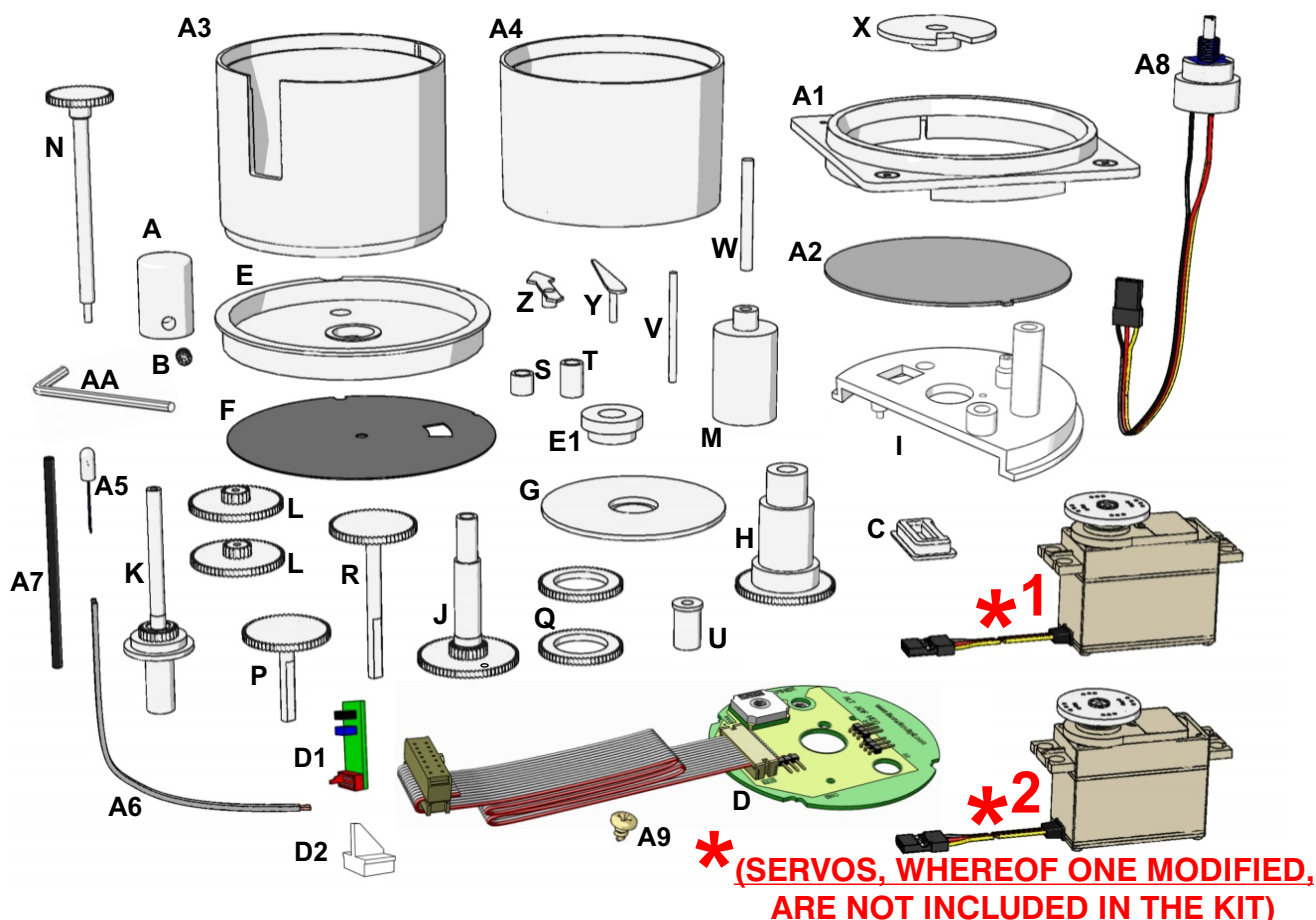


CONSTRUCTION MANUAL

ALTIMETER (Auto Zero Version)

Read this manual carefully
before starting construction



Construction kit "Altimeter"

Your kit contains all the necessary components (except for servomotors) for building an "Altimeter".

Fine-tuning

The calibration software allows you to accurately adjust the instrument (once connected to the Central Control Unit) to the movement of the needle of the chosen instrument.

Difficulty level

This product can be constructed without technical expertise. Knowledge of electronics soldering is required. Care and accuracy are of utmost importance.

What else do you need?

A normal and a modified servomotor, types HS300, HS311 or equivalent, are required to make the instrument fully functional (for modifying a servomotor, see the separate manual). This product can be ordered separately through the SimKits webshop or bought from any retailer of model kits. Additionally you will need some simple tools, such as a small star-shaped screwdriver, a hobby knife, some pliers, a small hammer, a 1/16" (4 mm) drill, a 0.26" (6.5 mm) drill, a soldering iron (suitable for fine electronics), tin solder, insulating adhesive tape, superglue and glue suitable for plastic model kits.

General hints

Be very careful when using the hobby knife! You can easily hurt yourself when handling

sharp objects! Take good care of the amount of glue you apply and to which areas you apply it. Glue for plastics is essentially a solvent. Excessive use can damage the exterior of the instrument.

Preparations before beginning construction
Check if all components are included. During packing, the contents of the construction kit have been inspected several times. Nothing should be missing.
Use the hobby knife to remove any irregularities. Be careful when using the sharp hobby knife!

Remark

The Auto Zero Version has an improved reset function. While the previous version had 4 Piher position sensors - to sense the position of the pointers - the Auto Zero Version has 3 Piher sensors and additionally a Photo Interrupter to set the Altimeter to an exact zero position at start up. (The previous version needed sometimes manual adjustment for a difference of 1000 feet at start up time). The Photo Interrupter is mounted on PCB D1.

It is strongly recommended to assemble the Altimeter first without using any glue and use the calibration for testing. When everything works fine, you can use glue for final assembly.

Warranty

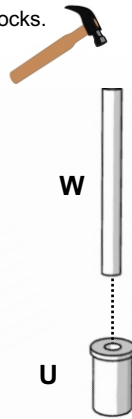
Construction kits come without a warranty!

List of components

A - Metal knob
AA - Inbus key

B - Bolt (inbus)
C - Strain relief
D - Printed Circuit Board
D1 - Printed Circuit Board small
D2 - PCB Support
E - Lower faceplate
E1 - Bearing
F - Faceplate
G - Pressure scale
H - Outer shaft
I - Plate
J - Central shaft
K - Inner shaft
L - Double gearwheel (2 x)
M - Upper cap rotary encoder
N - Propeller shaft
P - Gearwheel with shaft, short
Q - Hollow gearwheel (2 x)
R - Gearwheel with shaft, long
S - Fastening cap
T - Extended Fastening cap
U - Bush rotary encoder
V - Gearwheel shaft
W - Shaft
X - Indicator 10,000 foot
Z - Indicator 1,000 foot
Y - Indicator 100 foot
A1 - Front ring
A2 - Front optical
A3 - Upper casing
A4 - Lower casing
A5 - Light
A6 - 2-Wire cable
A7 - Heat shrink sleeve
A8* - Rotary encoder assembly
A9 - Self-tapping screw for mounting PCB

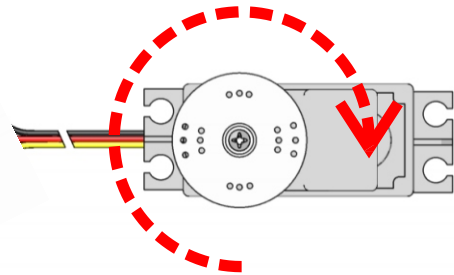
Carefully tap shaft W into cap U until it blocks.



1

Normal SERVO

Twist the servo clockwise by hand until it blocks.

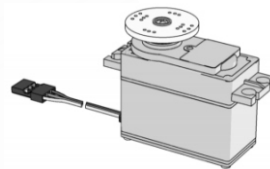


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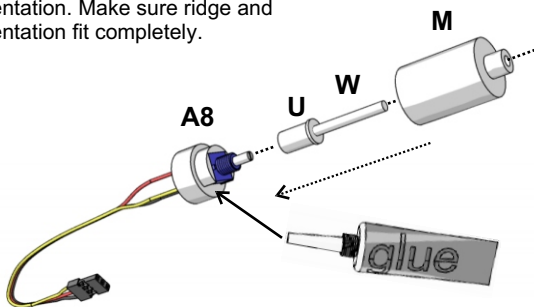
2

-Normal SERVO
-Modified SERVO
Remove disc and screw.
These parts are no longer required.

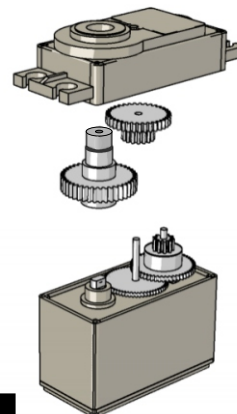


6

Place component W/U as assembled in drawing 1 onto the rotary encoder shaft. There is a small indentation in the rotary encoder shaft. The opening of component U contains a small ridge, which fits exactly into this indentation. Make sure ridge and indentation fit completely.



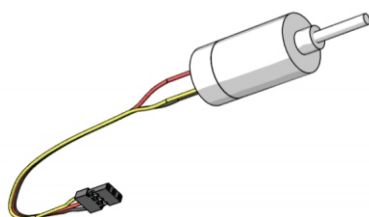
3



Modify an HS300 or HS311 servo, or order a modified servo through the SimKits webshop. See separate manual for instructions on modifying a servo.

7

Connect component M to component A8, making sure no glue comes into contact with the rotary encoder, with the rotary encoder shaft or with component W/U.



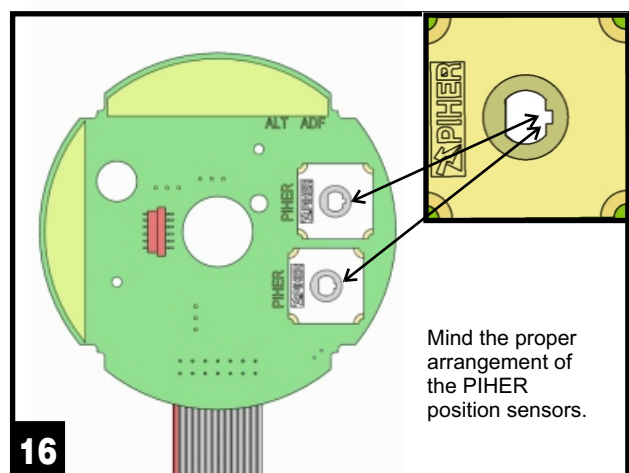
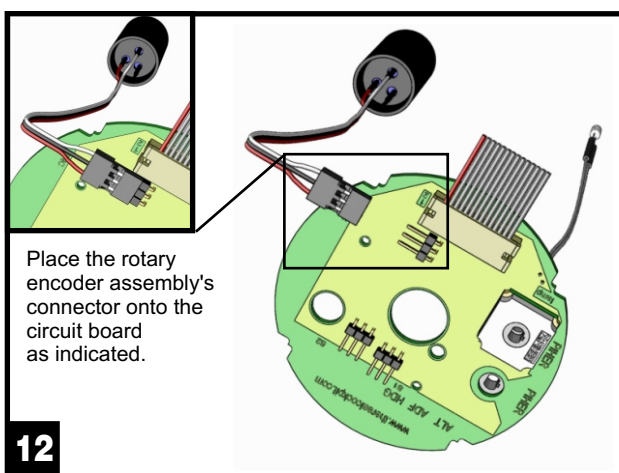
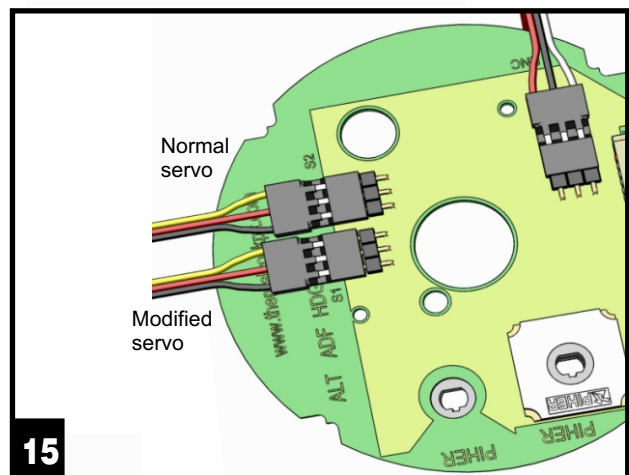
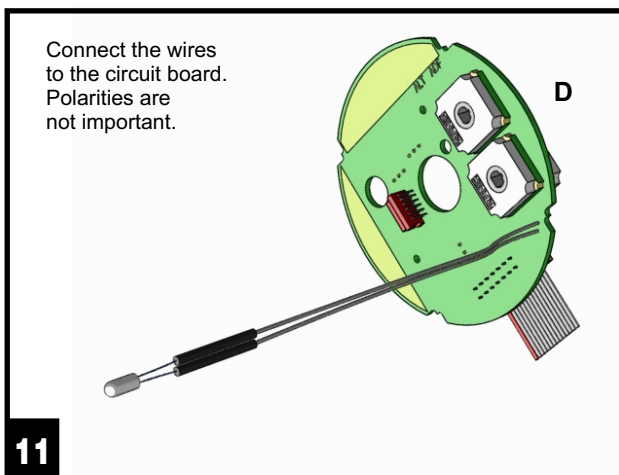
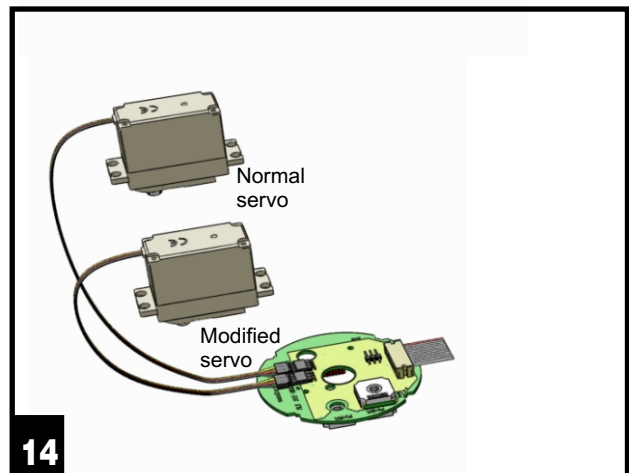
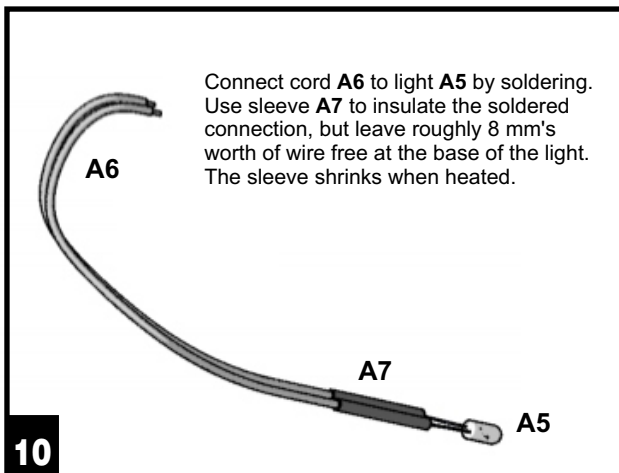
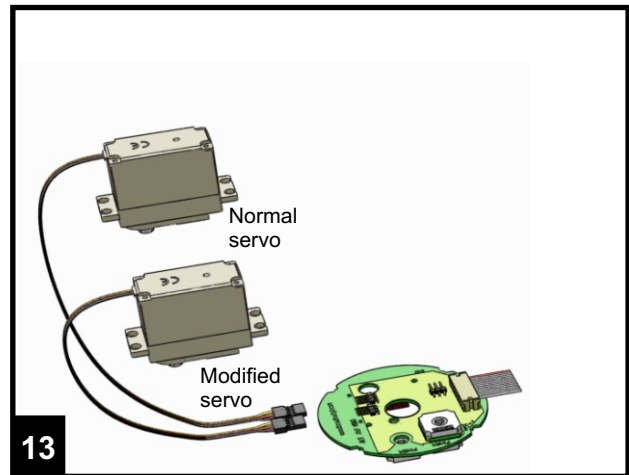
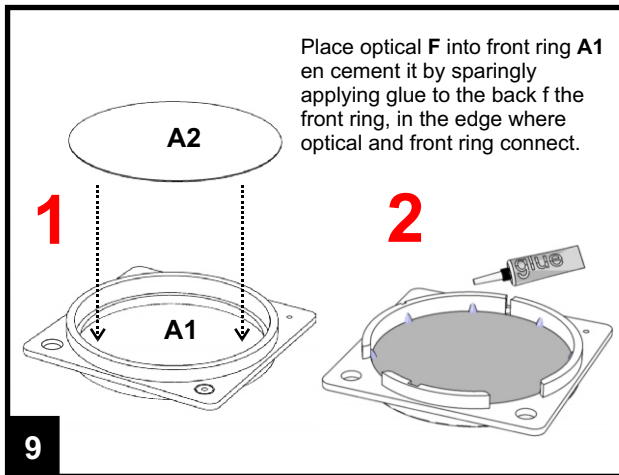
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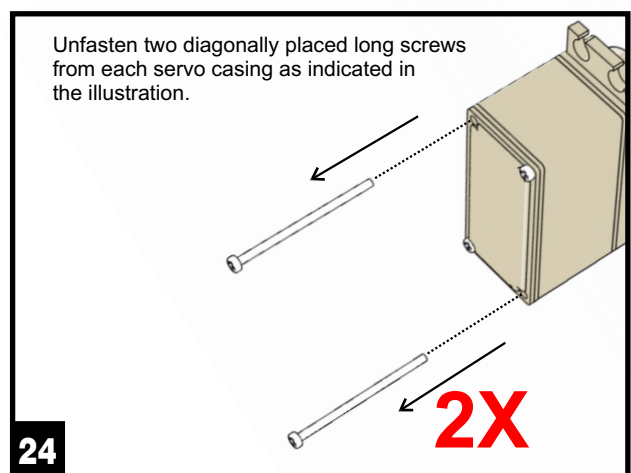
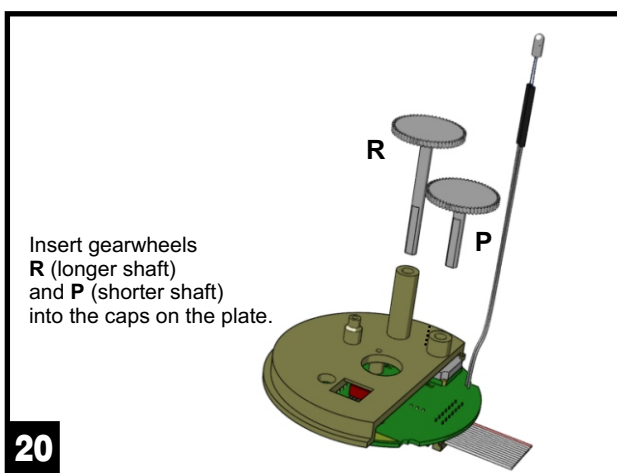
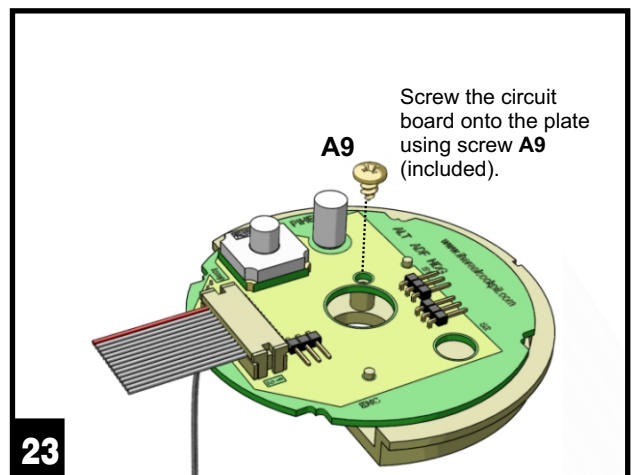
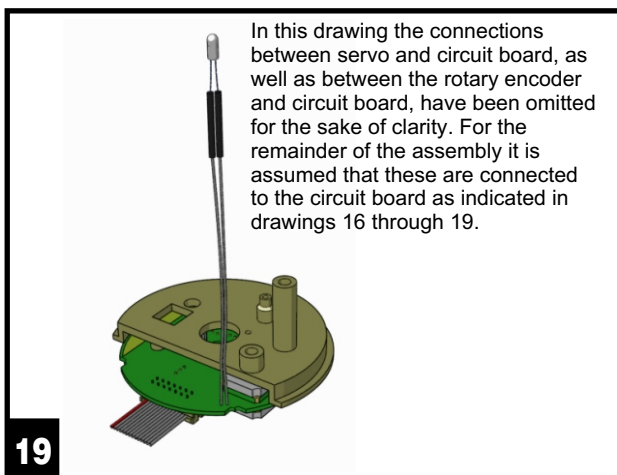
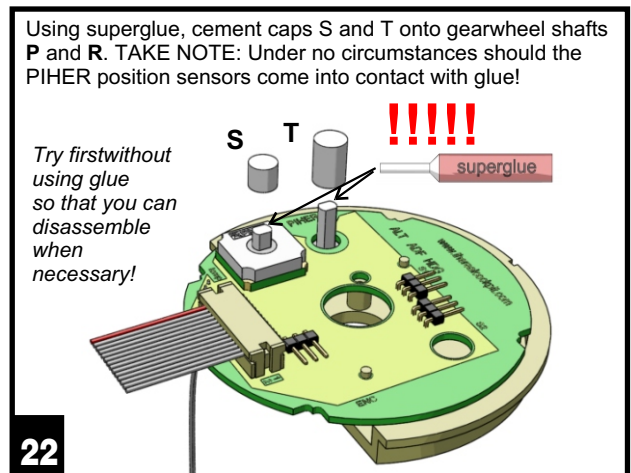
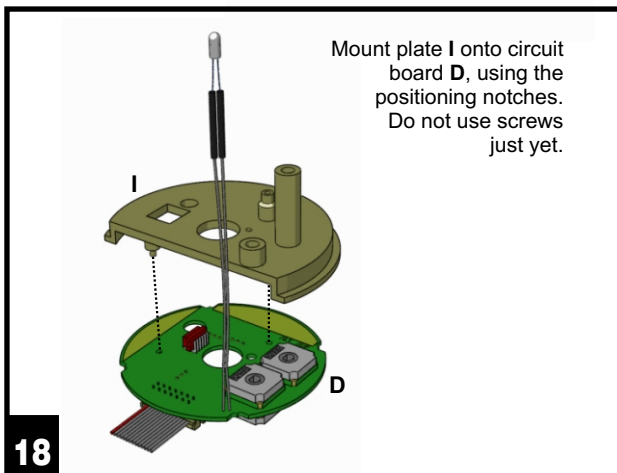
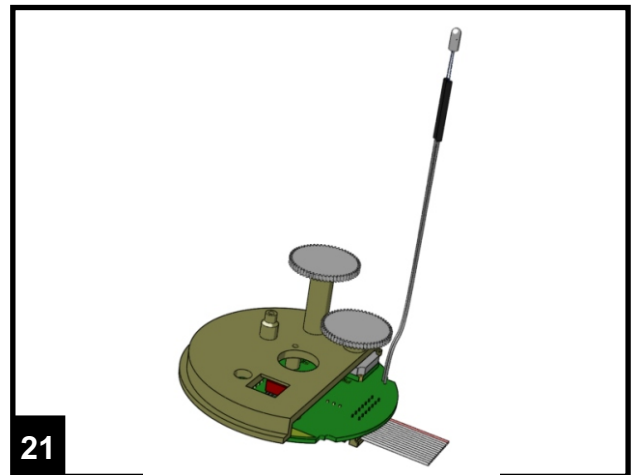
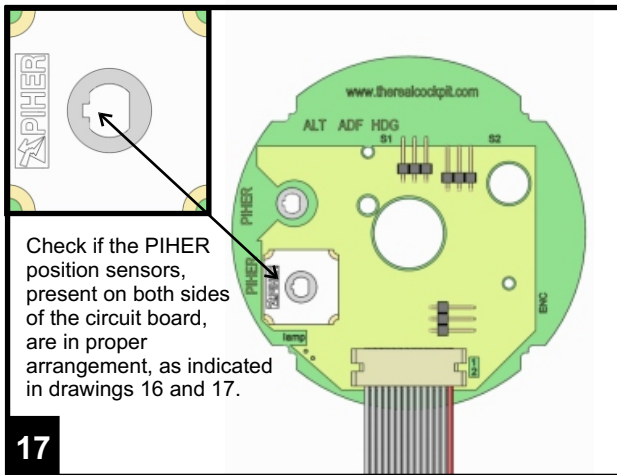
0.26"
(6.5 mm.)

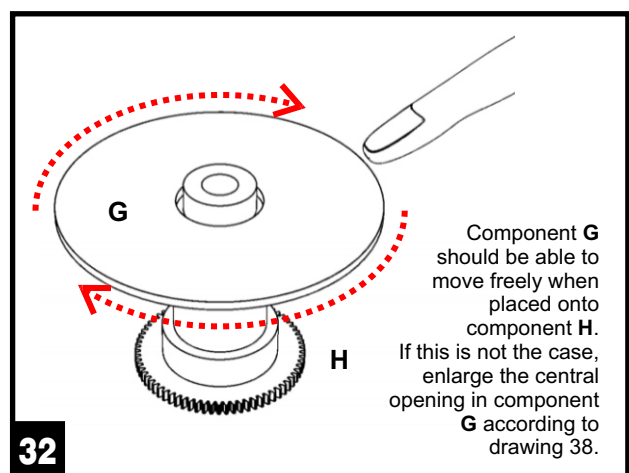
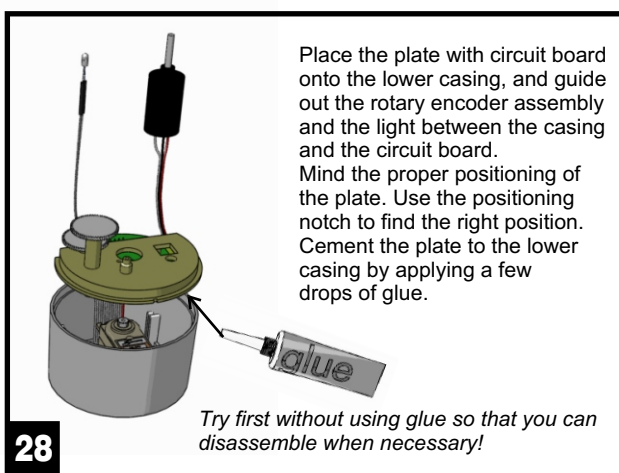
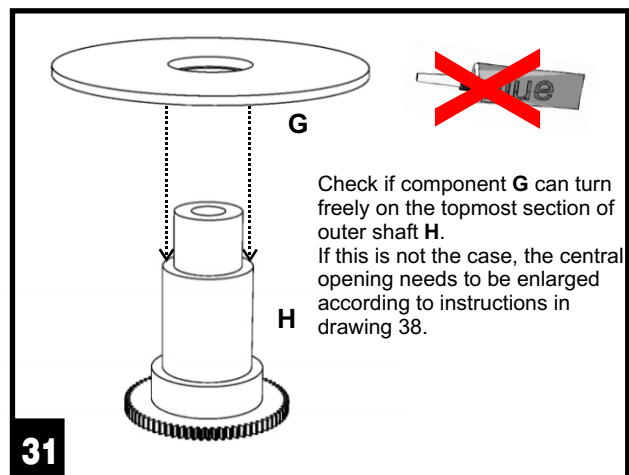
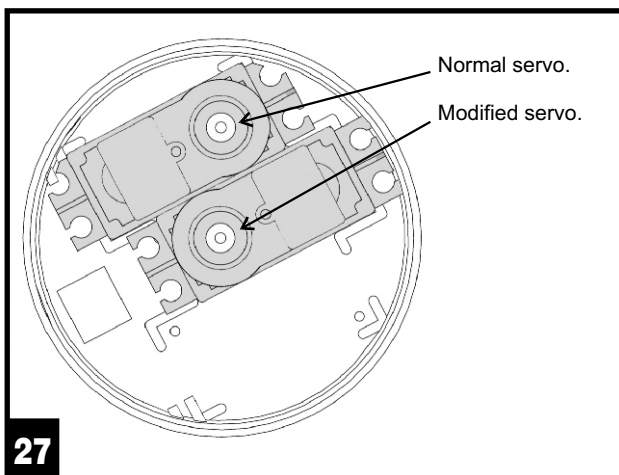
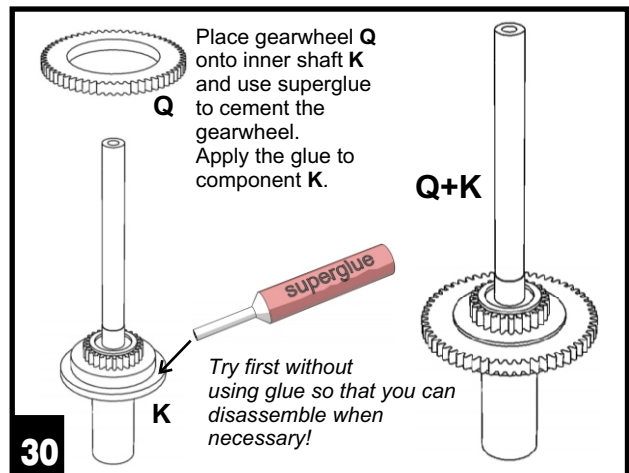
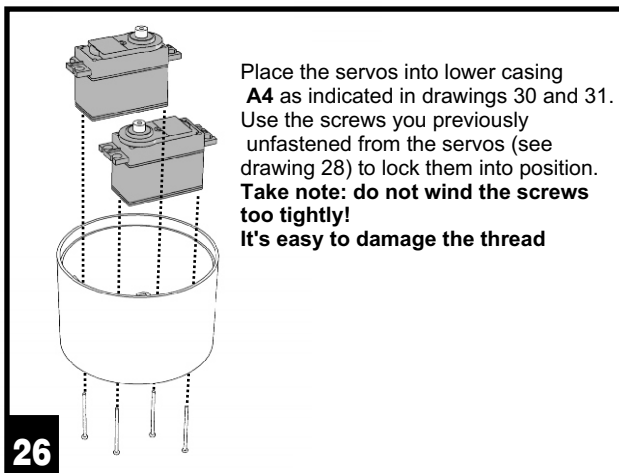
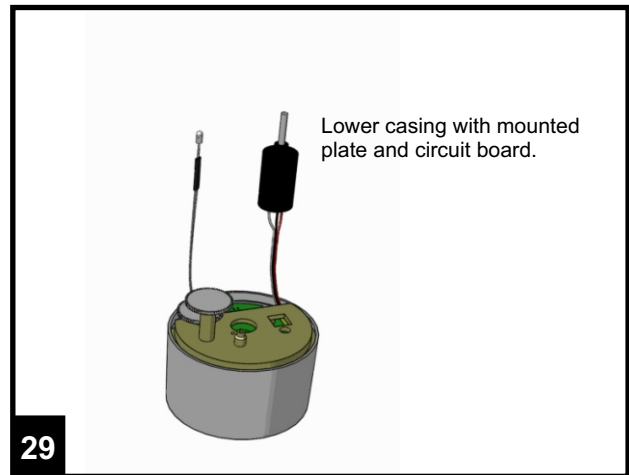
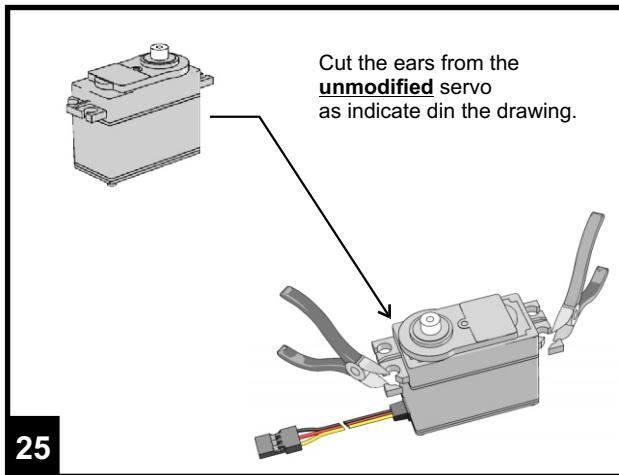
Boor het linker-benedengat (van voren af gezien) van front-ring A1 op, totdat dit een maat heeft van 0.26" / 6.5 mm.



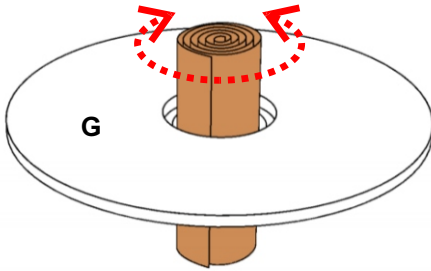
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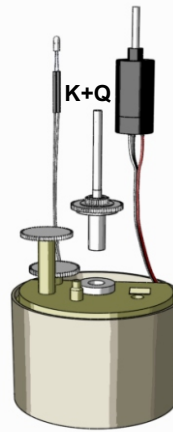


Use a rolled-up piece of fine sandpaper to widen the opening in component **G**, in case component **G** does not turn freely on component **H**.
It is absolutely necessary that part G turns freely on part H without any friction!!



33

Insert component **K+Q** (inner shaft and gearwheel) into bearing **E1**, making sure the inner shaft aligns with the modified servo.

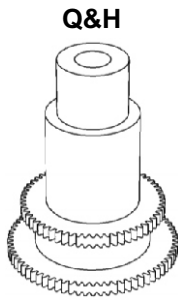
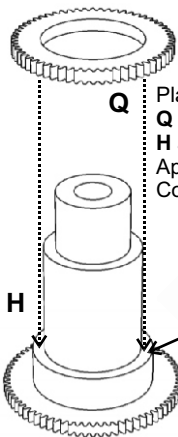


37

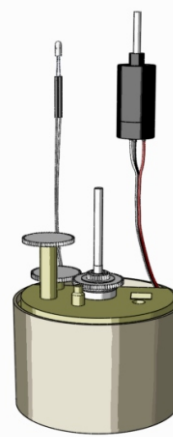
Place gearwheel **Q** onto component **H** and cement it. Apply the glue to Component **H**.

Q&H

Try first without using glue so that you can disassemble when necessary!

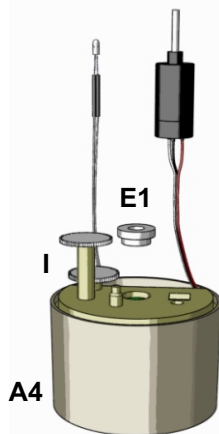


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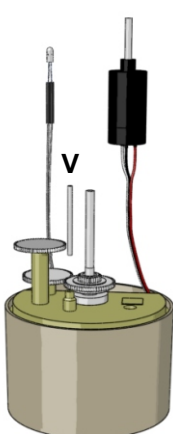
38

Place bearing **E1** into the plate and press it down. There is no need to cement bearing **E1**.

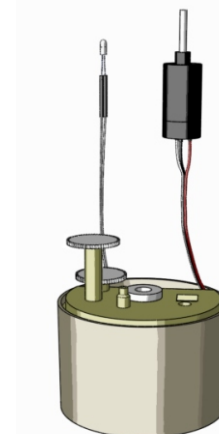


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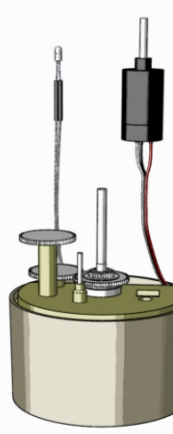
Insert gearwheel shaft **V** into the indentation on the plate and press it down tightly.



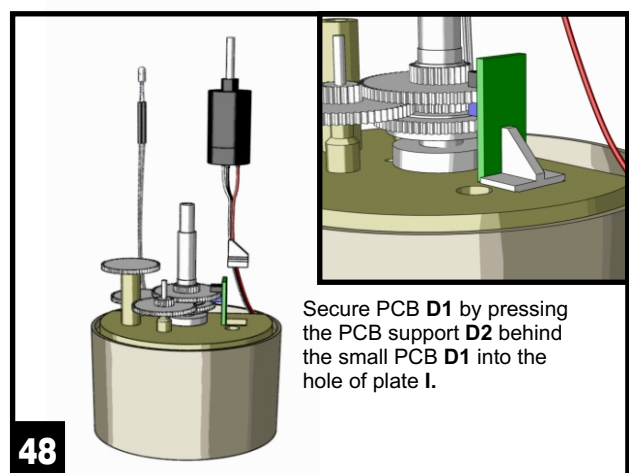
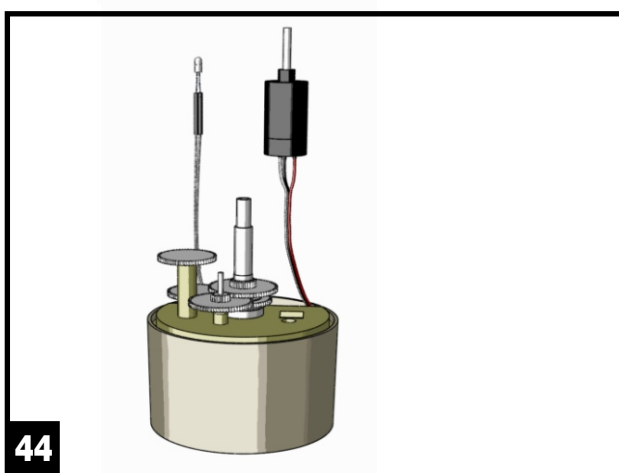
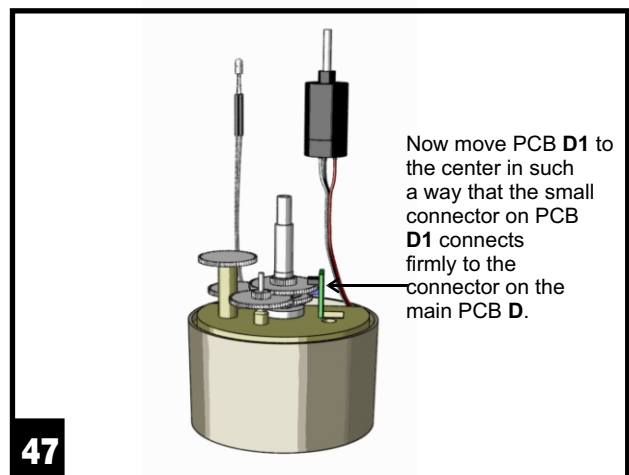
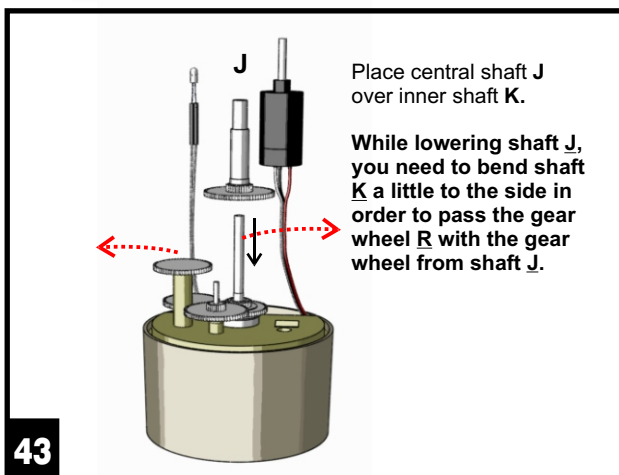
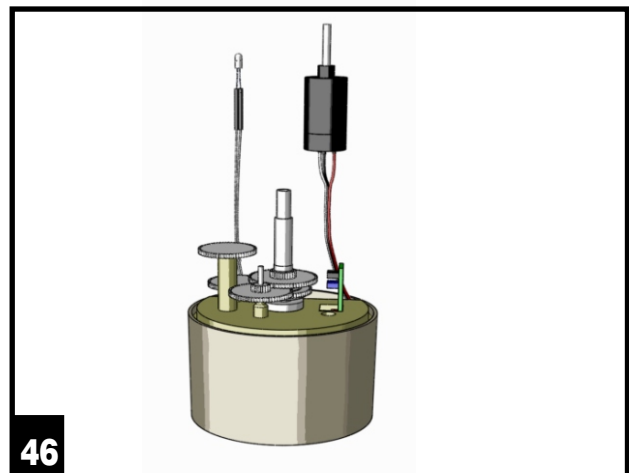
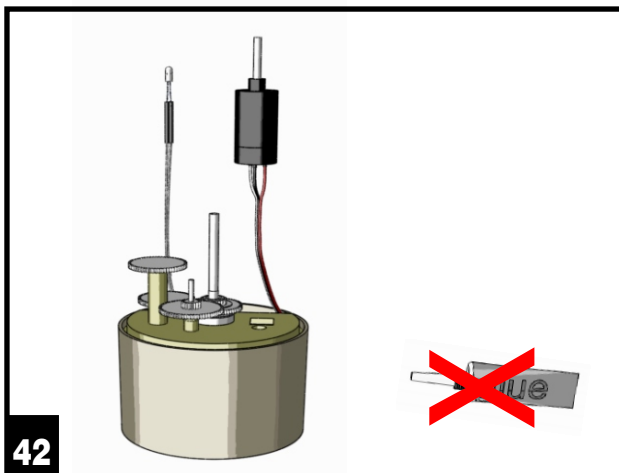
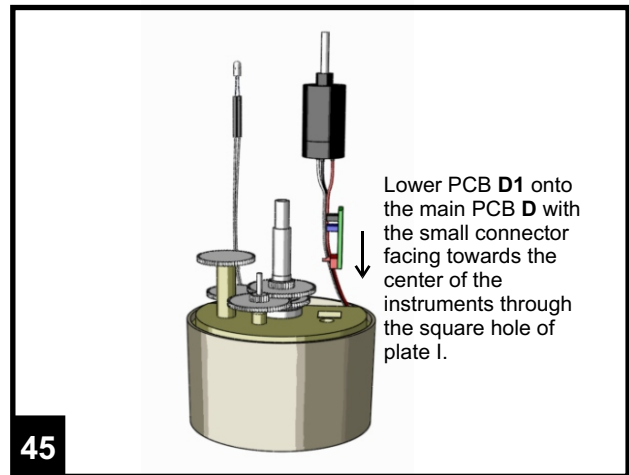
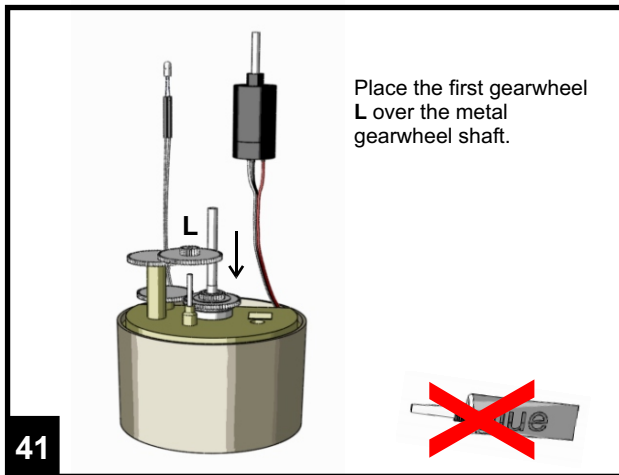
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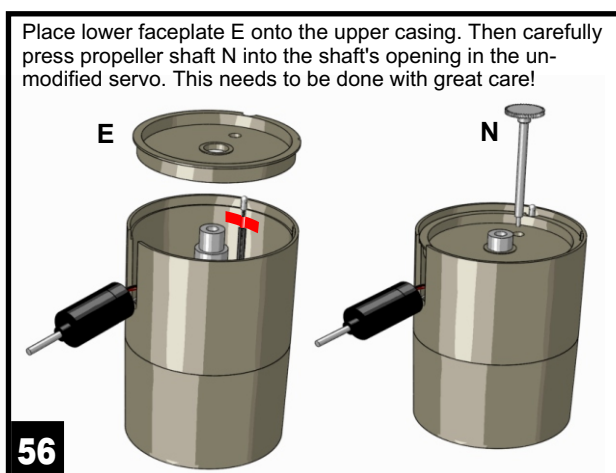
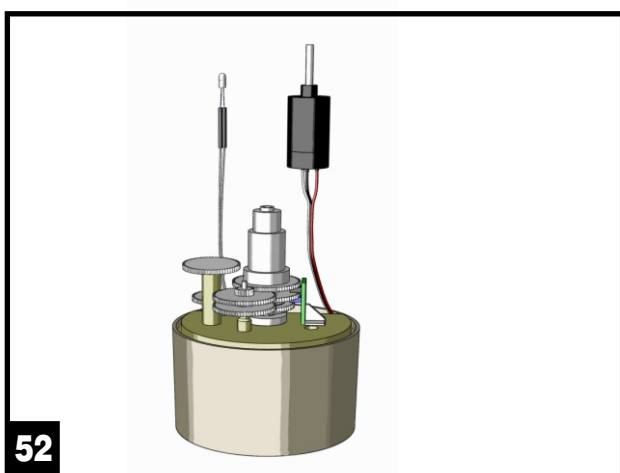
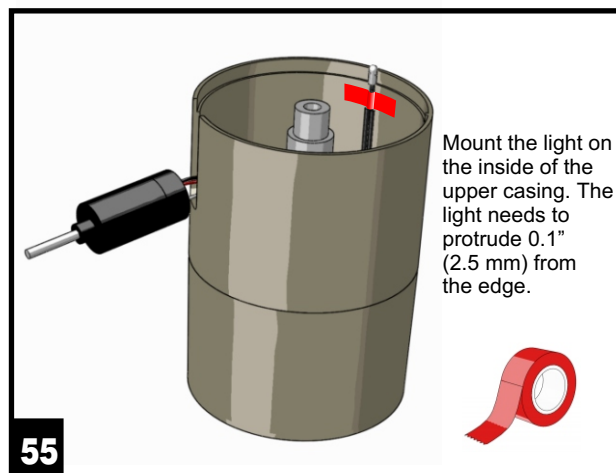
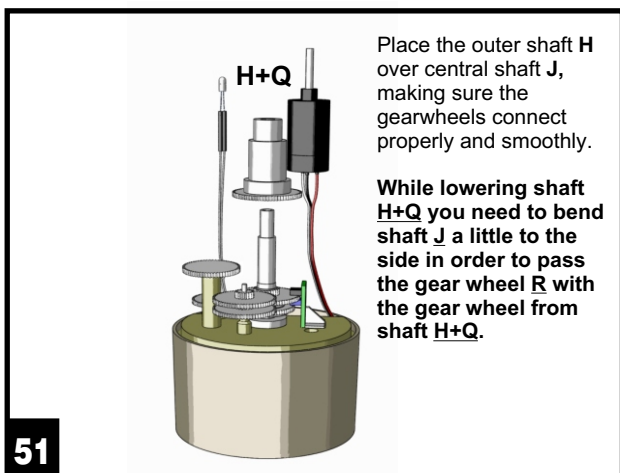
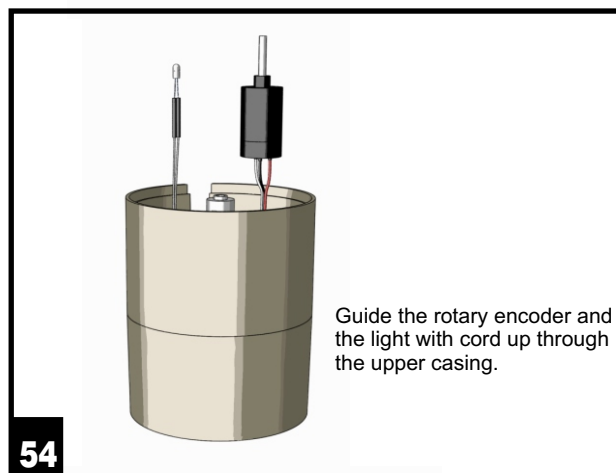
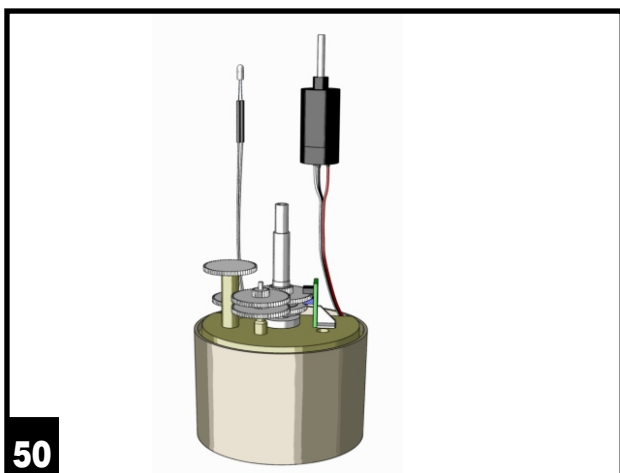
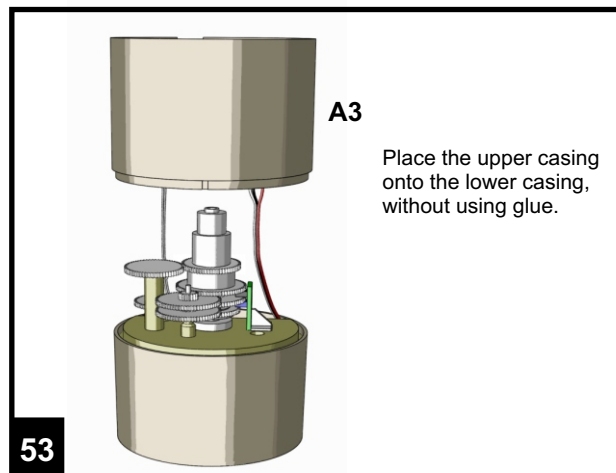
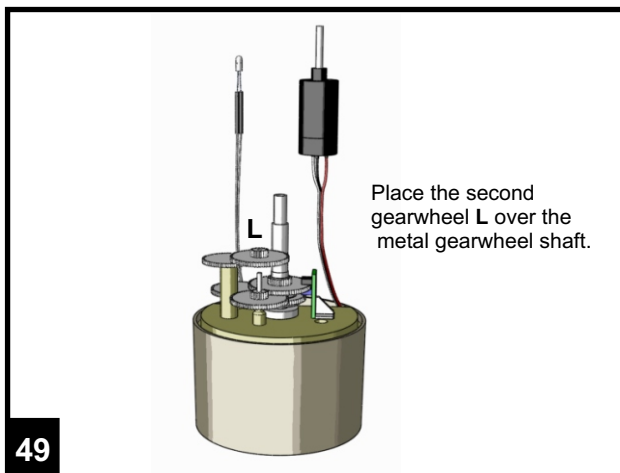


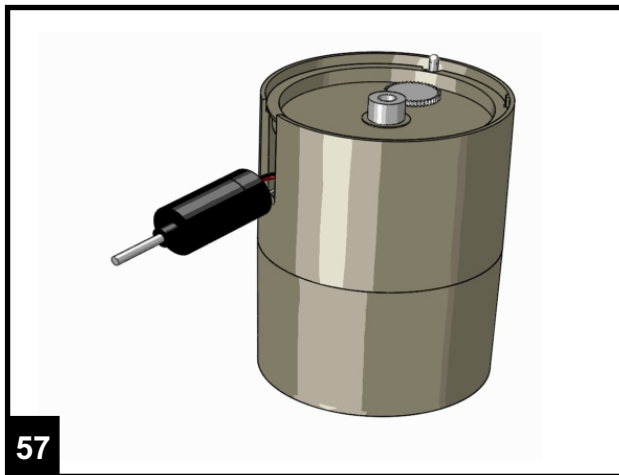
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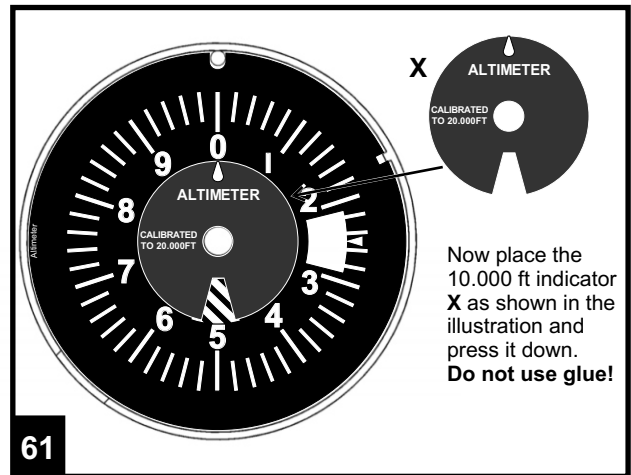
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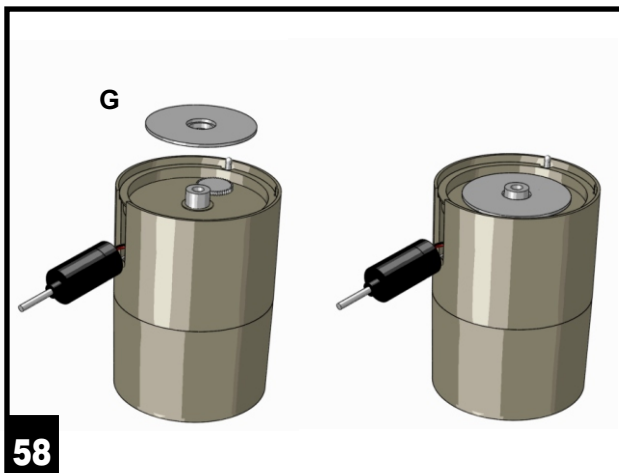




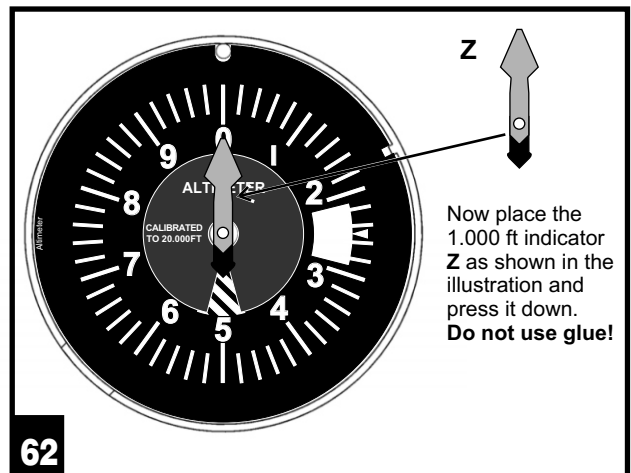
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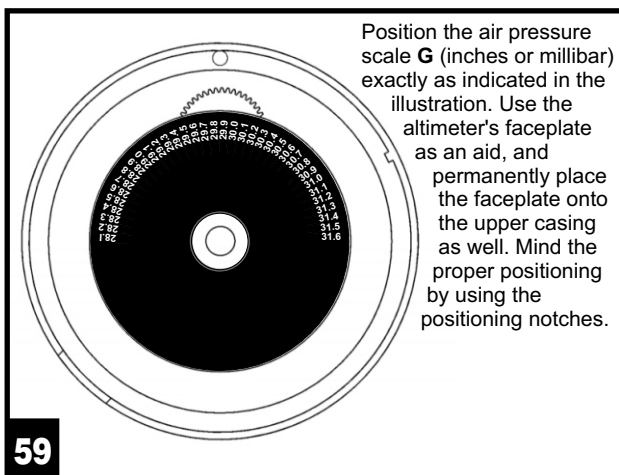
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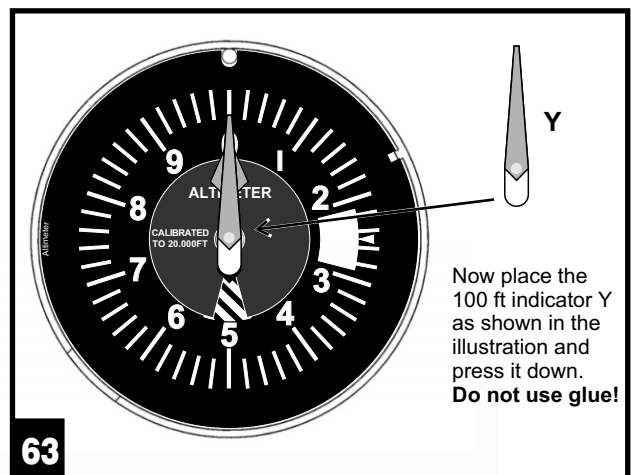
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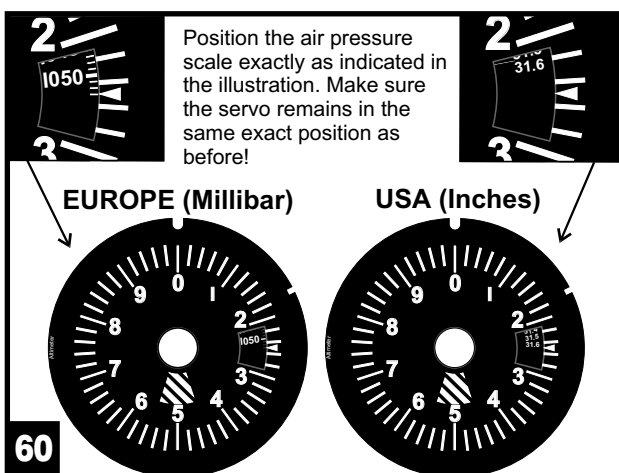
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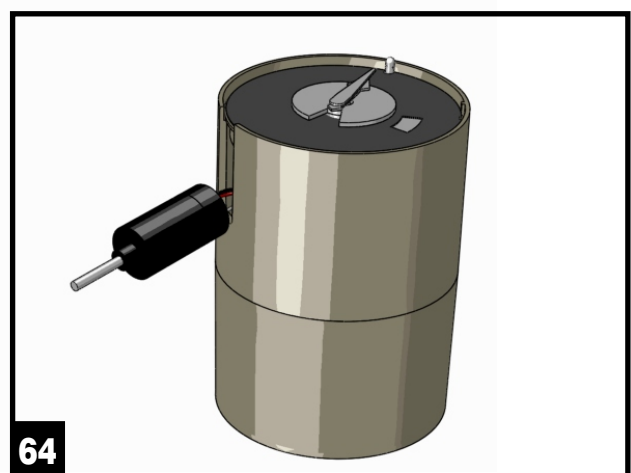
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