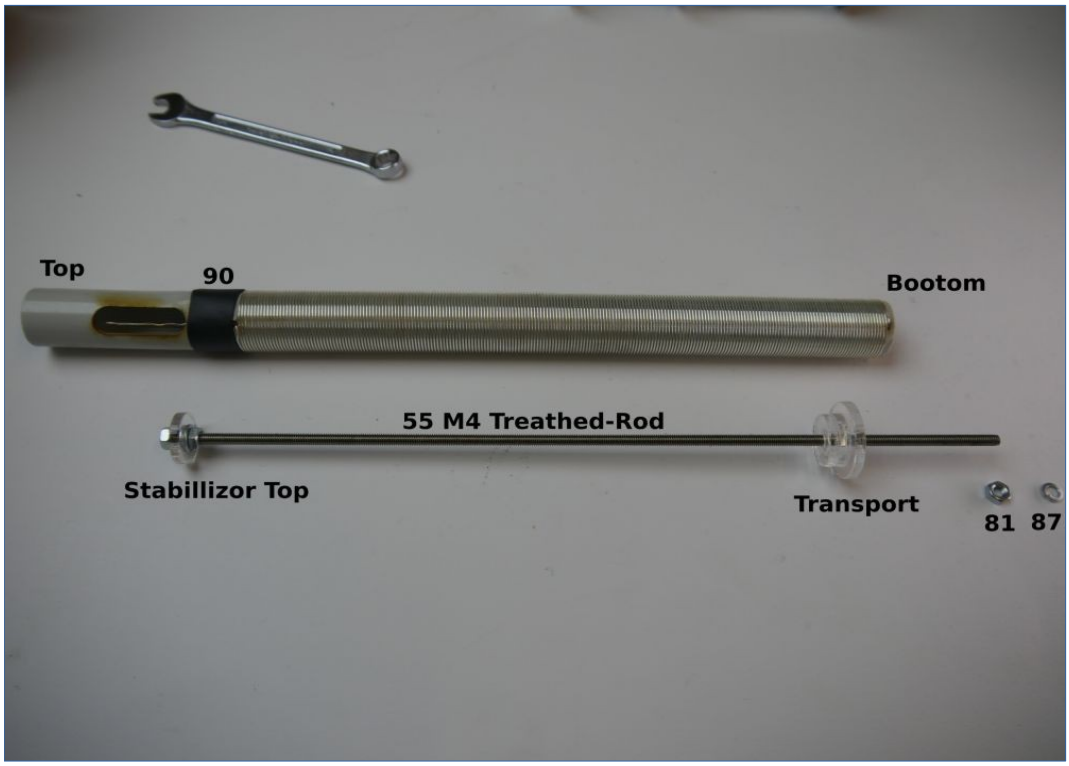
install part stabilizer on top of the threaded rod - hand tighten and glue -
it must not be loose!



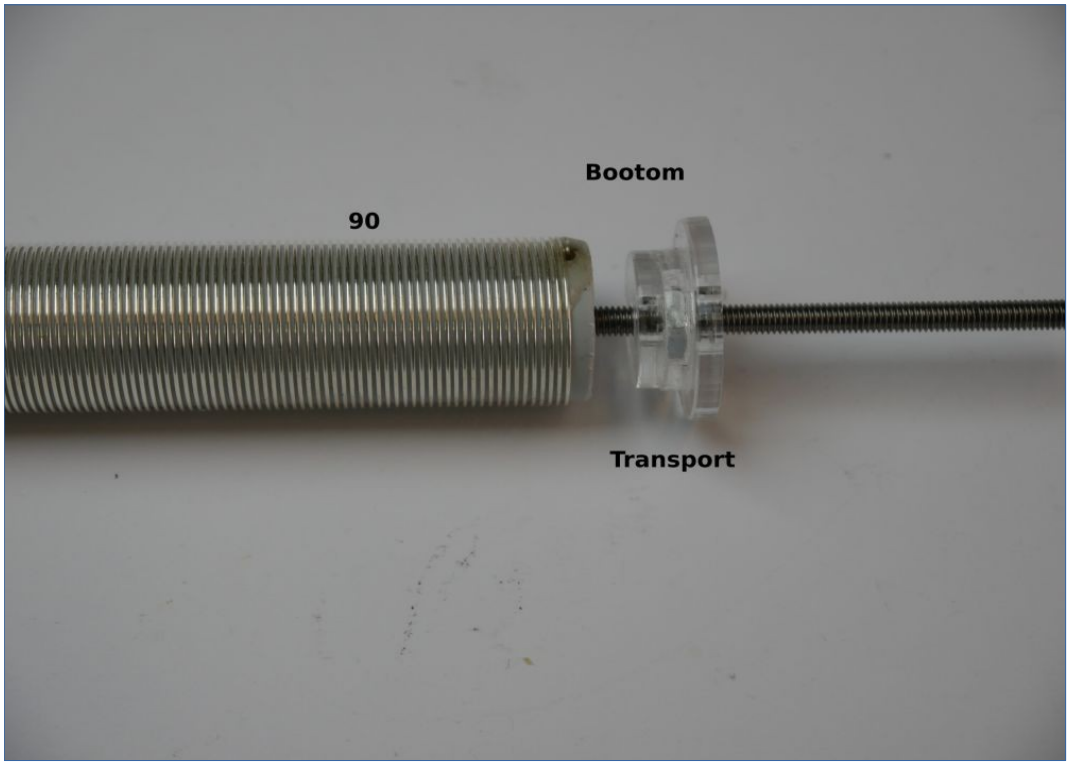

install part 83 84

install part 79 86 82 21 Stabilizer top must be tight and best
still with security glue!

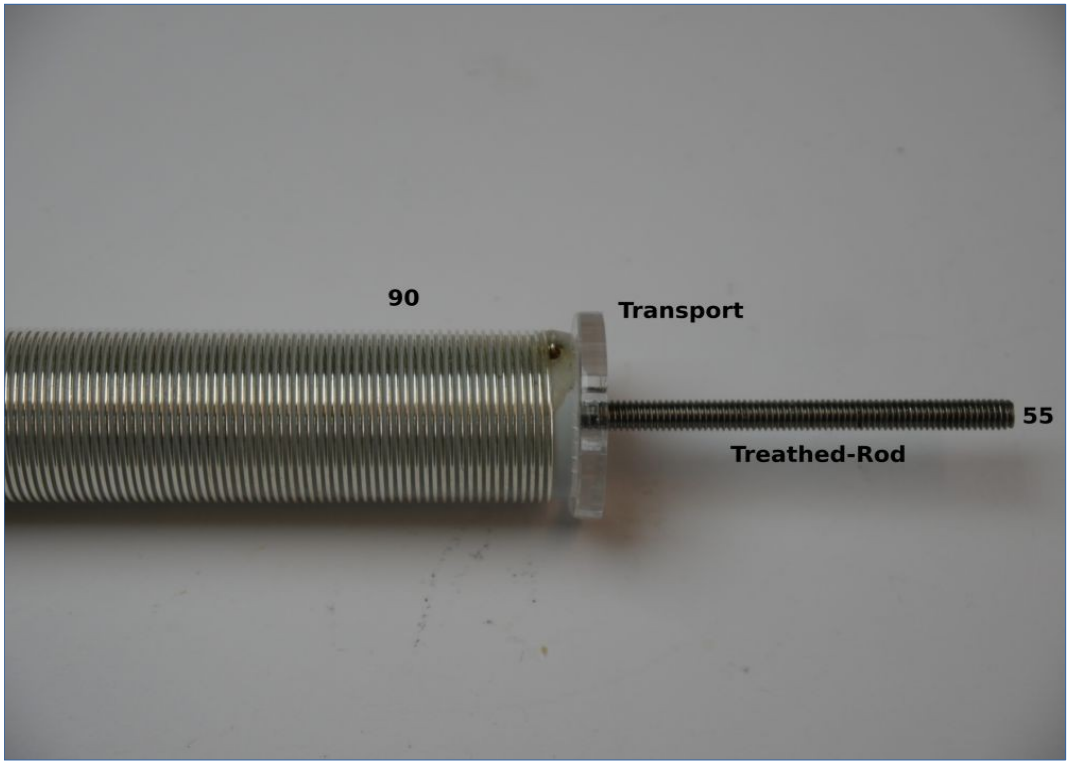

turn transport ring M4 onto the middle threaded rod



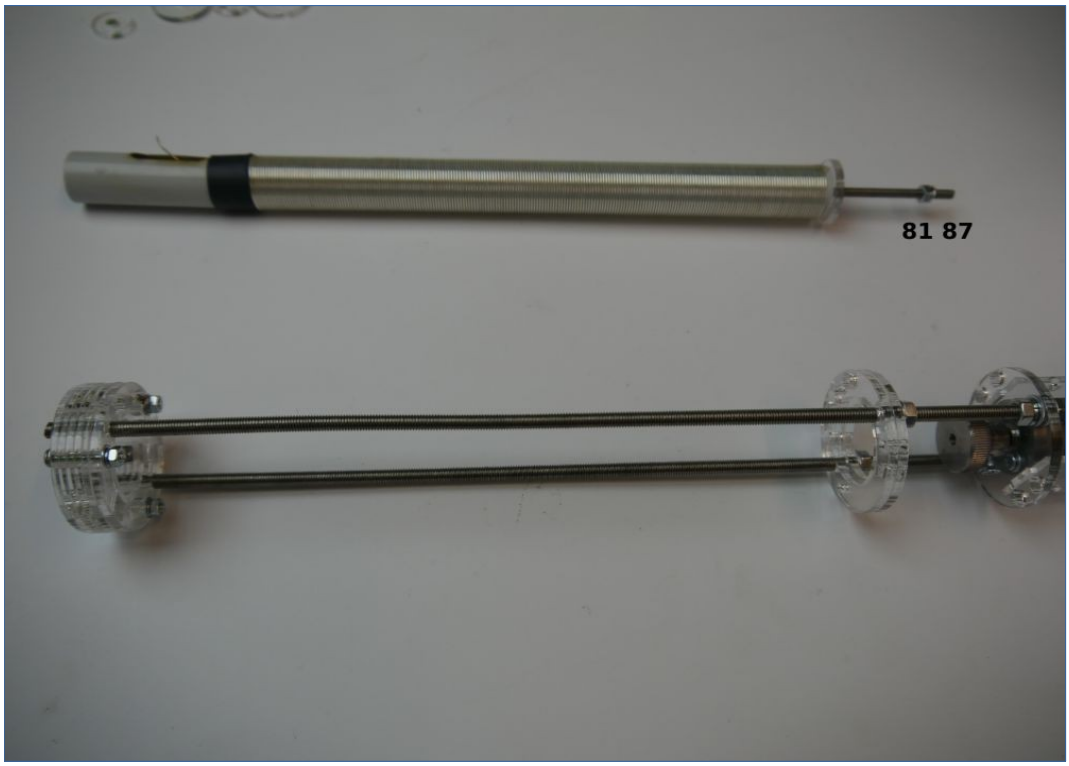
press the transport ring into the coil and fix it with glue it has to be straight.




Glue the transport ring straight into the coil carrier



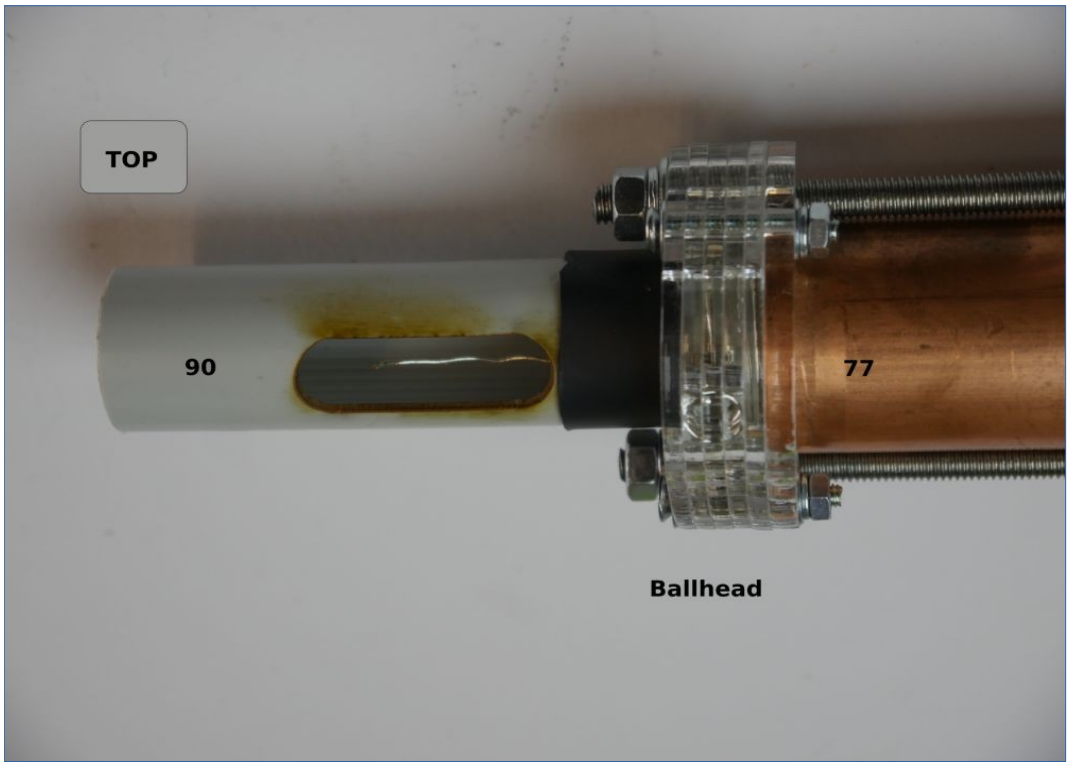
install part 81 87



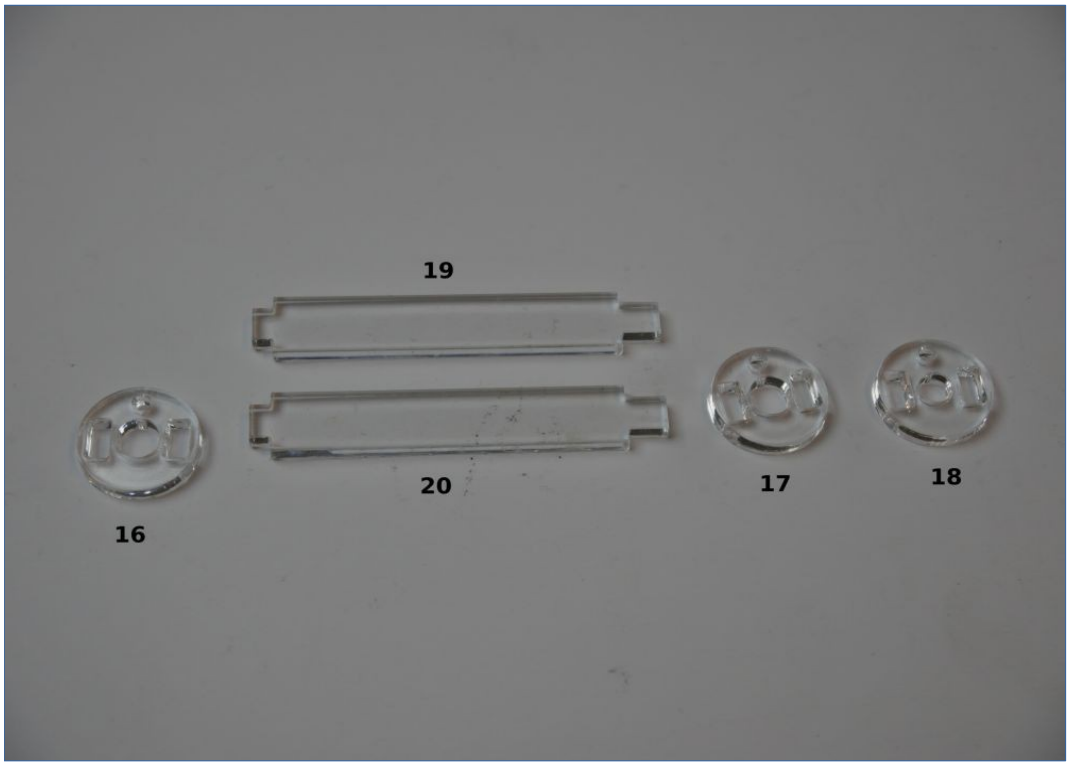

uninstall the “Ballhead” ball head and install the coil 90
with the mother is countered.

slide part 77 (copper sleeve) over the coil and mount the ball head.


Connect sending rod with contact wire

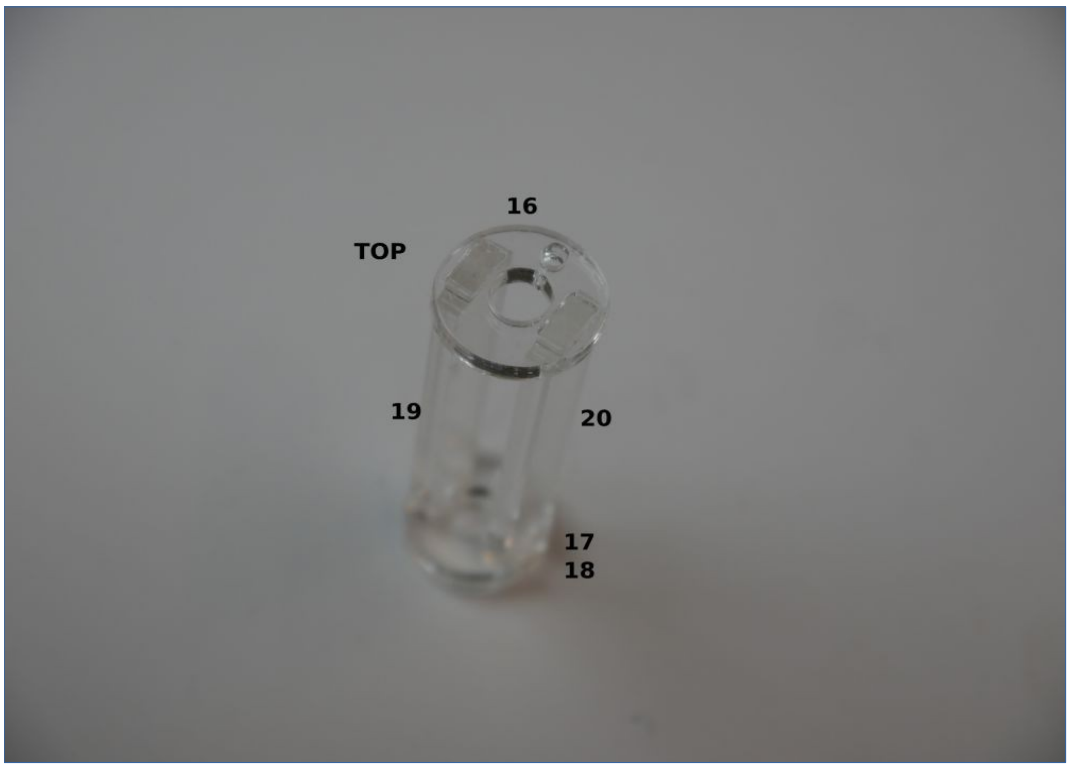


Parts 17, 18, 19, 20, 17 & 18 – are already glued



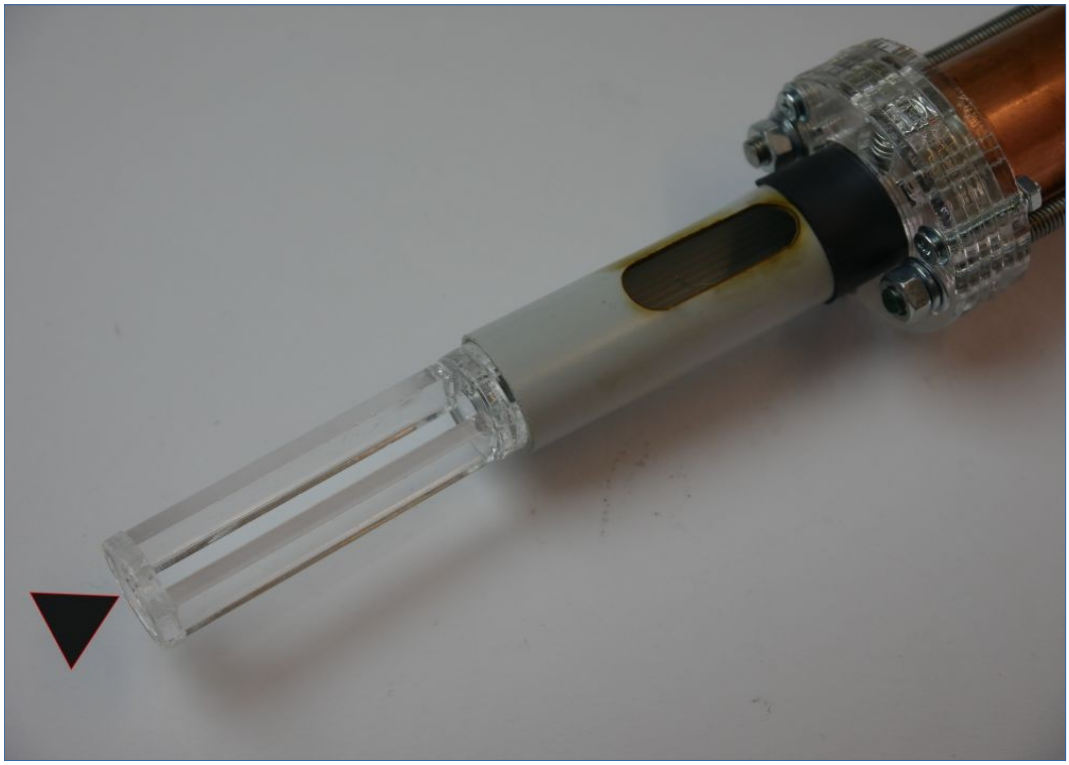

install part 19 20 in 17 and 18 – if they are not already glued.

stack 16 on 19 & 20

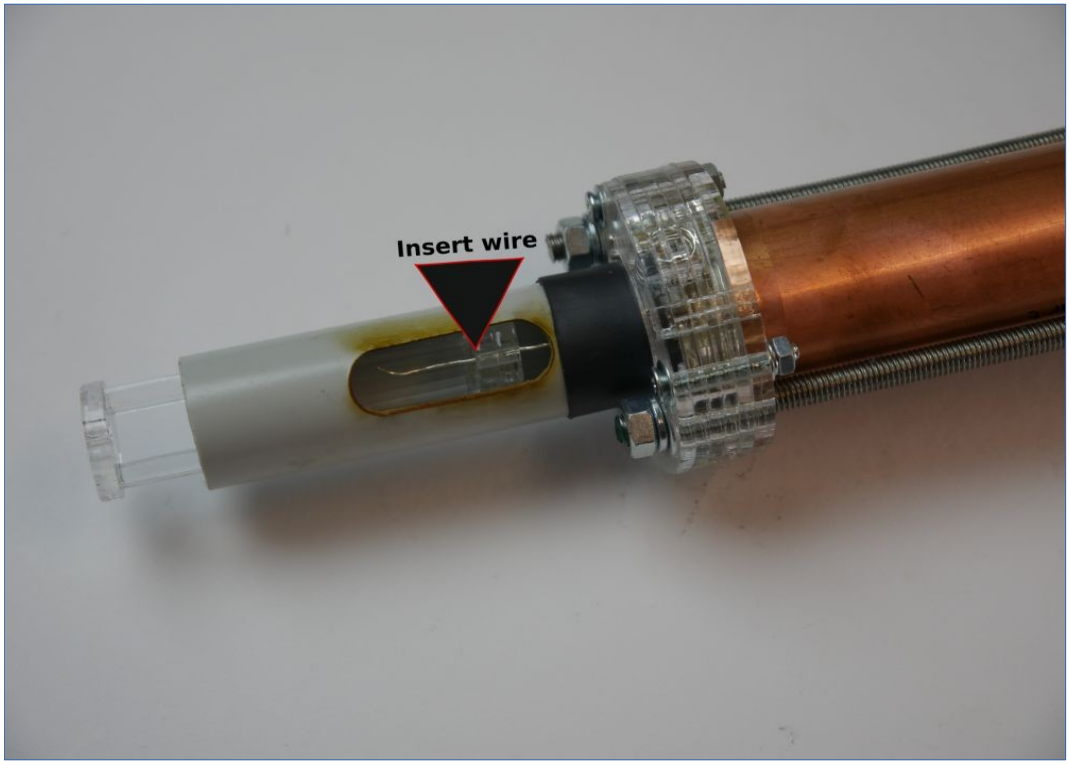



Methylene chloride glue – Attention, use safety glasses!

Heat shrink goes on the top of the bobbin if not already installed
Insert the spotlight holder into the bobbin.



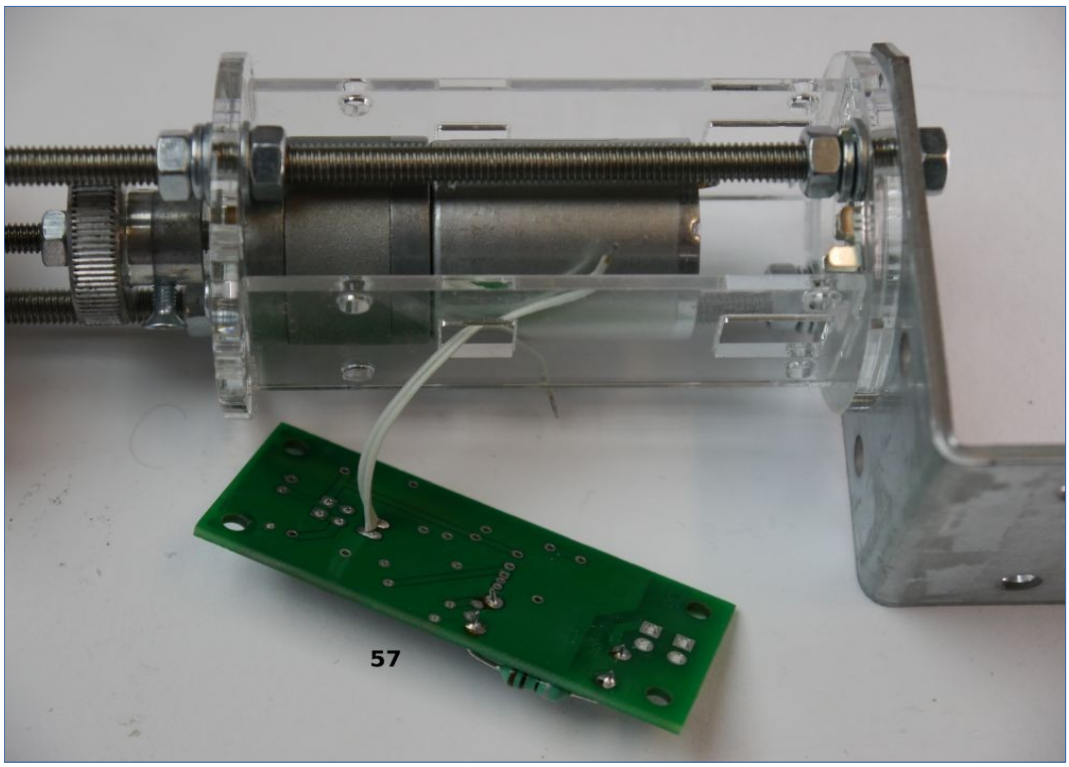
Insert the silver wire into the spotlight holder through the hole.



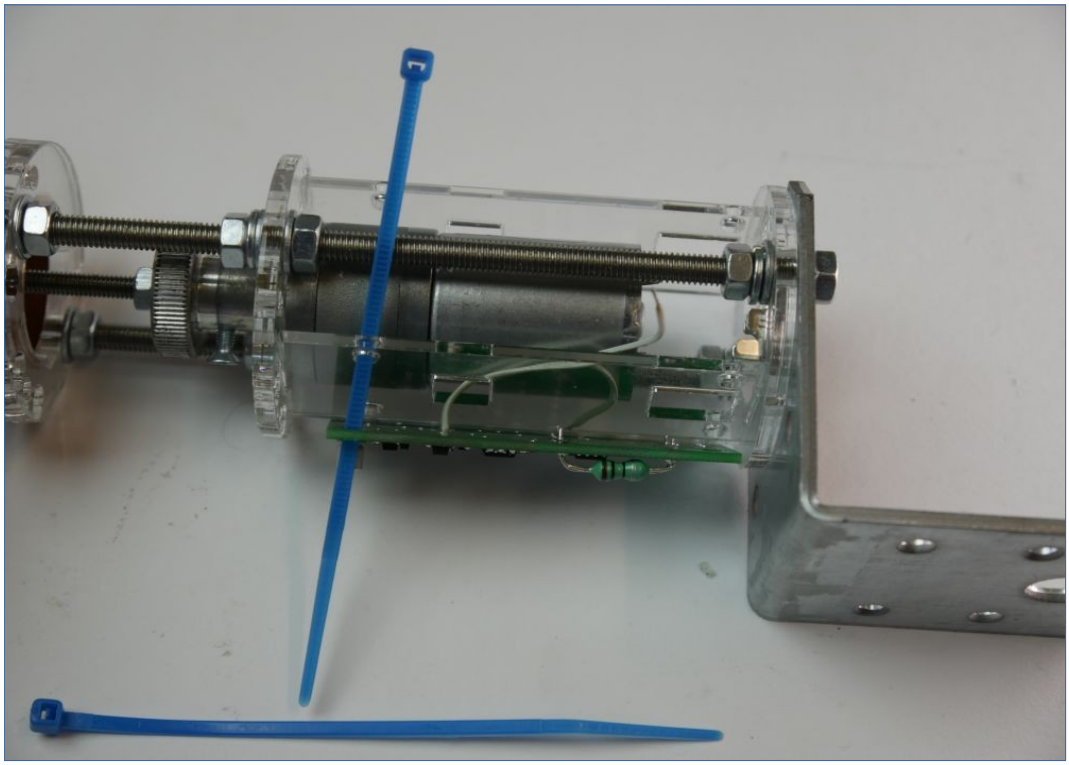
Insert the aluminum rod into the spotlight holder.

attach the silver wire to the spotlight with a cable tie. With the new spotlights
a hole and the silver wire is attached there with a screw/nut.

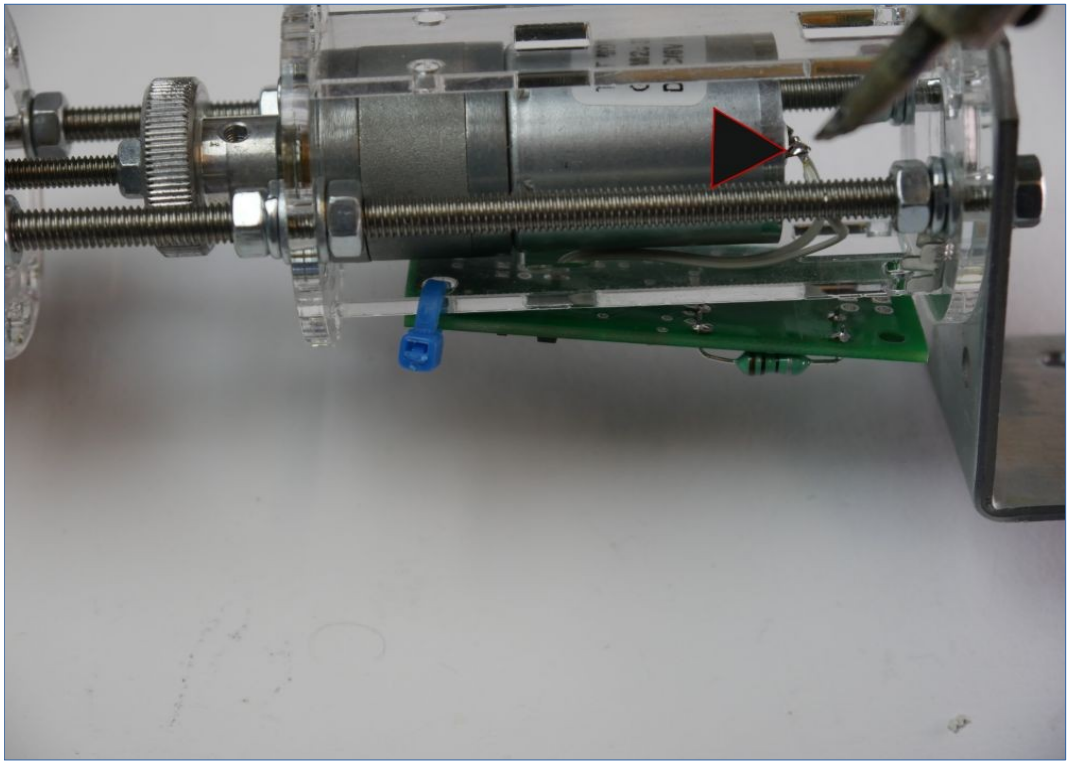
Install Motor Controller 57 with wire through the square hole as shown
Controller is attached with cable ties.



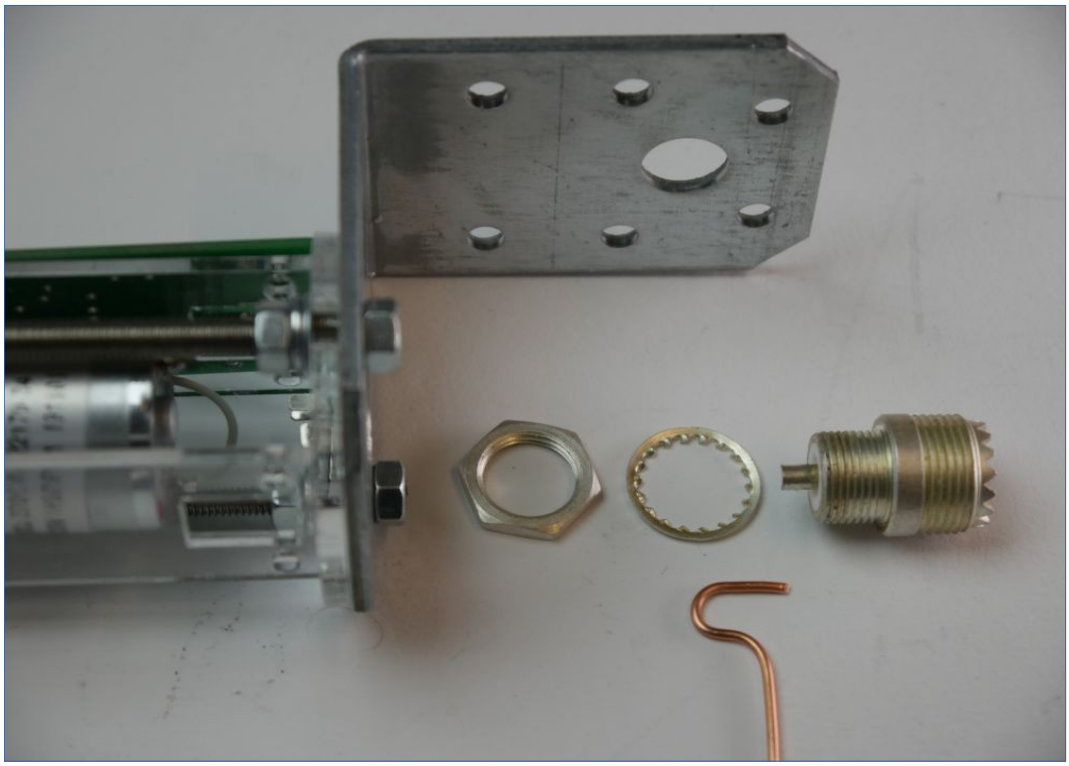

Fasten the motor controller with two cable ties



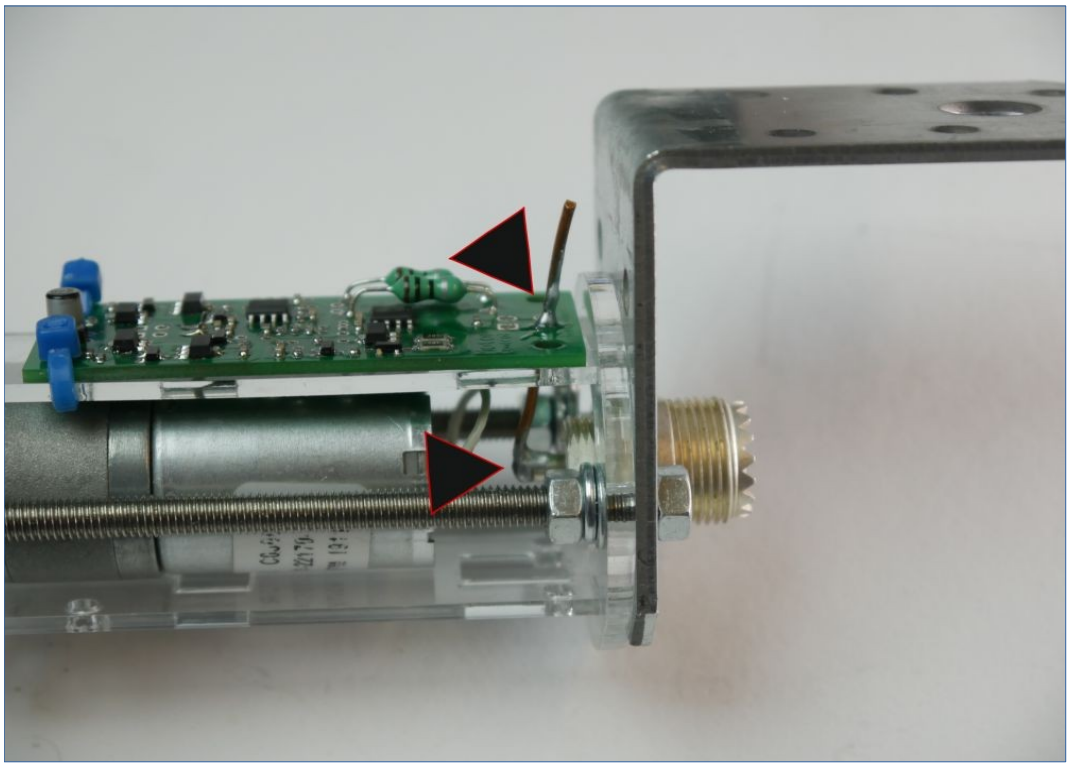
Solder the motor cables to the red and black motor pins.



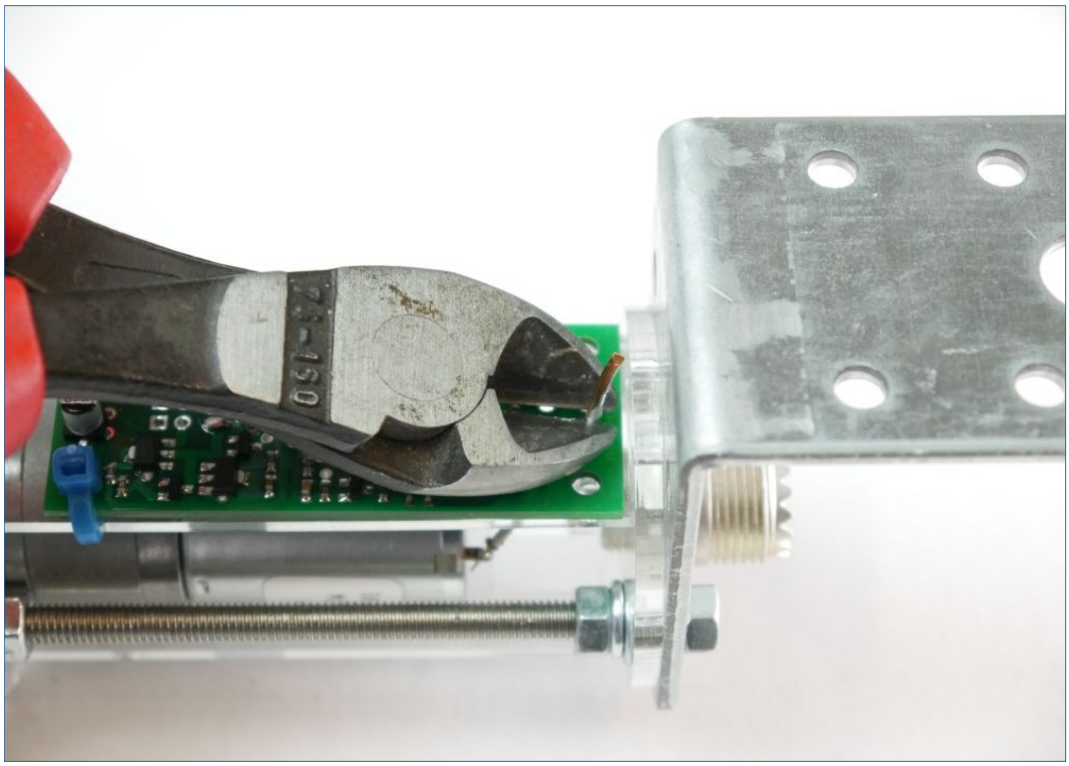
install part 91 - bend the wire as shown in the picture because this is the hot connection (HF signal).



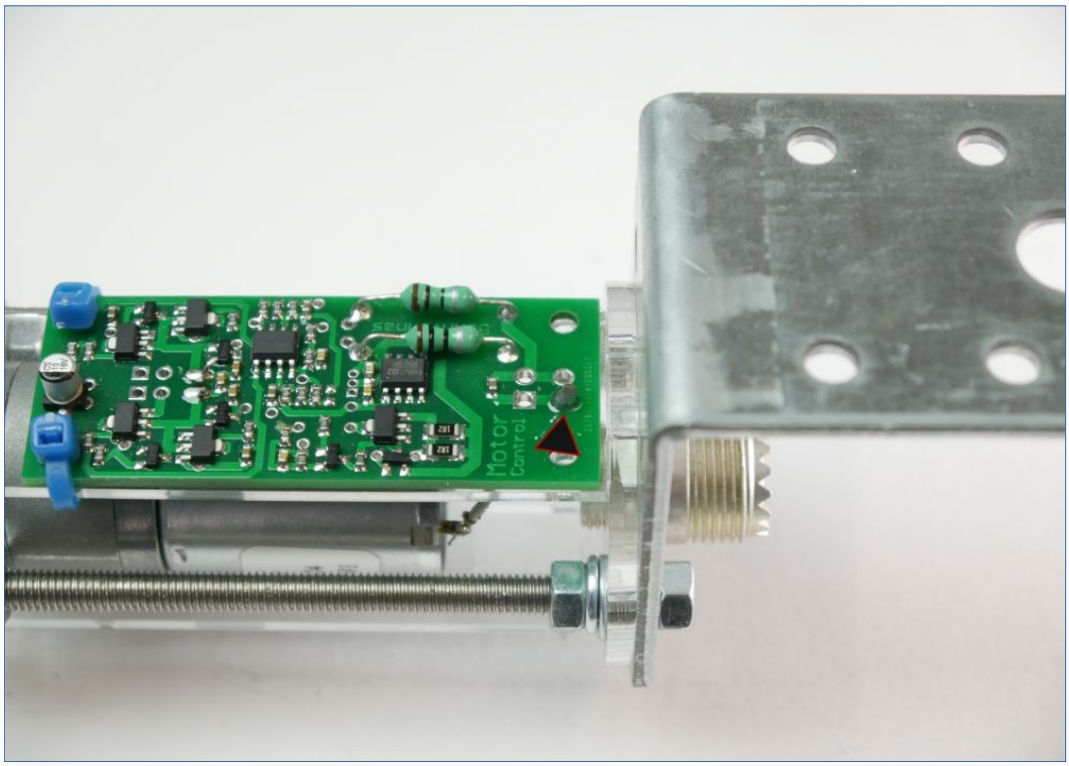
Solder the middle pin RF socket to the PCB SQUARE pin.



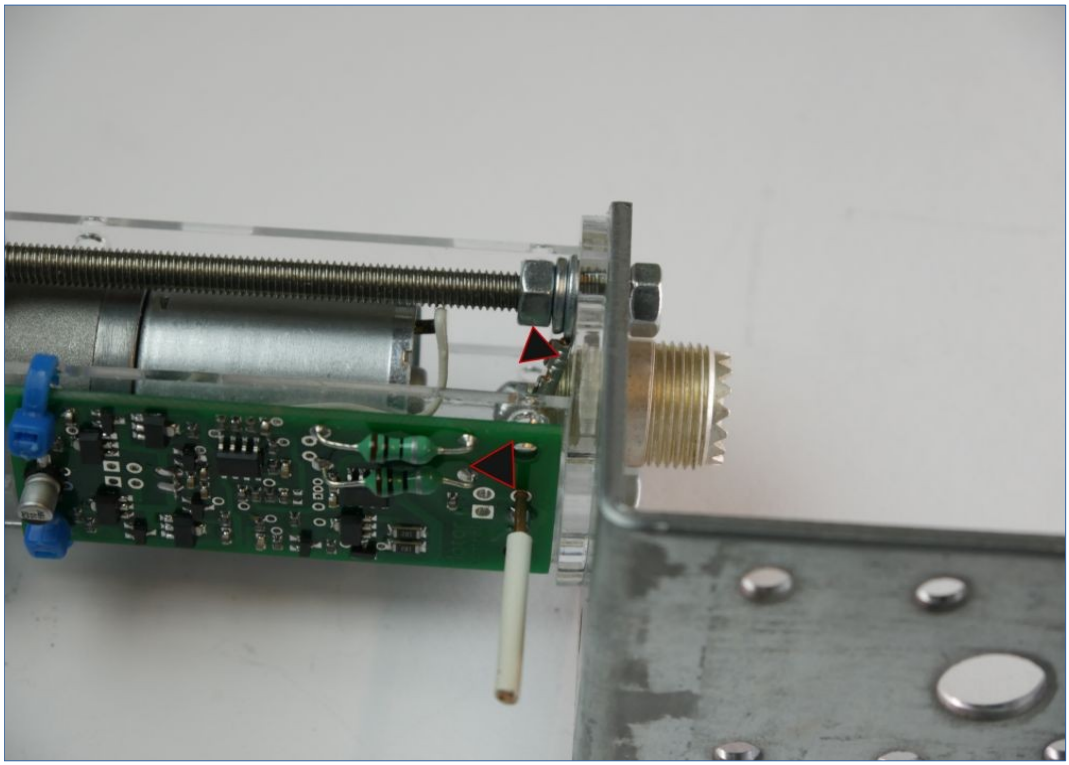
Cut off the wire that protrudes from the SQUARE pin using side cutters.



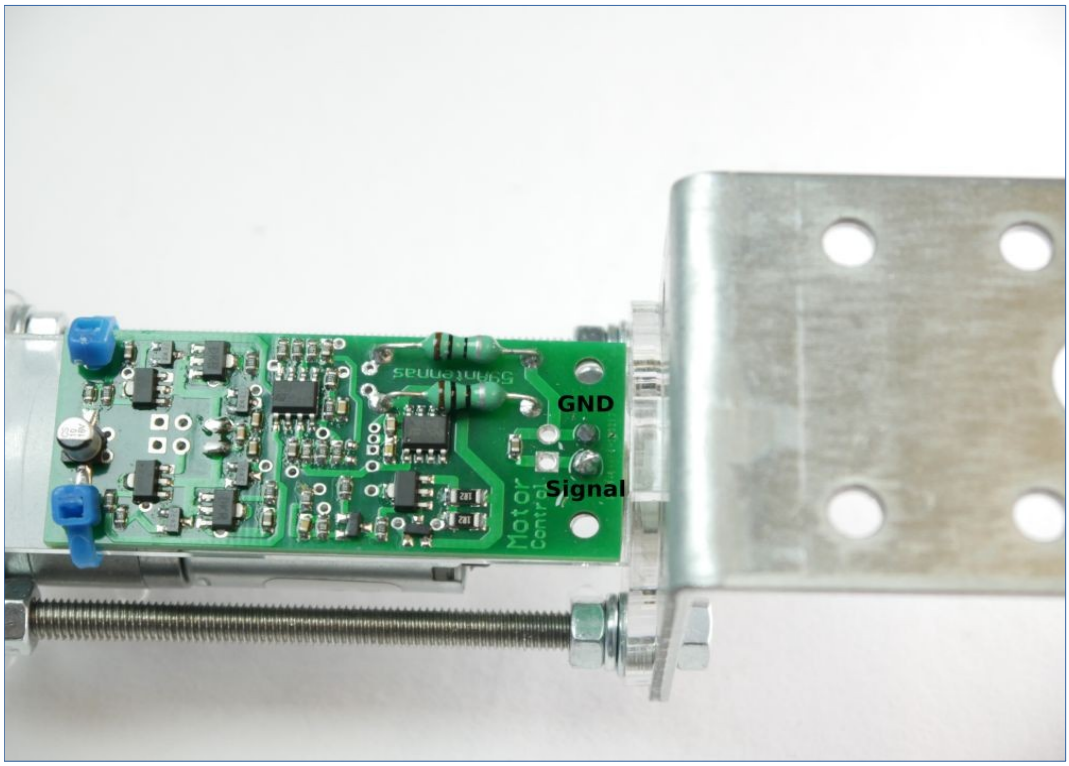
SQUARE pin



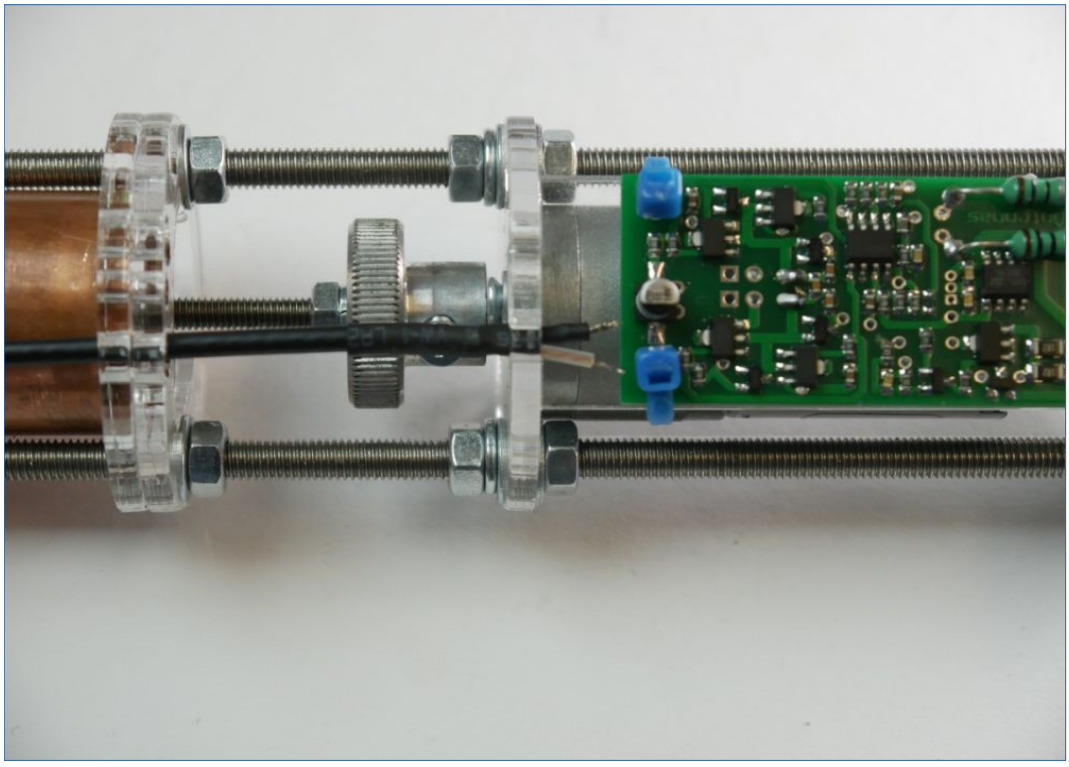
Solder the ground (GND) with a wire directly to the ring of the RF socket.
The ground (GND) must be well connected!



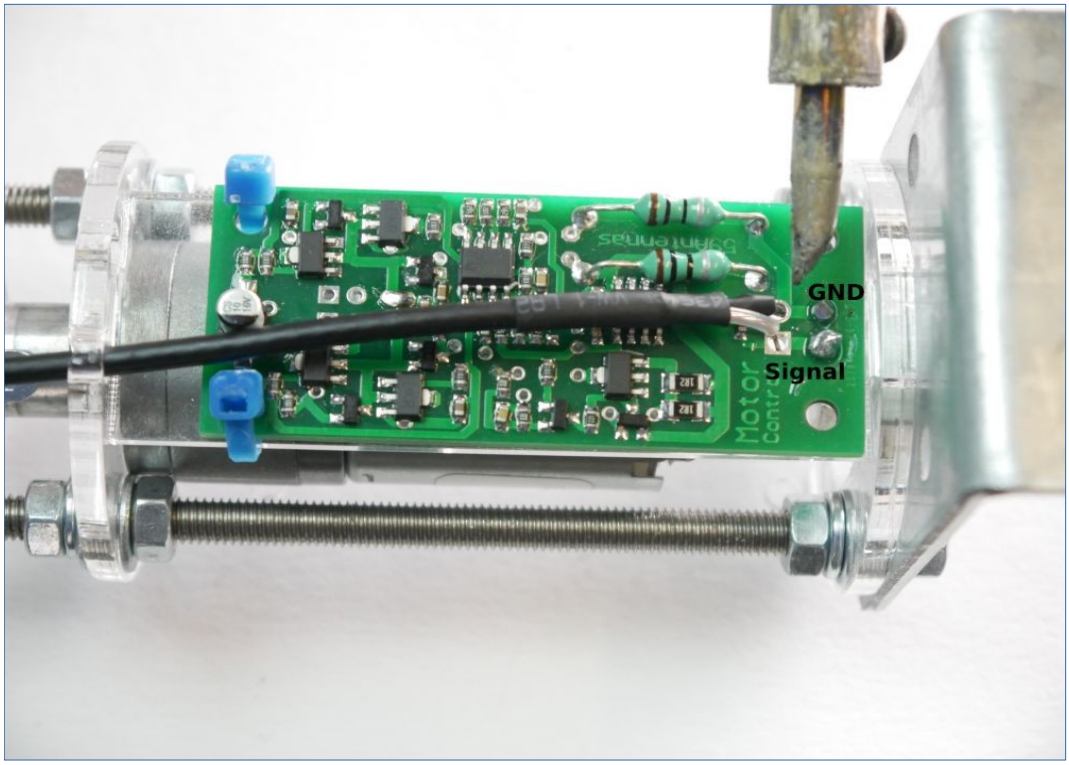
Connection points should look like this.



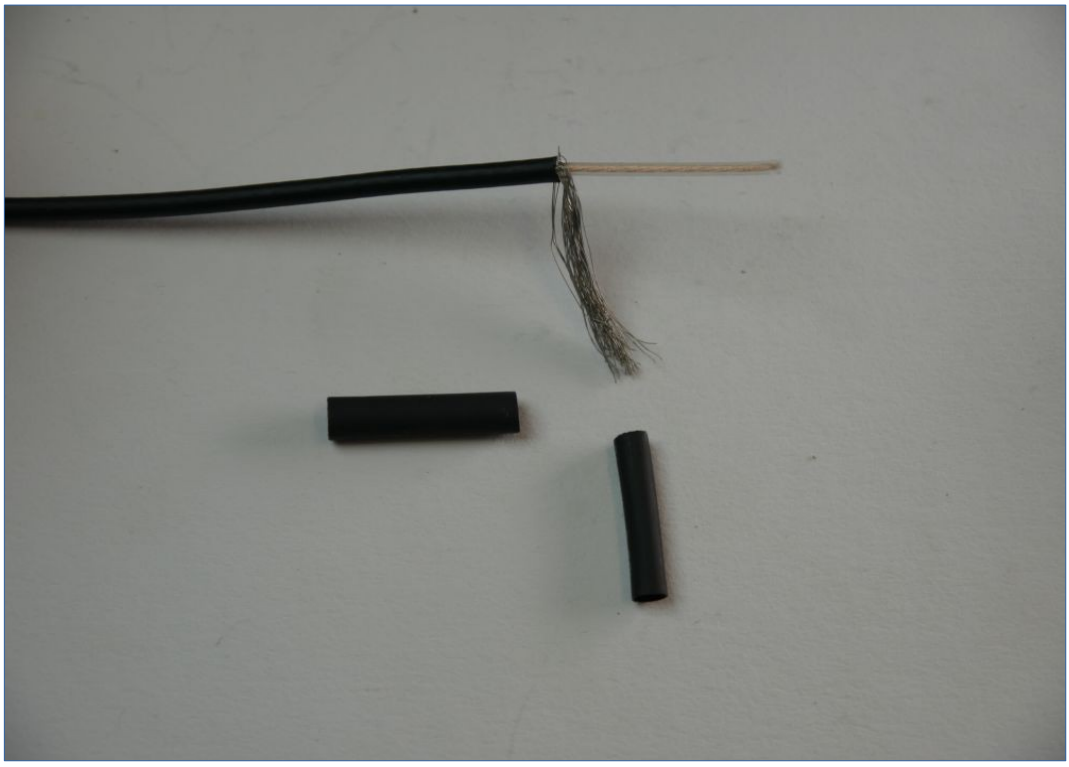

Thread the coax cable through the holes in the rings.



Solder the coax cable as shown in the picture - square HF signal and round ground (GND).

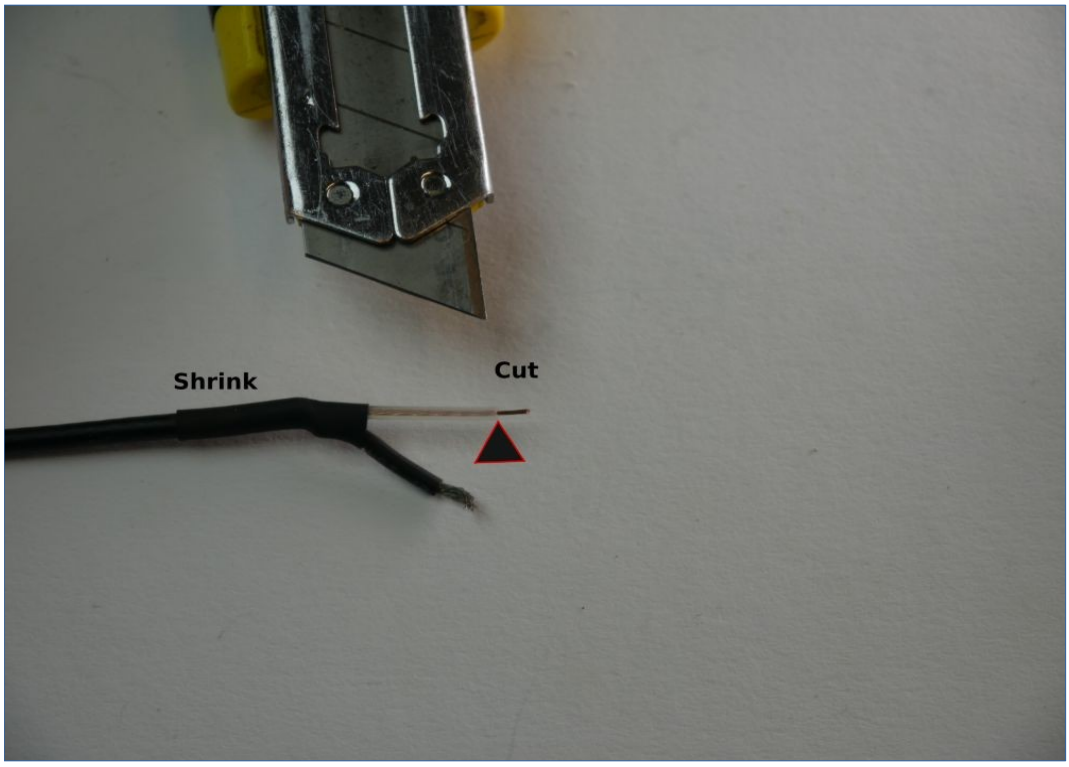



cut open the sheathing of the coax cable as shown in the picture (5cm).

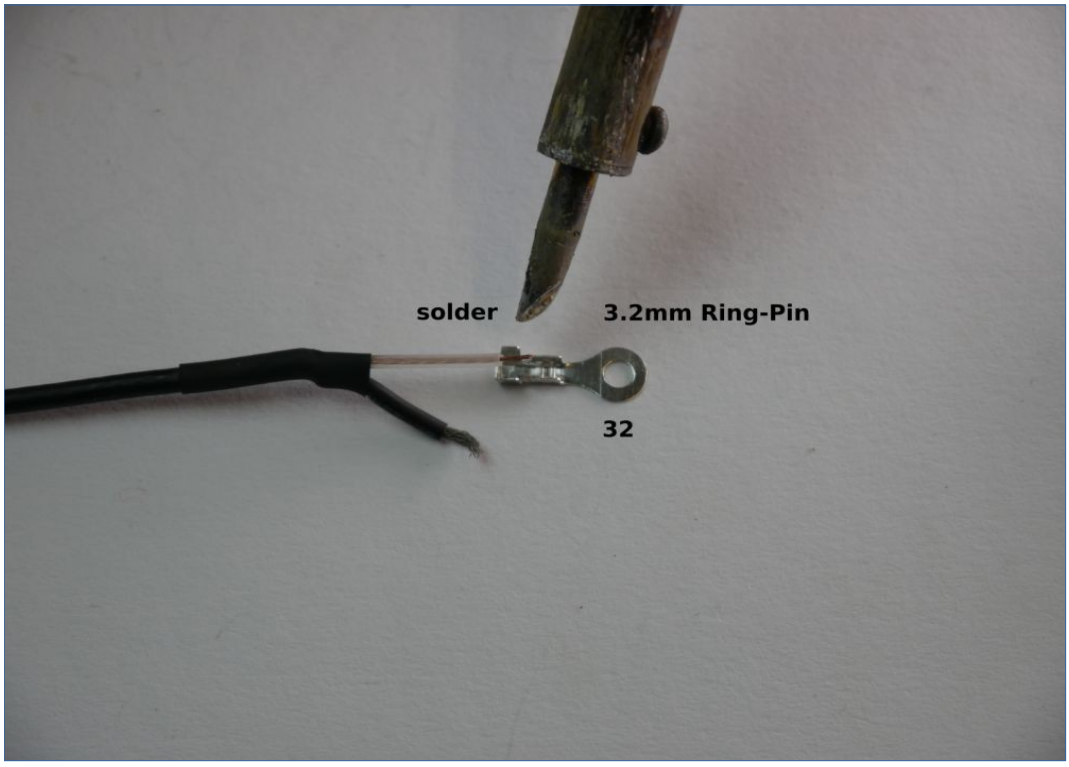


install the shrink tube and shrink it with hot air.

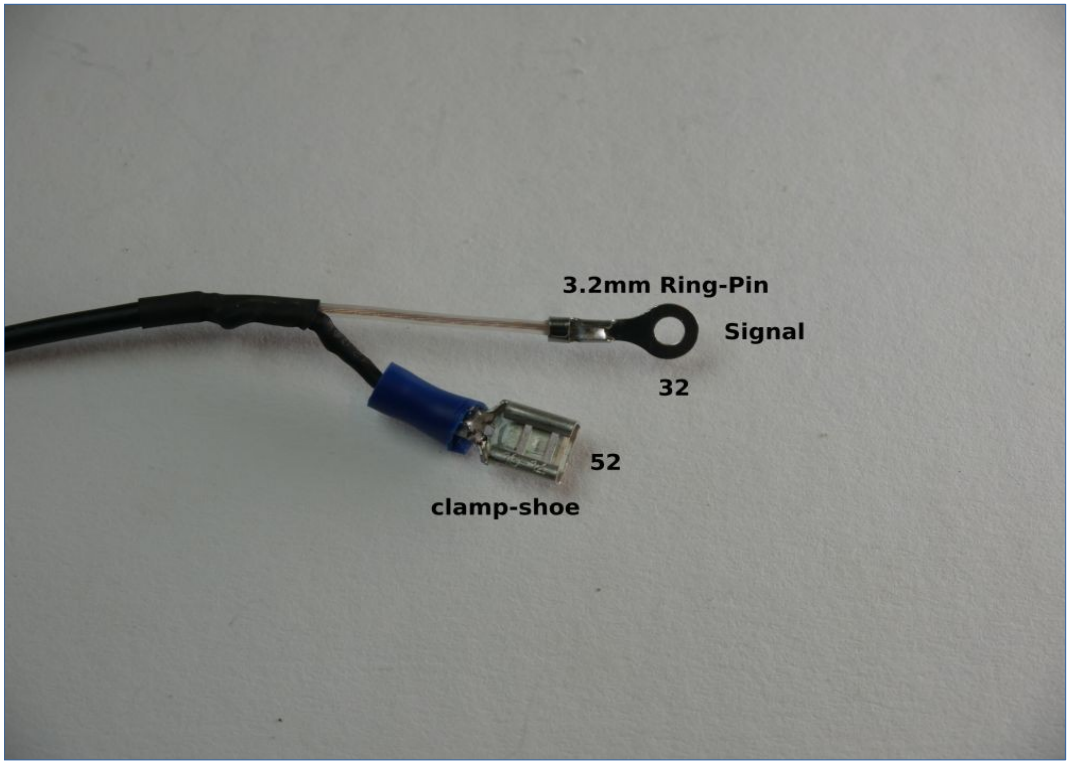

cut the inner part to approx. 5mm as shown in the picture



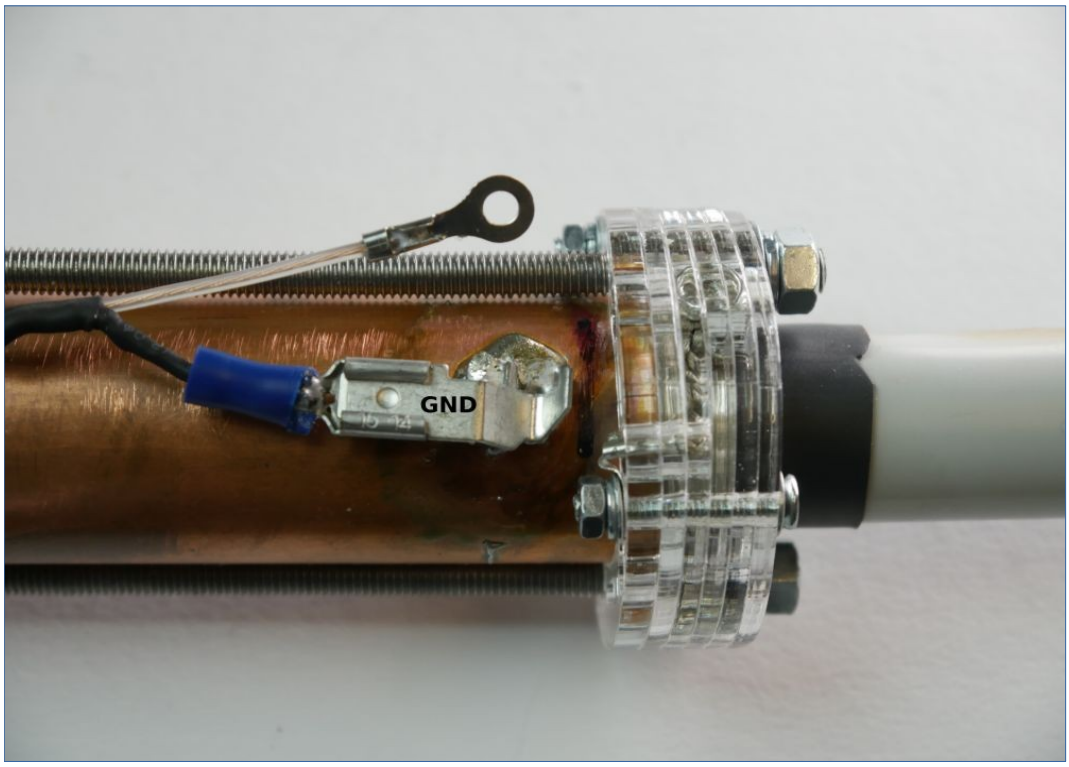
Solder part 32 to the inner cable.



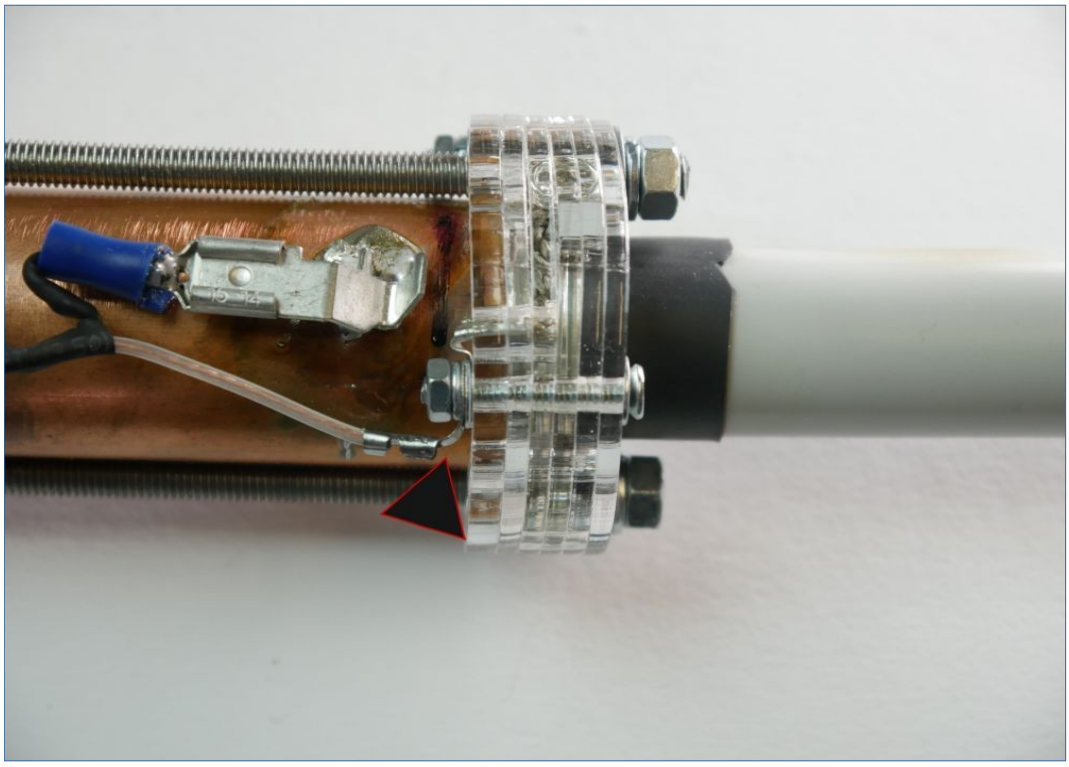

Solder or crimp the clamping shoe 101 to ground (GND).



connect the ground to the copper tube.




connect the HF cable to the ball holder so that the signal is transmitted. There is no DC here
You can retrofit insulation with a capacitor if it interferes with the control voltage
radiator is present.



Finish building the motor antenna

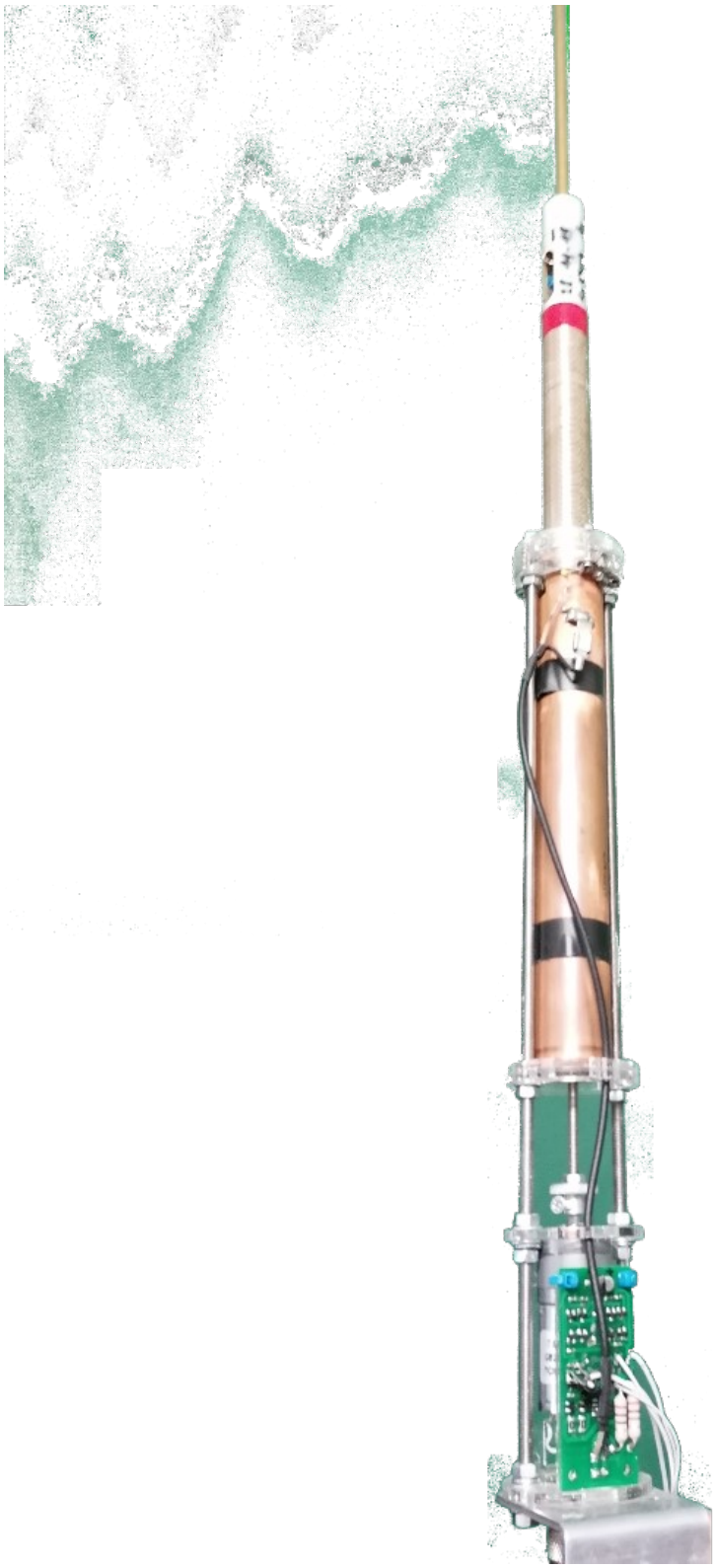
Many options are possible, e.g. you can extend the spotlight with a rod.

ATTENTION - the middle pin is for controlling the plus of the motor. Attention do not twist the polarity!

approx. +8V causes the motor to move downwards, the coil becomes shorter and the frequency in

approx. +11 volts, the motor moves up, the coil becomes longer and the frequency lower. - approx. 160mA

approx. +9V the motor is stopped and is in STOP mode - the voltage should be present as it represents the reference.

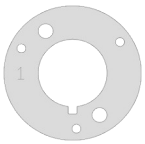
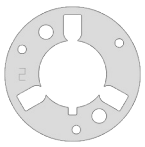
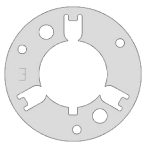
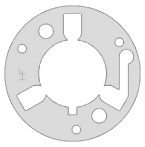
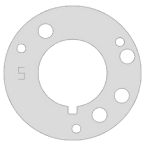
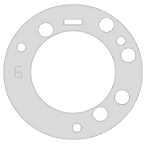
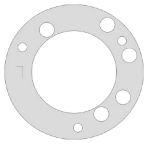
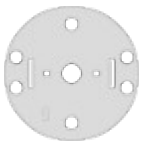
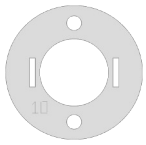


Electrical connection via the phantom power supply on the coil!
Injection of the phantom power into the coax cable

Operation – Fashion

| Volt(Volt) | | Up/Stop/Down direction | Current(mA) | |
|---|---|---|---|---|
| +13.8V | Center pin | Engine on | ~160mA | |
| +10.5V | Center pin | Engine on | ~160mA | |
| +9V | Center pin | Stop | ~3mA | For test |
| +8V | Center pin | Engine off | ~160mA | |
| 0V | GND shield coax | | | |

Option end switch
You can also install an end switch underneath that opens when pressed
You can read in the plan where to make the interruption for the end switch.
There is also a video in which everything is explained and I will also show the options
for everyone who wants to experiment. The motor antenna can be screwed to a window
if you don't have shortwave options like me - that's why the DIY kit was created!

| Number | | item | Type | thick | pcs |
|---|---|---|---|---|---|
| 1 |  | Item 1 | Ball holder ring top | 2mm | 1pcs |
| 2 |  | Item 2 | Ball holder ring upper | 2mm | 1pcs |
| 3 |  | Item 3 | Ball holder ring middle | 2mm | 1pcs |
| 4 |  | Item 4 | Ball holder ring wireout | 2mm | 1pcs |
| 5 |  | Item 5 | Ball holder ring bottom | 2mm | 1pcs |
| 6 |  | Item 6 | Copper Tube TOP | 3mm | 1pcs |
| 7 |  | Item 7 | Copper Tube Holder Bottom & Item 13 Ring Tube Bottom Hole=6mm, Dia=25mm | 3mm | 1pcs |
| 8 |  | Item 8 | Copper Tube Bottom & Item 14 Ring Nut Holder Tube (4mm Nut)=dia 7.9mm; Diameter 17.5mm | 3mm | 1pcs |
| 9 |  | Item 9 | Engine top | 3mm | 1pcs |
| 10 |  | Item 10 | Motor Bottom & Item15 17.5mm Hole 6mm | 3mm | 1pcs |
| 11 |  | Item 11 | Engine Side1 | 2mm | |

| | | | | |
|---|---|---|---|---|
| 12 |  | Item 12 | Engine Side2 | 2mm |
| 13 |  | Item 13 | ringinside item 7; 25mm; Get 6mm | 3mm |
| 14 |  | Item 14 | ringinside Item 8; M4 nut holder 17.5mm | 3mm |
| 15 |  | Item 15 | ringinside item 1017.5mm top; Get 6mm | 3mm |
| 16 |  | Item 16 | Emitter (radiator) top 5.8mm/17.5mm | 3mm |
| 17 |  | Item 17 | Emitter (radiator) middle 5.8mm/17.5mm | 3mm |
| 18 |  | Item 18 | Emitter (radiator) bottom 4.4mm/17.5mm | 3mm |
| 19 |  | Item 19 | Side part engine | 3mm |
| 20 |  | Item 20 | Side part engine | 3mm |
| 21 |  | Item 21 | Top inner stabilizer 17mm; Hole 4.2mm | 3mm |
| 22,23,24, 25,26,27, 28,29,30, 31,32,33 |  | Items 22-33 | Groove M5 DIN934 ISO4032 1g | 5mm |
| 34 |  | Item 34 | Ring pin 3.2mm | 3.2mm |
| 35 |  | Item 35 | Ring pin 3.2mm | 3.2mm |
| 36,37,38, 39,40,41, 42,43,44, 45 |  | Items 36-45 | Flat washer 5.4mm DIN125 | 5.2mm |
| 46,47,48, 49,50,51 |  | Items 46-51 | Spring ring 5mm DIN127 | 5.2mm |
| 52 |  | Item 52 | Clamp shoe | |
| 53 | | Item 53 | threaded rod 5mm | 36cm |
| 54 |  | Item 54 | threaded rod 5mm | 36cm |
| 55 | | Item 55 | threaded rod 4mm transport | 26cm |

| | | | | |
|---|---|---|---|---|
| 56 |  | Item 56 | Motor clutch 22/12mm | 4mm |
| 57 |  | Item 57 | Motor controller electronic | |
| 58 |  | Item 58 | Gear DC motor 6V 24.5mm | 69mm |
| 59.60 |  | Item 59.60 | Flat washer 3.2mm DIN125 | 3.2mm |
| 61,62,63 |  | Items 61,62,63 | Skrew Flat-Heat cross 3.0x10mm DIN965 | 3mm |
| 64 |  | Item 64 | Angle 90° | 2.5mm |
| 65,66,67 |  | Items 65,66,67 | Skrew Flat-Head Cross 3.0 x 20mm DIN965 | |
| 68,69,70 |  | Items 68,69,70 | Spring ring 3.2mm | |
| 71,72,73, 74,75,76 |  | Items 71,72,73,74,75,76 | Flat washer 3.2mm | |
| 77 |  | Item 77 | Couper tube 28mm/26mm inner 21.2cm long | |
| 78,79,80 |  | Items 78,79,80 | M4 groove 0.6g DIN934 | M4 |
| 82,83 |  | Items 82,83 | Flat washer 4.3mm DIN125 | 4.4mm |
| 86,87 |  | Items 86,87 | Spring ring 4mm DIN127 | 4.2mm |
| 90 |  | Item 90 | Coil Silver coated 0.6mm/28cm/20mm Dia | 28cm |
| 91 |  | Item 91 | UHF Connector Jack Female front mount bulkhead RF connector solder 15.8mm inner, 15.8mm outter | 15.9mm |
| 92,93,94 |  | Items 92,93,94 | M3 hex groove DIN934 | M3 |

| | | | | |
|---|---|---|---|---|
| 95,96,97 |  | Items 95,96,97 | Metal Ball 6mm 1pcs Brass & 2pcs Steel | 6mm |
| 98,99,100 |  | Item 98,99,100 | Spring 6mm | 6.5x10mm |
| 101 | | Item101 | SWR meter & motor controller | |

ection to the coil.

creases.