

ULTIMATE HARDWARE KIT

For Duplex Designs 3D Printed Snub Nose Version
PKD-19 Blade Runner Blaster



Contains all hardware and full electronics
for LED lighting.



Duplex Designs

IMAGINE - DESIGN - BUILD

Hardware – Assembly

General Notes

- Holes may need to be slightly enlarged to fit steel pins.
- All holes for M3, M4 and M5 screws may need to be drilled before tapping. Attempting to tap when the holes are too small may lead to fracturing of the resin parts.
Recommended drill hole sizes for tapping are as follows:

M3	2.5mm
M4	3.5mm
M5	4.4mm
- NOTE: Micro screws for attaching sight to side cover will not require tapping. Simply use a well-fitting screwdriver to drive screws into holes.

Compatibility With Anders Blade Runner Blaster

NOTE: The following parts may be used with an existing **Anders PKD-19 blaster** build to convert it into a snub nosed version. All other Duplex Designs blaster parts (Non snub) are dimensionally compatible with the Anders parts.

- BarrelSupportKnurled.stl
- Mag.stl
- MagHousing.stl
- OuterHandle.stl
- SlottedScrew.stl
- SnubBarrel.stl
- SnubBolt.stl
- UpperReceiver.stl
- GripLeftSmooth.stl / GripLeftKnurl.stl / GripLeftPattern.stl / GripLeftMedallion.stl / SteyrMedallion.stl
- GripRightSmooth.stl / GripRightKnurl.stl / GripRightPattern.stl / GripRightMedallion.stl / SteyrMedallion.stl

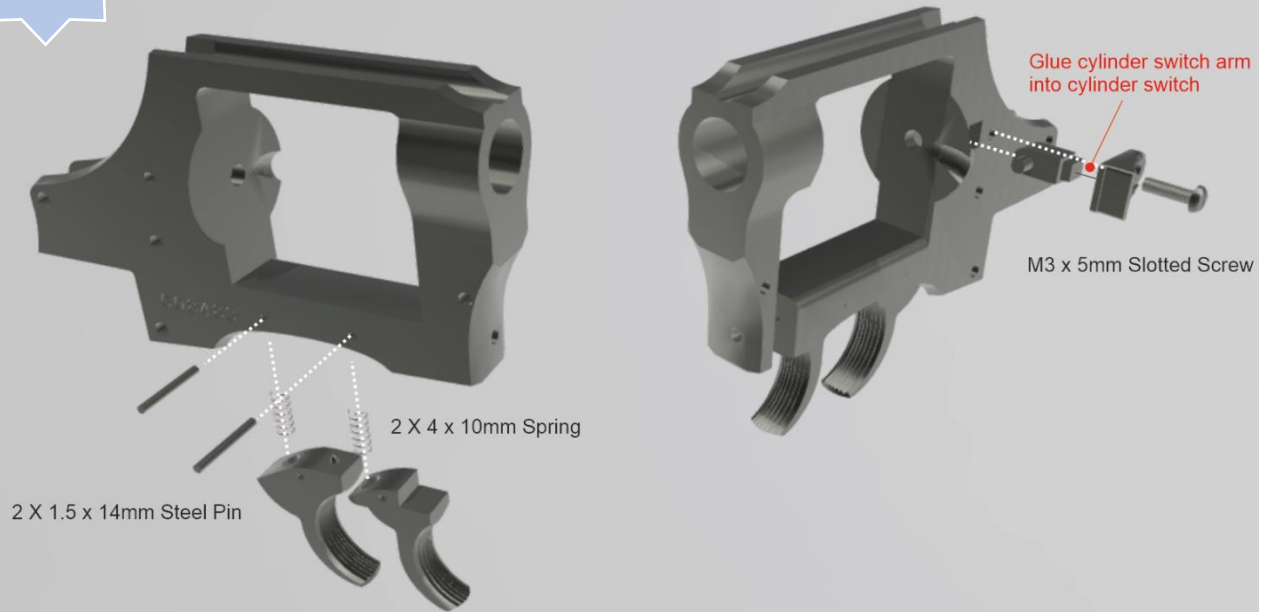
Grips

Grips may be printed using clear resin with the addition of orange ink dye to create the iconic amber translucent grips just like the full-size blaster. Or go with a solid resin but then you will not see the details of the hammer spring through the grips.

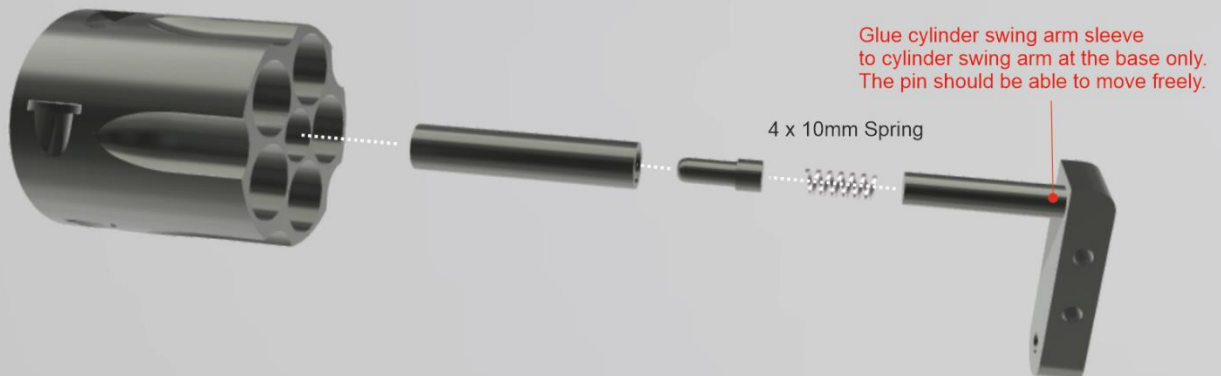
Serial Numbers

Yes, we know that the receiver and frame serial numbers and markings are the same as the actual full-size blaster. This is deliberate and a 'nod' to the original.

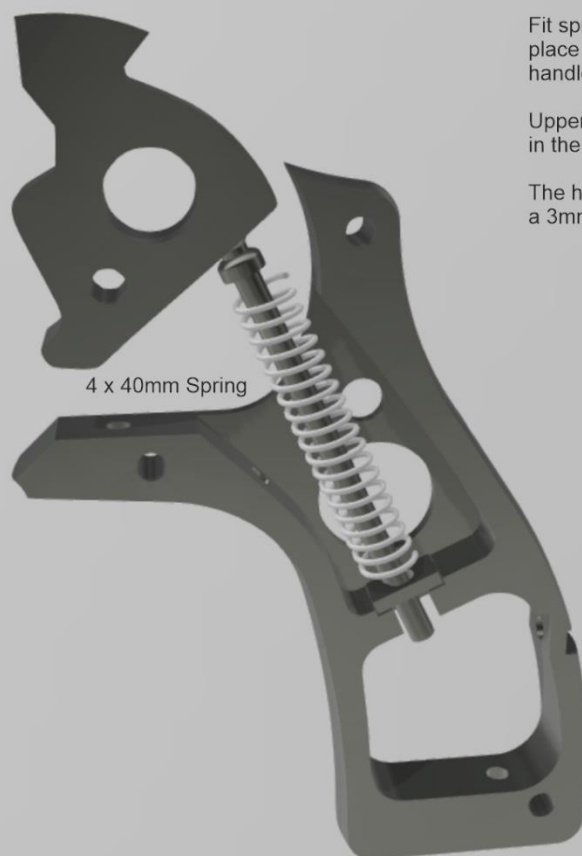
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3



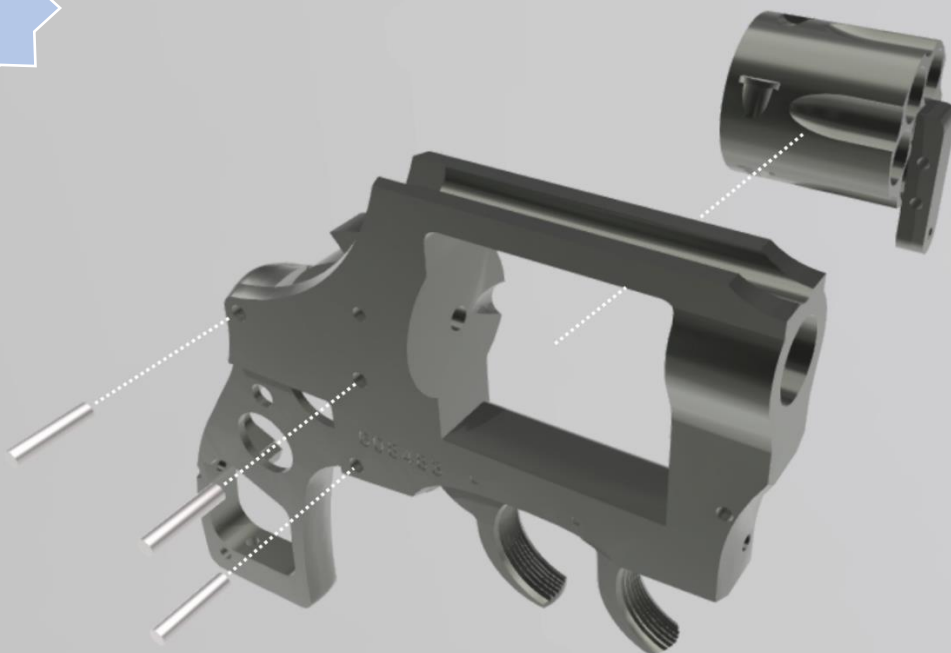
4 x 40mm Spring

Fit spring onto hammer spring guide, place spring guide through guide stop in handle.

Upper part of spring guide locates in recess in the bottom of the hammer.

The hammer locates in the receiver using a 3mm x 14mm steel pin.

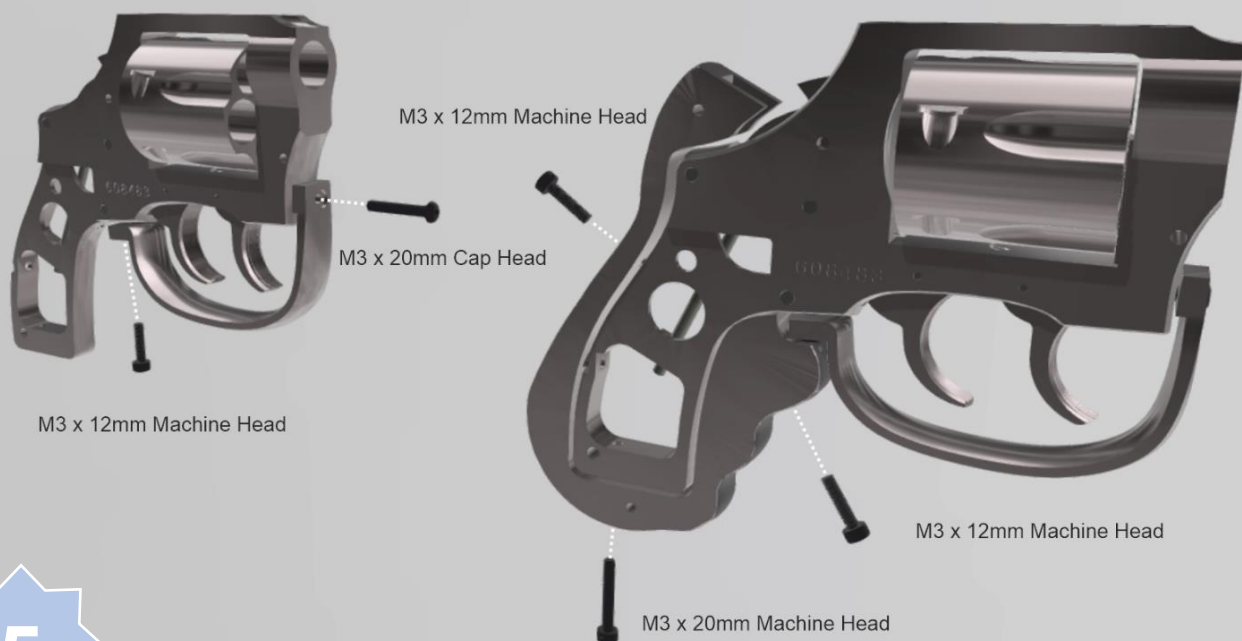
4



3 X 3 x 14mm Steel Pin

Note: If hammer is not fitted the centre pin is not required.

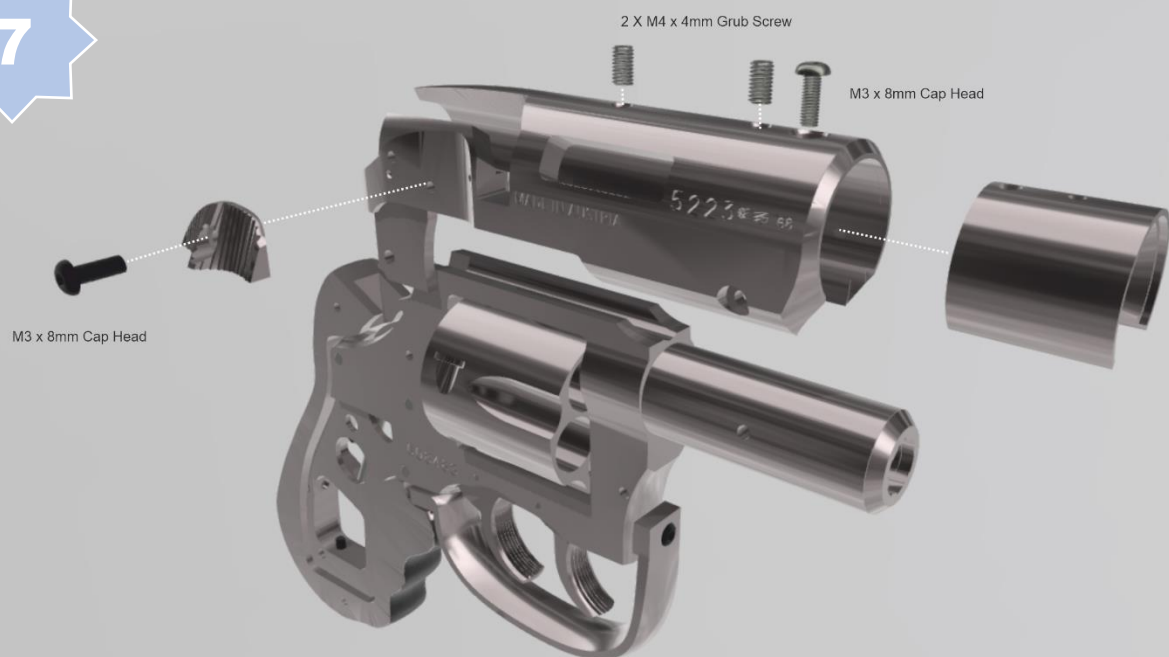
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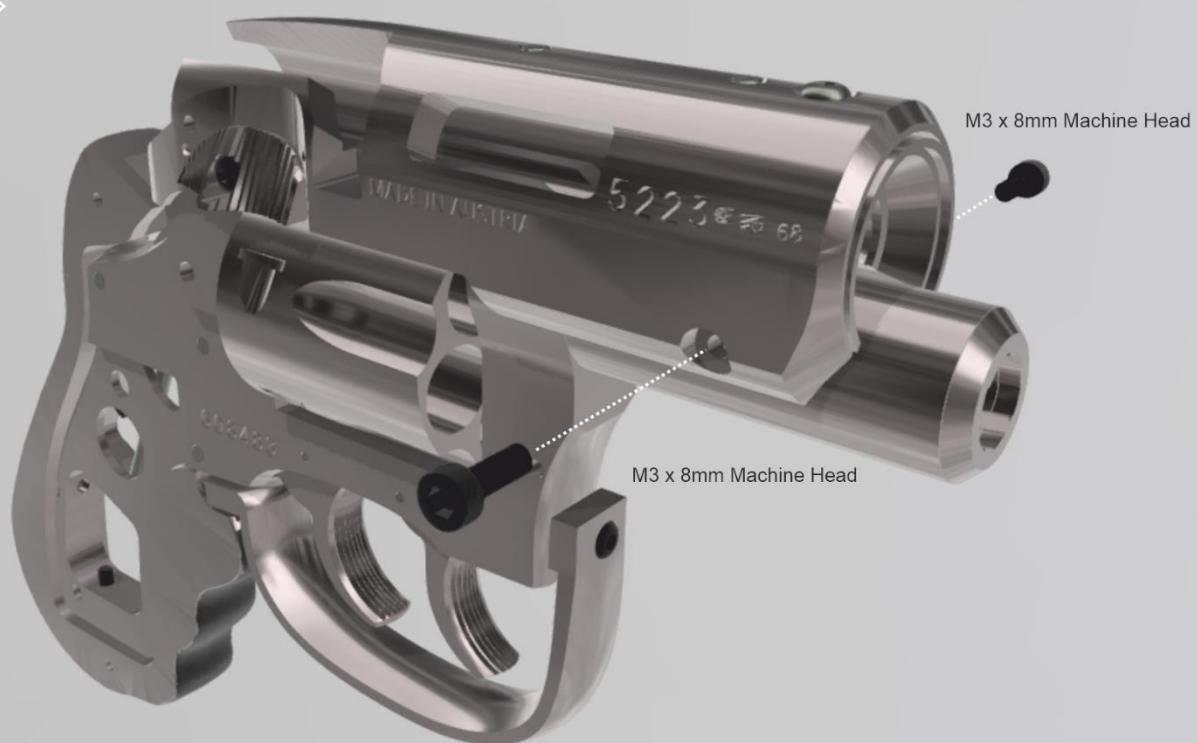
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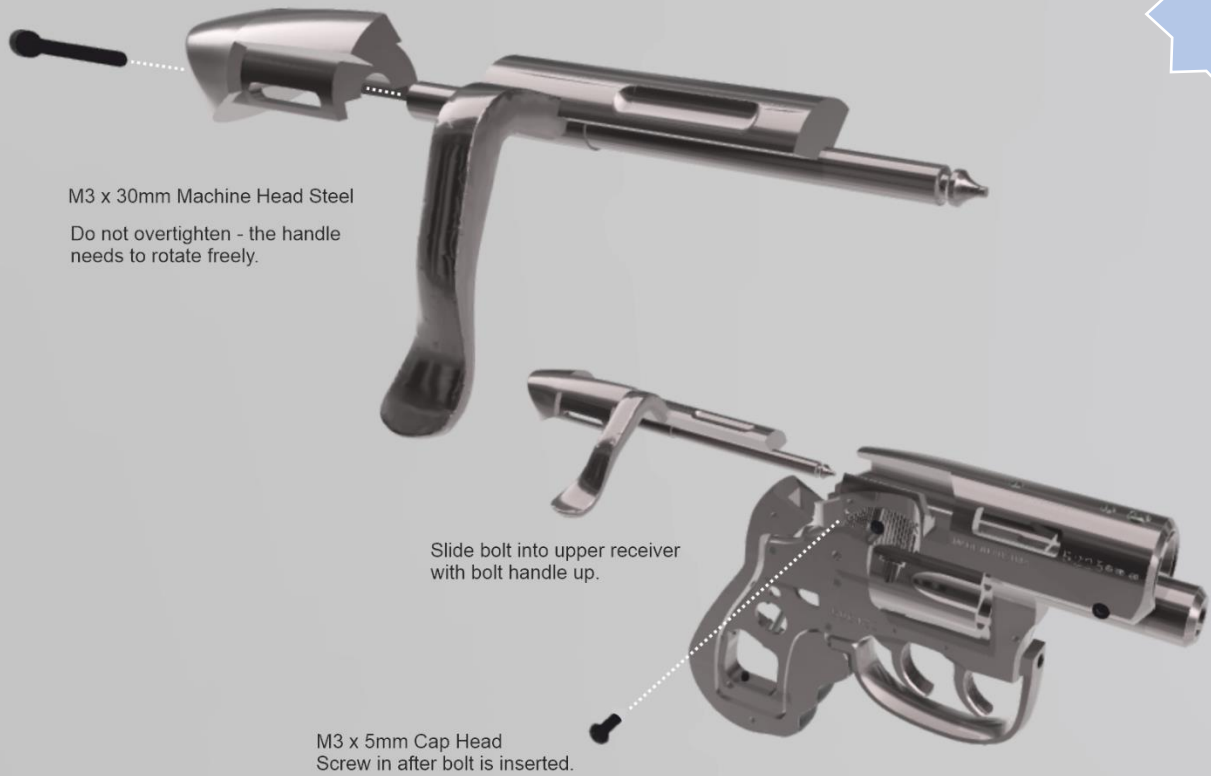
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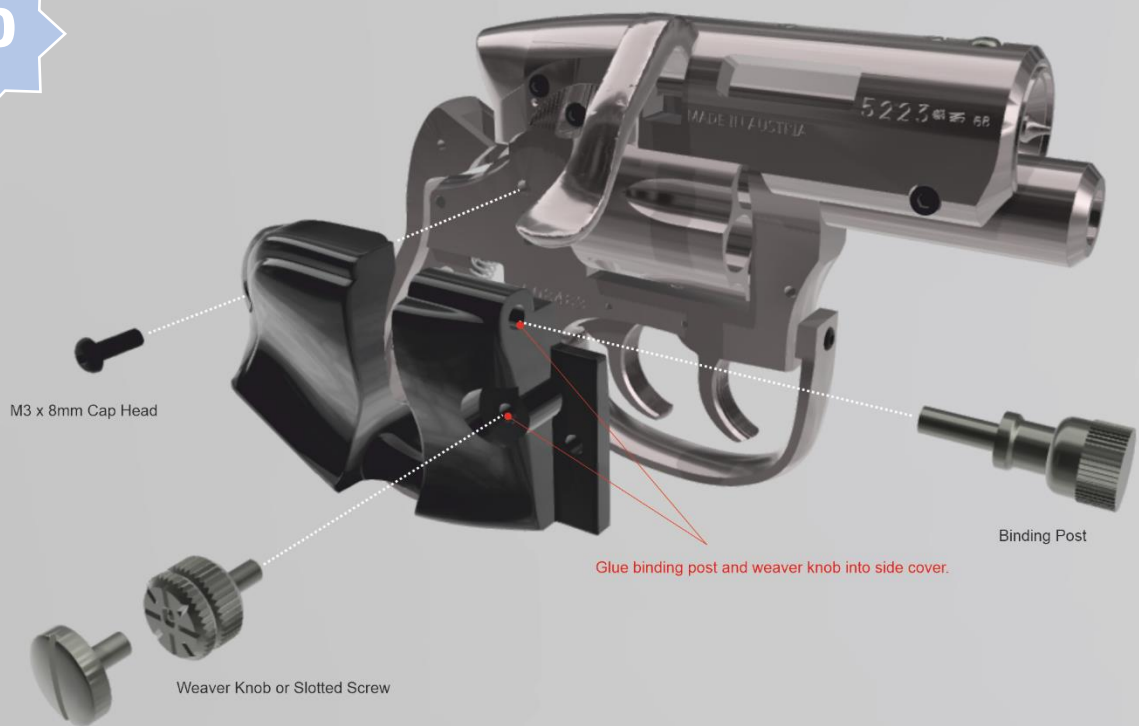
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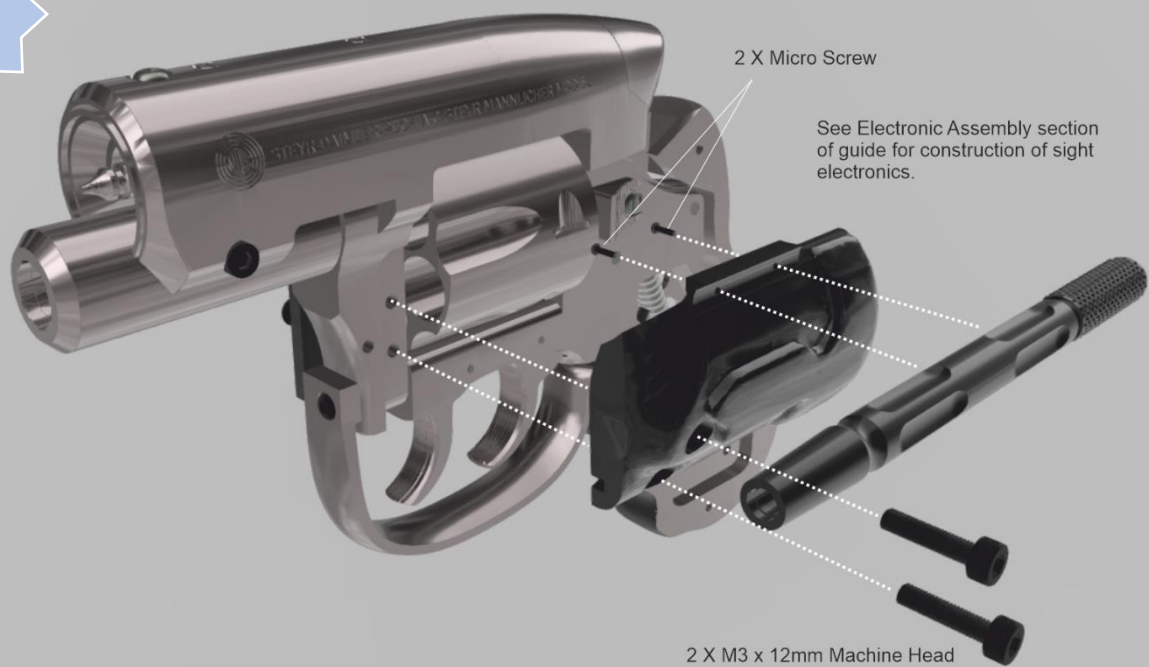
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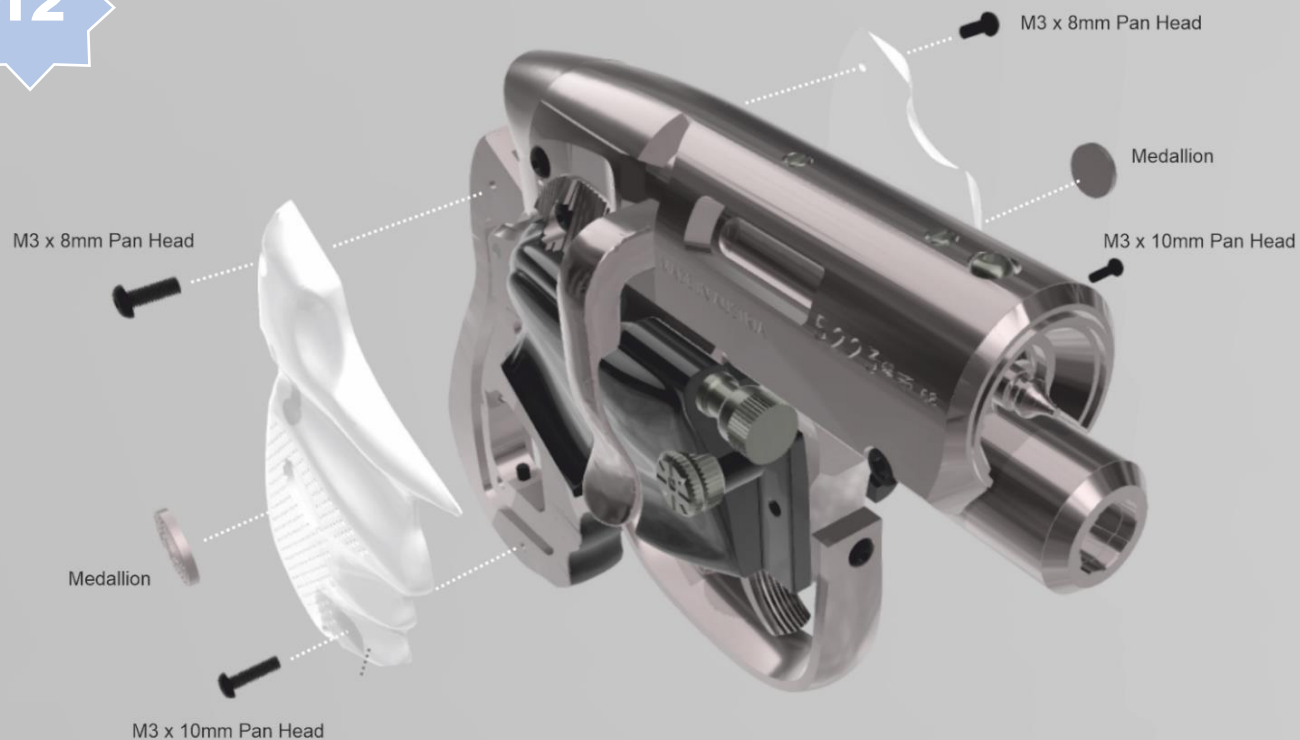
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12



13

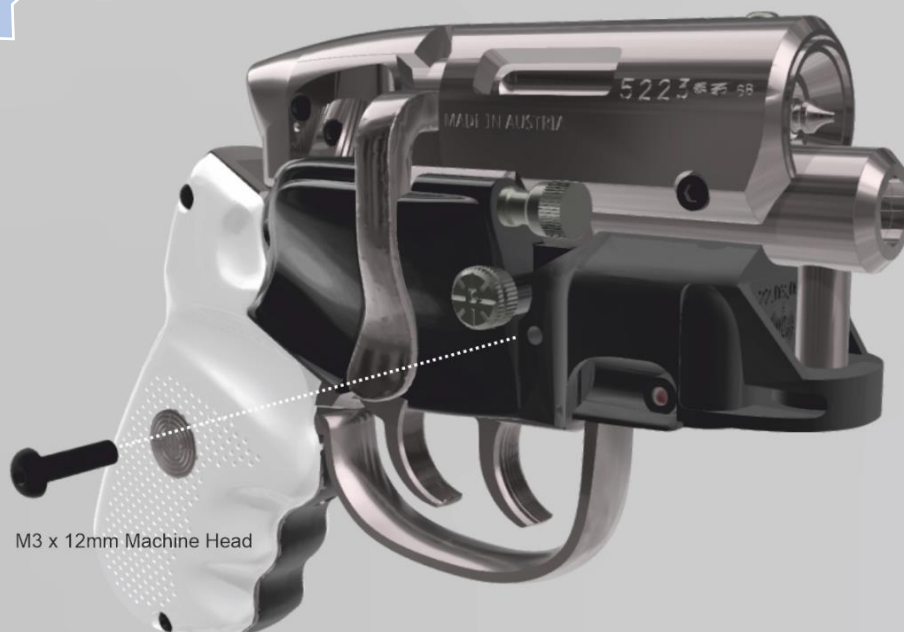


Alternative knurled barrel support may be fitted



See Electronic Assembly section of guide for construction of magazine electronics.

14



Electronics – Magazine Assembly

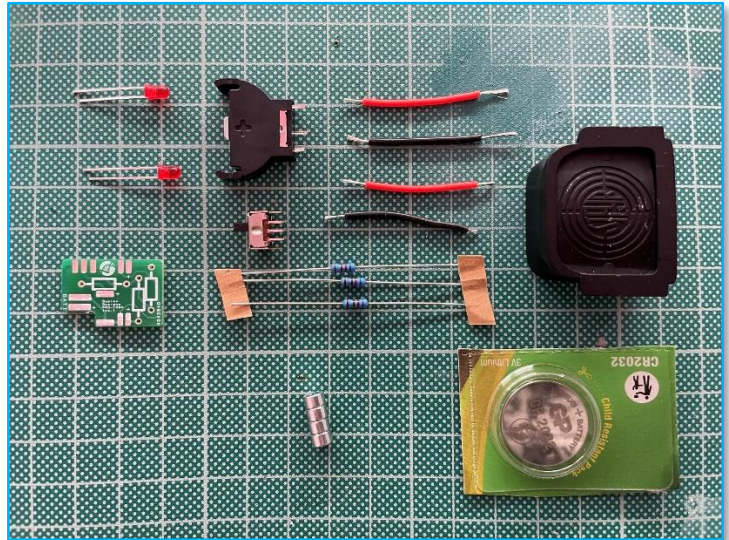
This hardware kit contains a PCB to enable you to construct a neat electronics assembly for your blaster.

Most available electronics kits leave you to solder all the components together with individual wires, but this kit gives a much neater and robust solution and also includes series resistors for the LEDs (Which most kits omit) and this ensures the LEDs are operating with the correct current and will make the battery last longer.

This part of the assembly guide deals with the electronics housed in the magazine.

First identify the positive and negative leads of the LEDs.

The longest leg is the positive. Because we are going to cut the legs short later it is a good idea to mark the LEDs with a sharpie or marker. In this example the negative (shortest) leads were simply coloured black with a marker.

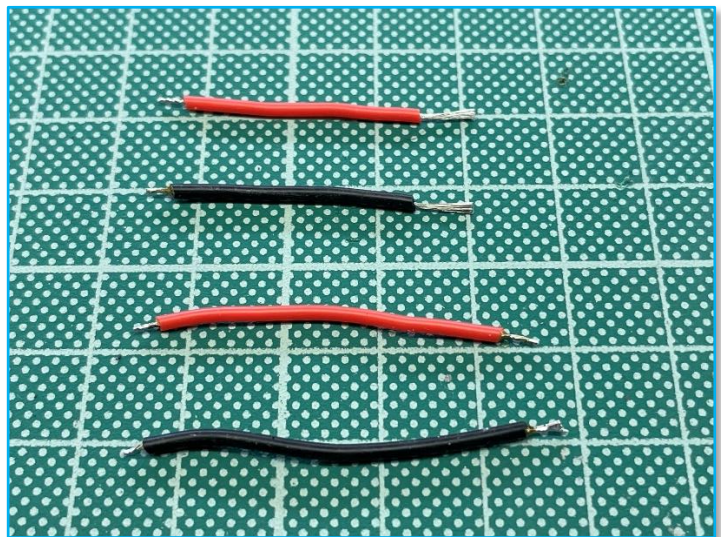


Next prepare the wires. The square markings on the cutting mat are 1cm so these can be used as a visual guide to the wire lengths.

Bend the two tinned copper wires (seen on the left) ready for fitting as links.

Notice that one each of the red and black wires have one end with much longer bared conductors.

Use the soldering iron to tin all the end of the red and black cables **except** for the two longer length exposed conductors.



Next fit the three resistors. These are fitted (unconventionally) on the track side of the PCB. Snip off extra leads from rear of PCB after soldering.

Fit the switch. It does not matter which way up, but it must be fitted close to the PCB and flat. It will be easier if you tin the three switch pins before soldering to the PCB.

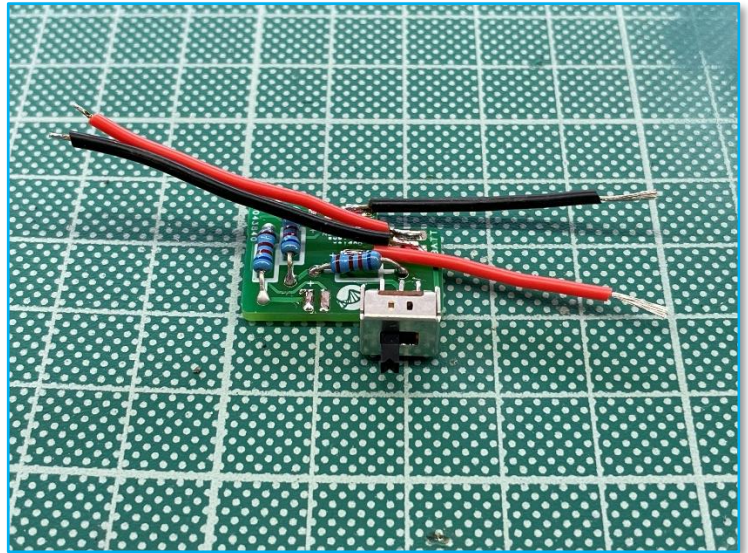
Make sure the switch is not crooked and is fitted nice and flat to the PCB.



Next attach the wires to the PCB.

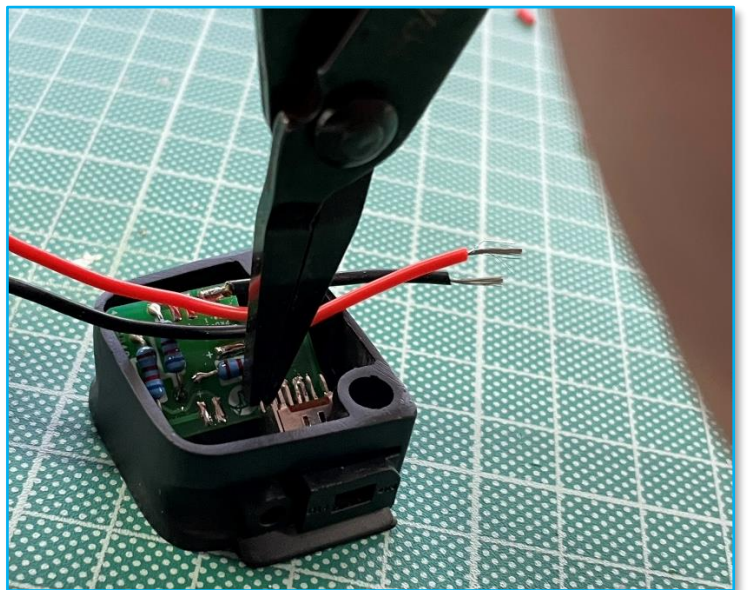
Ensure the correct polarity so the red wires attach to the pads marked with a '+'.
Note the direction that the wires are attached and that the wire ends with the untinned conductors are as shown in the photo.

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Now the PCB is slid into the magazine. This may take a little finessing, but it will go in.

Some flat pliers can be used to hold the metal tab on the side of the switch to make inserting the PCB easier.



Now bend the tabs of the battery holder as shown in the photo.

Ensure that the '+' embossed in the battery holder is uppermost.

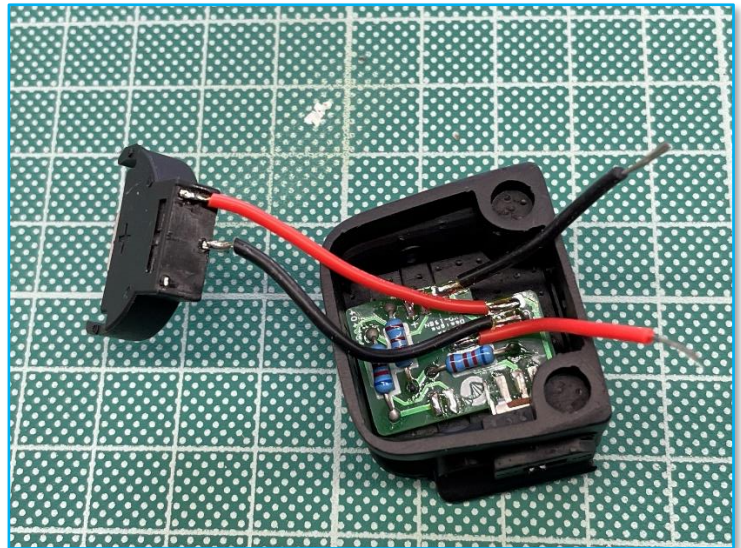
The unused pin can be snapped off.



At this point you can attach the battery holder to the wires with the tinned ends.

Make the connection as flat as possible to the bent pins so that the wires lead downwards from the battery holder.

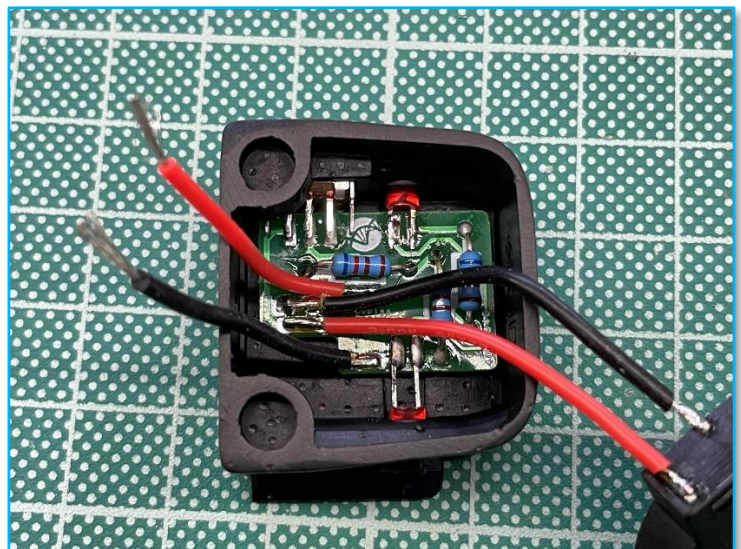
Tip: You could make the black wire shorter than the red.



Cut the two 3mm red LED leads to about 6mm and 10mm length. *This is when it is useful to have marked those negative leads!*

Fit each LED into its side hole ensuring that the correct polarity lead aligns with the correct polarity PCB pad. The positives are marked with a '+' sign on the PCB.

Solder these leads to the PCB pads.



Now it is time to test the LEDs.

Make sure the switch is set to the 'OFF' position. Fit the battery to the holder.

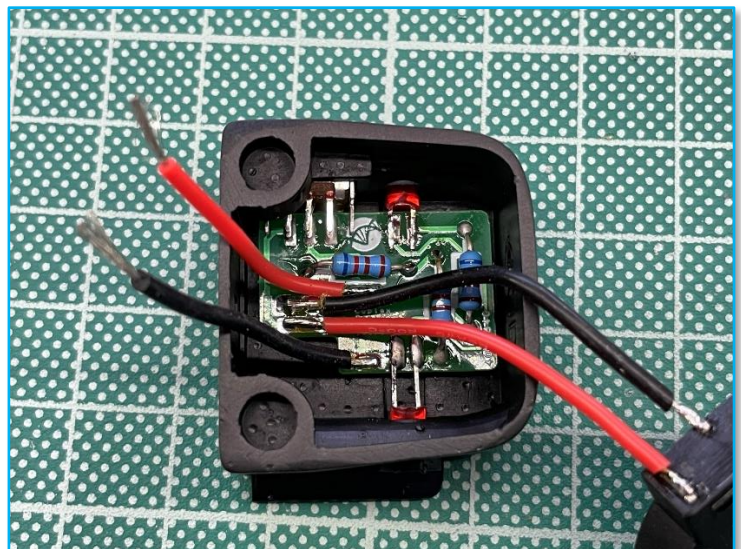
The large flat face of the CR2032 battery is positive and should match the side of the holder marked with the '+'.

Slide the switch to 'ON' and check both LEDs.

If any do not illuminate check solder connection and LED polarity.

Check for any unwanted short circuits on the PCB due to excessive solder and check that all resistor leads have been soldered.

Remove the battery before proceeding.



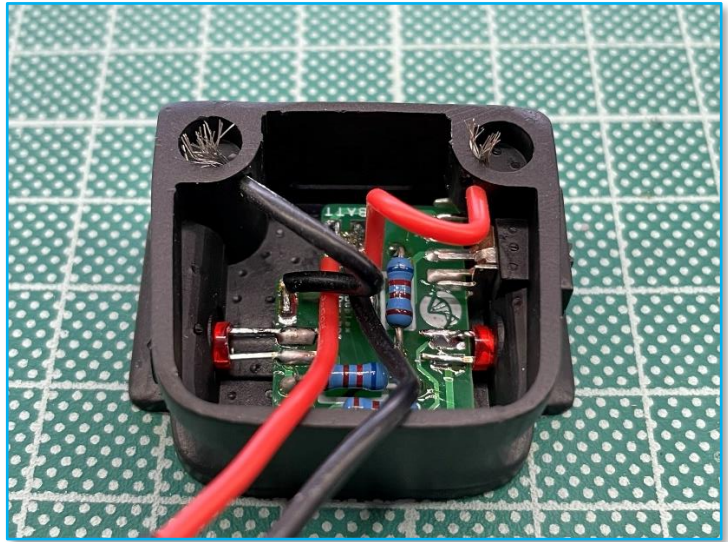
The next stage takes the power to the magnets to enable the sight LEDs to illuminate.

Take both wires and thread the longer, untinned conductors into the magnet holes as shown.

Splay them out a bit to make contact with the magnet when it is seated in its pocket.

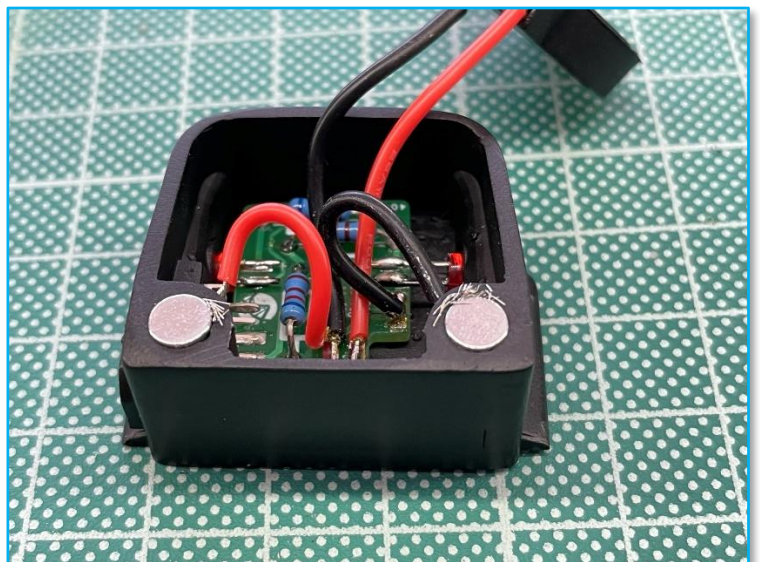
Push the wire into the hole so no conductors are present on the inside of the magazine.

Put a small amount of superglue in the bottom of the magnet pocket (or on the inside away from the wire conductors) and push the magnets into their pockets ensuring they are left a little proud of the magazine surface.



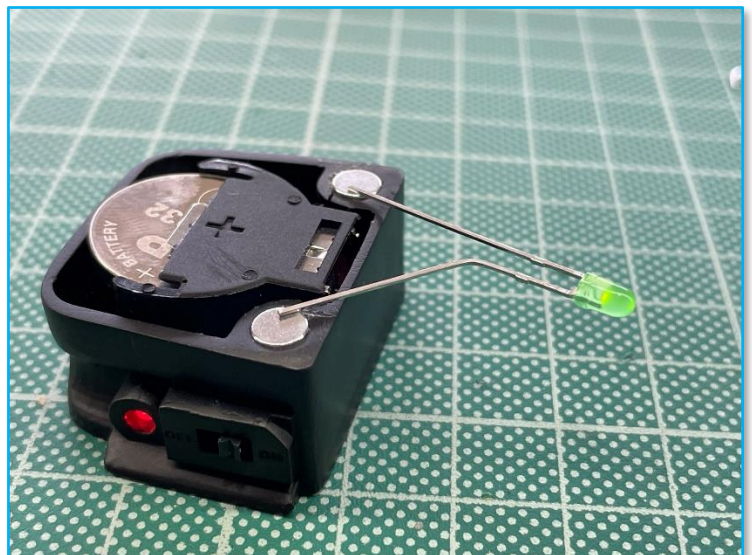
TIP: It is best to insert all magnets with the same polarity. Remember later when fitting magnets to the upper magazine housing to orient the correct polarity so they attract, not repel, those fitted to the magazine.

Once the magnets are stuck you can clean up any exposed conductors by cutting them with a craft knife.



Test the connections to the magnets by holding a green LED onto the magnets. Ensure that the switch is set to 'ON' and that the long LED lead goes on the magnet with the red wire.

If all is well the LED should illuminate.



Use the same technique, above, when connecting the white figure '8' wire to the upper magazine holder. This white wire will route up to the screwdriver/sight rod to power the green LEDs.

You can then position the battery holder.

Carefully bend the wires under the battery holder and seat into place so it is not proud of the top lip of the magazine.

This could be secured with a small piece of Blu-Tak but remember that you will need to be able to lift the holder again to change the battery.

This stage of the electronics is now complete!

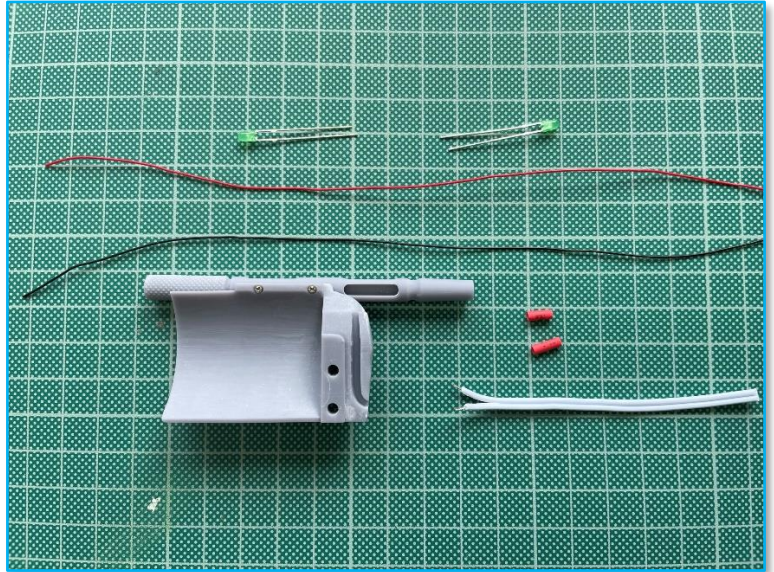


Electronics – Sight Assembly

This part of the assembly guide deals with the electronics housed in the sight rod.

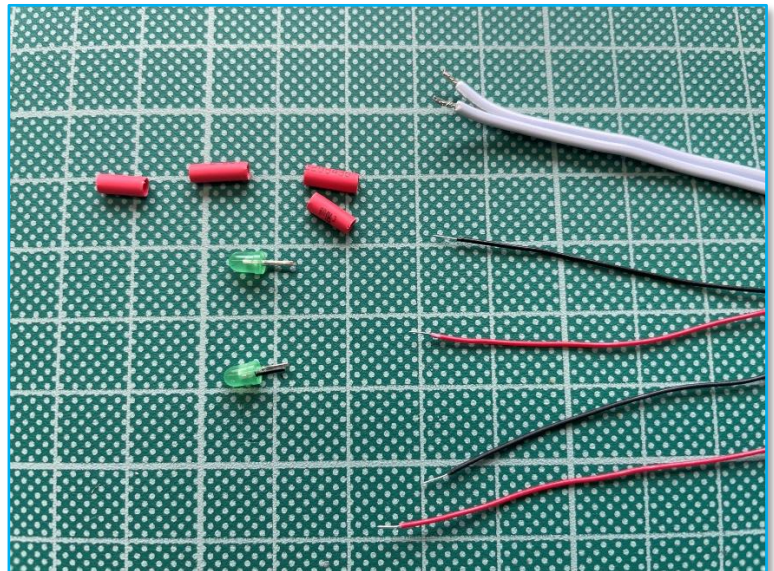
First identify the positive and negative leads of the LEDs.

The longest leg is the positive. Because we are going to cut the legs short later it is a good idea to mark the LEDs with a sharpie or marker. In this example the negative (shortest) leads were simply coloured black with a marker.

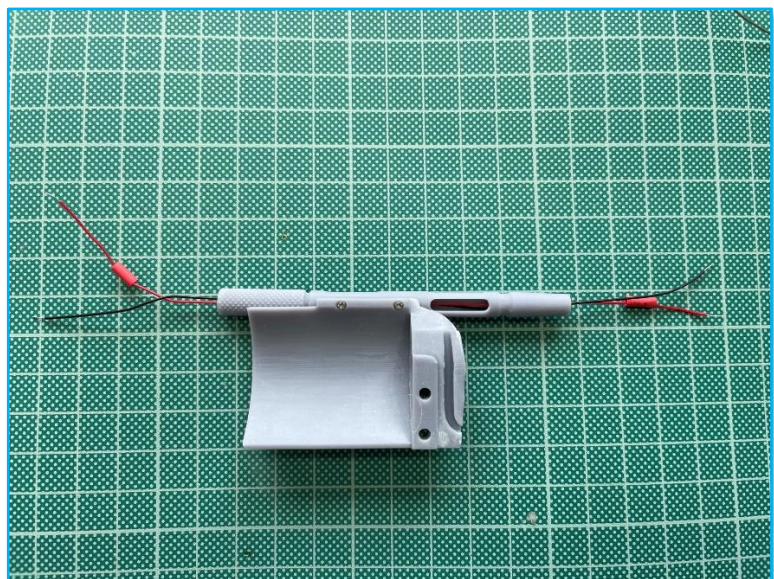


Strip and tin the ends of the wire, snip off the leads from the LEDs (Remember to mark the negative lead with a marker) leaving around 6-8mm.

Cut up 4 pieces of heat shrink tubing.

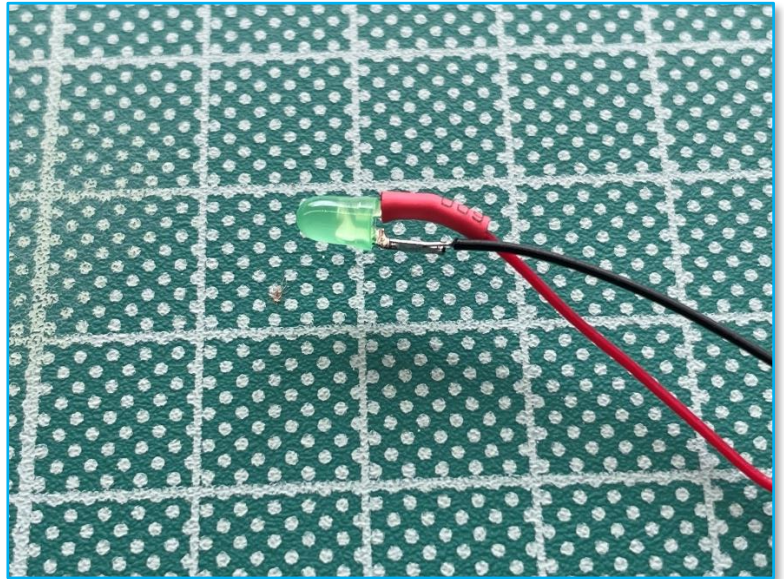


Thread the red and black wires through the sight tube and fit heat shrink tubing over the red wire at each end.



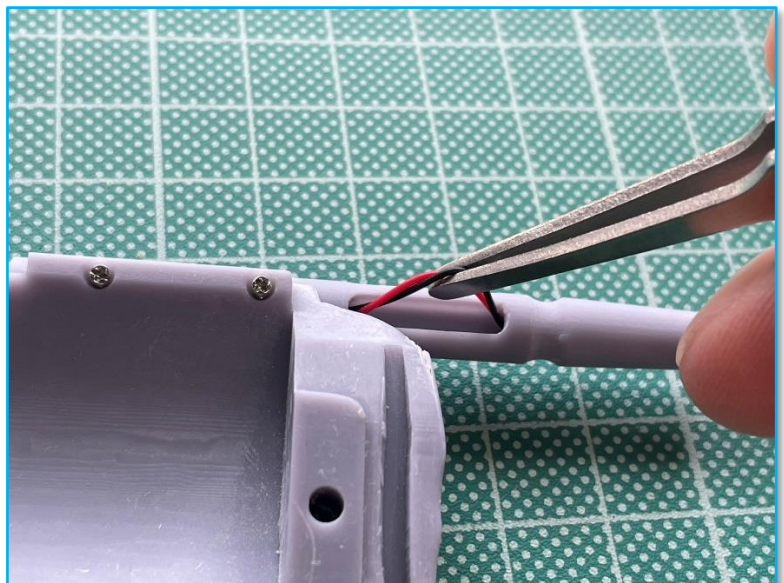
Next solder the wires to the LEDs taking care to get the polarity correct.

Slide the heat shrink tubing over the LED lead and shrink it with a hot hair dryer or heat gun.



Slide the LEDs into the ends of the sight. Note that there is a correct orientation as the sight has a wider part to accommodate the LED leads.

Use a pair of tweezers to grab the wires and pull them out through the access slot.



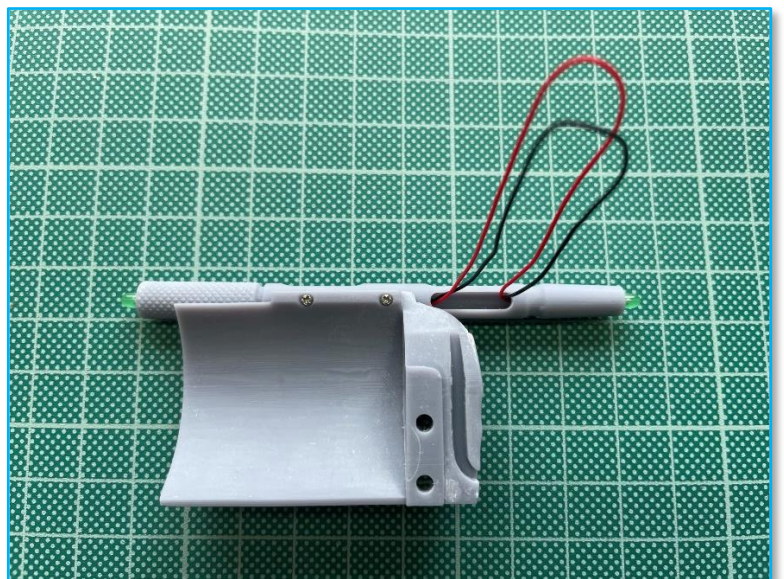
Now comes the tricky part.

Snip these wires and strip the ends being careful not to pull the wires off the LEDs. Twist together both reds and twist together both blacks.

(Alternatively, the wires to each LED could be cut and stripped prior to inserting into the tube but you will need tweezers to pull them out through the slot.)

Place heat shrink tubing over the ends of the white wires and solder the white wires to the red and black pairs.

One side of the figure '8' white cable has dark printing on, and this can be used to identify the negative when you connect the other end to the magnets in the magazine housing.



After soldering, slide up the heat shrink tubing over the connections and shrink with hair dryer or heat gun.

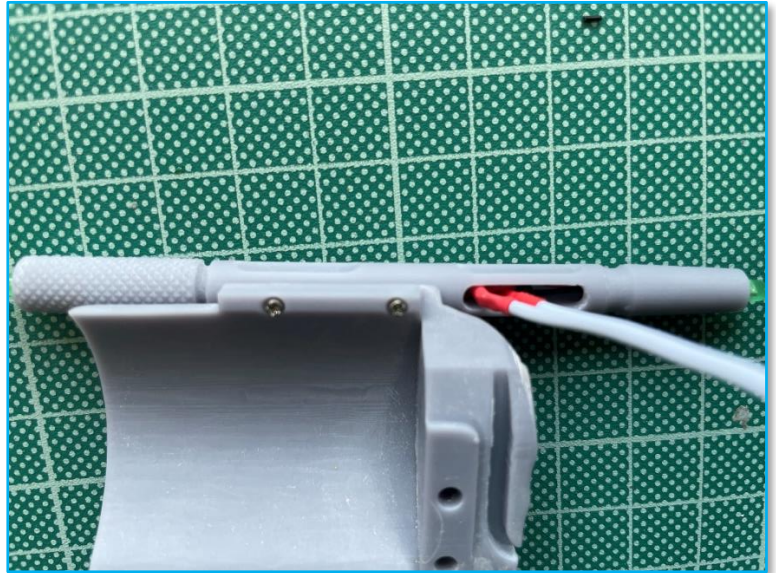
Be careful not to overheat and warp the resin model.

Once that is done you can seat the wiring carefully inside the sight tube.

At this point the wiring can be tested by connecting the other end of the white cable to the power carrying magnets on the magazine.

If any do not illuminate check solder connections and LED polarity and connection to magnets is also correct polarity. Check for any unwanted short circuits in the wiring.

If the magnets carrying the power supply do not touch each other when the magazine is mated with the magazine housing, try building up the height of the problem magnet with a small shim of metal or wire.



Once you are happy everything is working the wires can be glued into the sight tube.

A good method is using UV resin dropped in around the wires.

The cylinder cover has a groove for the white wire if you decide to hide the wire inside the cover (As real prop was provided pre-production).

Alternatively, route the wire on the outside of the cover (As seen on screen in movie).



Parts List

2	Micro Screws
1	M3 x 5mm Slot Pan Head
1	M3 x 5mm Cap Head
5	M3 x 8mm Cap Head
2	M3 x 10mm Cap Head
1	M3 x 12mm Cap Head
1	M3 x 20mm Cap Head
2	M3 x 8mm Machine Head
5	M3 x 12mm Machine Head
1	M3 x 20mm Machine Head
1	M3 x 30mm Machine Head
1	M5 x 25mm Machine Head
2	M3 x 4mm Grub Screw Slot Head
2	M4 x 4mm Grub Screw Slot Head
3	3mmØ x 14mm Steel Pin
2	1.5mmØ x 14mm Steel Pin
4	5mm x 3mm Neodymium Magnets
2	3mm Red LED
2	3mm Green LED
3	160R Leaded Resistors
1	CR2032 Battery Holder
1	DPDT Slide Switch
1	CR2032 Battery
3	4mmØ x 10mm Spring (Triggers & cylinder)
1	6mmØ x 40mm Spring (Hammer)
1	White Figure '8' 2 Core Wire
1	Red Flexible 26AWG Wire
1	Black Flexible 26AWG Wire
1	Red Single Core 30AWG Wire
1	Black Single Core 30AWG Wire
1	Heat Shrink Tubing



<https://duplexdesigns.co.uk>

support@duplexdesigns.co.uk

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