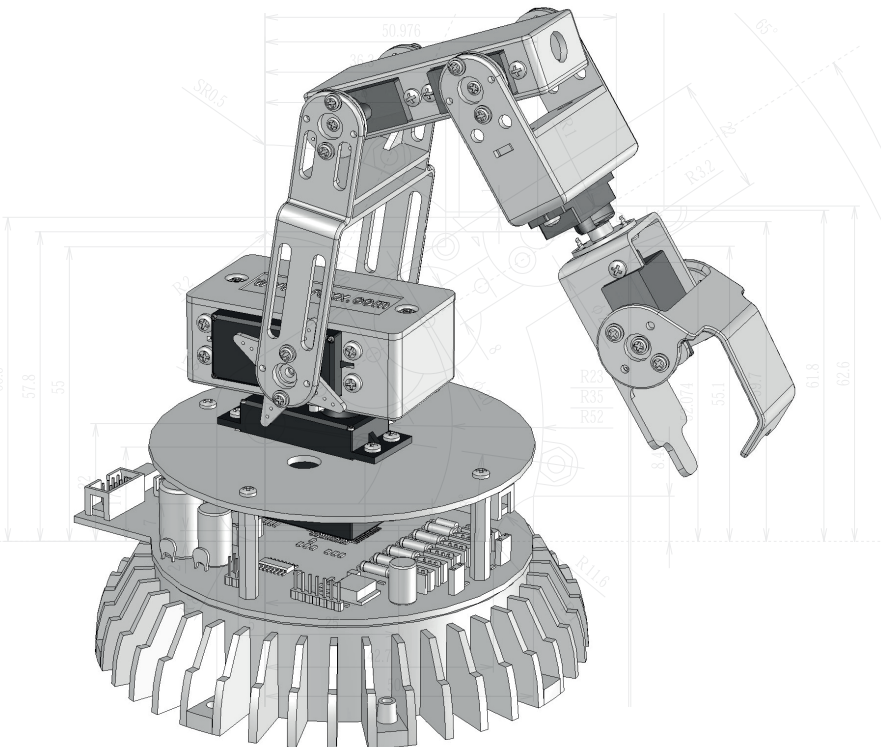




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# EDUCATIONAL ROBOT ROBOT ARM CHASSIS

**MOUNTING INSTRUCTIONS: Model RA2-CH2**



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**DAGU HI-TECH**



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## Impressum

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## Information about limited warranty and responsibility

The warranty granted by AREXX Engineering is limited to the replacement or repair of the Robot Arm and its accessories within the legal warranty period if the default has arisen from production errors such as mechanical damage or missing or wrong assembly of electronic components except for all components that are connected via plugs/sockets.

The warranty does not apply directly or indirectly to damages due to the use of the robot. This excludes claims that fall under the legal prescription of product responsibility.

The warranty does not apply in case of irreversible changes (such as soldering of other components, drilling of holes, etc.) of the Robot Arm or its accessories or if the Robot Arm is damaged due to the disrespect of this manual!

The warranty is not applicable in case of disrespect of this manual! In addition, AREXX Engineering is not responsible for damages of all kinds resulting from the disrespect of this manual! Please adhere above all to the „Safety recommendations“ in the Robot Arm manual.

Please note the relevant license agreements on the CD-ROM!

### IMPORTANT

Prior to using this robot arm for the first time, please read this manual thoroughly up to the end! They explain the correct use and inform you about potential dangers! Moreover they contain important information that might not be obvious for all users.

### Important safety recommendation

This module is equipped with highly sensitive components. Electronic components are very sensitive to static electricity discharge. Only touch the module by the edges and avoid direct contact with the components on the circuit board. Please do never overload the servo's

## Symbols

This manual provides the following symbols:



*The "Attention!" Symbol is used to mark important details. Neglecting these precautions may damage or destroy the robot and/or additional components and additionally you may risk your own health or the health of other persons!*



*The "Information" Symbol is used to mark useful tips and tricks or background information. In this case the information is to be considered as "useful, but not necessary".*

## Safety recommendations

- Check the polarity of the batteries or power supply.
- Keep all products dry, when the product gets wet remove the batteries or power directly.
- Remove the batteries or power when you are not using the product for a longer period.
- Before taking the module into operation, always check it and its cables for damage.
- If you have reason to believe that the device can no longer be operated safely, disconnect it immediately and make sure it is not unintentionally operated.
- Consult an expert if you are unsure as to the function, safety or connection of the module.
- Do not operate the module in rooms or under unfavourable conditions.
- Do not overload the servo's
- This module is equipped with highly sensitive components. Electronic components are very sensitive to static electricity discharge. Only touch the module by the edges and avoid direct contact with the components on the circuit board.

## Normal use

This product was developed as an experimental platform for all persons which are interested in robotics. Main goal is to learn how you can program the device in C-languge. This product is not a toy; it is not suitable for children under 14 years of age!

This robot arm is also not an industrial robot arm, with industrial specifications and preformance!

It may only be used indoors. The product must not get damp or wet. Also be careful with condence when you take it from a cold to an warm room give it time to adapt on the new coditions before you use it.

Any use other than that described above can lead to damage to the product and may involve additional risks such as short circuits, fire, electrical shock etc.

Please read all the safety instructions of this manual.

# 1. PRODUCT DESCRIPTION ROBOT ARM

The ROBOT ARM is an affordable robot for the hobbyist. It is ideally suited to learn the basics of electronics, mechanics and programming.

## ***Contents of the package:***

- *Complete Robot Arm construction set (mechanics WITHOUT electronics)*
- *CD-ROM containing all manuals*

## 1.2. Specifications:

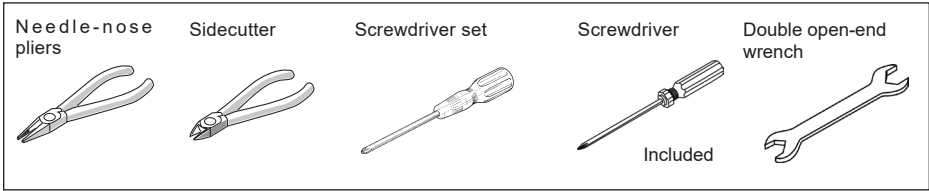
- 4 mini-servos DGServo 12g
- 2 maxi-servos DGServo S07NF STD
- Plastic arm and metal chassis
- Arm length: 260 mm
- Height: 320 mm
- Base diameter: 150 mm
- Lifting power 75 Gramms



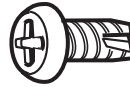
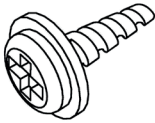
### **Warnings**

- \* The right of return does not apply after opening the plastic bags containing parts and components.
- \* Read the manual thoroughly prior to assembling the unit.
- \* Be careful when handling tools.
- \* Do not assemble the robot in presence of small children. They can get hurt with the tools or swallow small components and parts.
- \* Check the correct polarity of the batteries.
- \* Make sure that batteries and holder remain always dry. If the ROBOT ARM gets wet, remove the batteries and dry all parts as thoroughly as possible.
- \* Remove the batteries if the ROBOT ARM will not be used for more than one week.

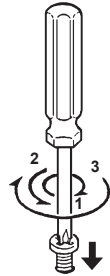
## 2. Required tools



### Selftapping screws (Parker)



Selftapping screws behave like wood screws i.e. they cut a thread into the material in a rotating motion that functions like a nut. To this end, this type of screw has a larger thread and a sharper tip as a normal screw.



Selftapping screws have a cutout at the top that makes it easier to drill into the material. The best way to fasten such a screw is:

- 1 Drive the screw into the material
- 2 Slightly loosen the screw
- 3 Tighten the screw again

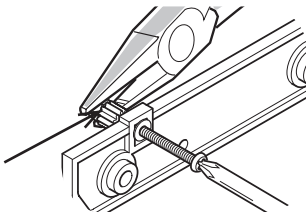
*If the screws are loosened and tightened too often, the hole enlargens gradually and the screw doesn't fit anymore properly.*

### Locknut

#### Fastening a locknut



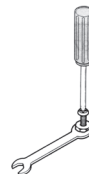
Locknut



Do not force the screws otherwise the plastic may crack.

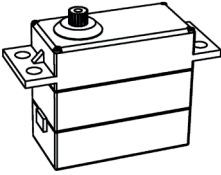
### Double open-end wrench:

The set includes a double open-end wrench. Use this wrench for the M2 and M3 nuts. You can use this wrench instead of pliers.



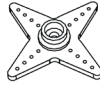
# 3. PART LIST

Servomotor



- 4 x Mini  
*DGServo 12g*
- 2 x Maxi  
*DGServo S07NF STD*

Servolever



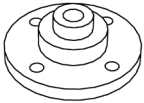
- 2x

CD



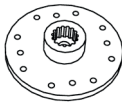
- 1x

Disk with axis



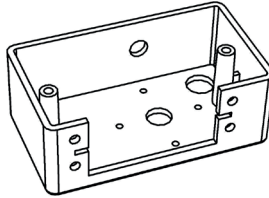
- 4x

Servo disc



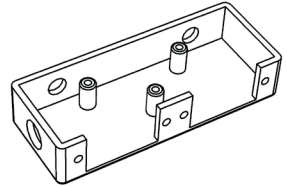
- 4x

Holder for maxi-servo



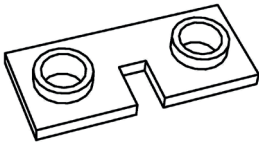
- 1x

Servo holder -dual



- 1x

Spacer for Servo



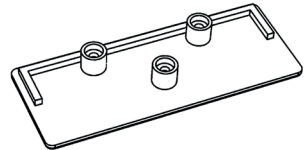
- 2x

Cover for maxi-servo holder



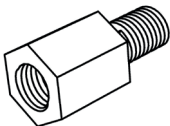
- 1x

Cover for servo holder



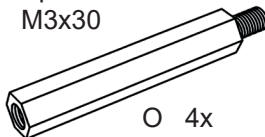
- 1x

Spacer M3x6



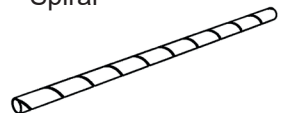
- 4x

Spacer M3x30



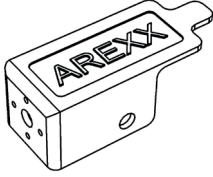
- 4x

Spiral



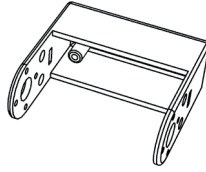
- 1x

Servo holder  
for finger servo



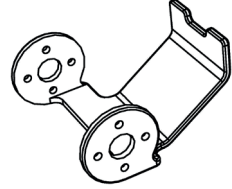
○ 1x

Servo holder  
Wrist



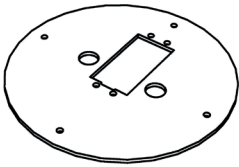
○ 1x

Fingertip



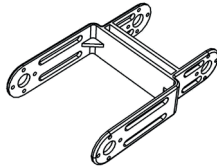
○ 1x

Servo bottom plate



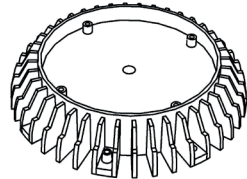
○ 1x

Coupling rod



○ 1x

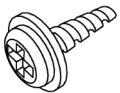
Robot Arm base



○ 1x

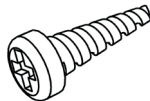
# ROBOT ARM CHASSIS

Servo screw  
small M2x6



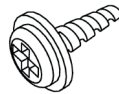
○ 8x

Selftapping screw  
M2.3x8



○ 4x

Servo screw  
large M2.3x6



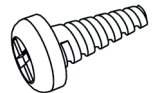
○ 10x

Selftapping screw  
M2.6x6



○ 8x

Selftapping screw  
M3.5x8



○ 4x

O-Ring M3



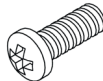
○ 3x

Round-head  
screw M3x6



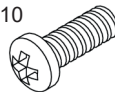
○ 4x

Round-head  
screw M3x8



○ 8x

Round-head screw  
M3x10



○ 2x

Nut  
M3



○ 4x

Locknut M3



○ 4x

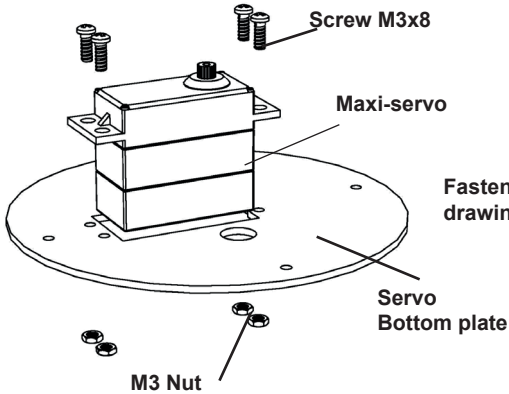


# 4. Mounting instructions mechanical

## Mounting the bottom servo:

Following parts are required:

- 1x Bottom plate
- 1x Maxi-servo
- 4x Round-head screw M3x8
- 4x Nut M3



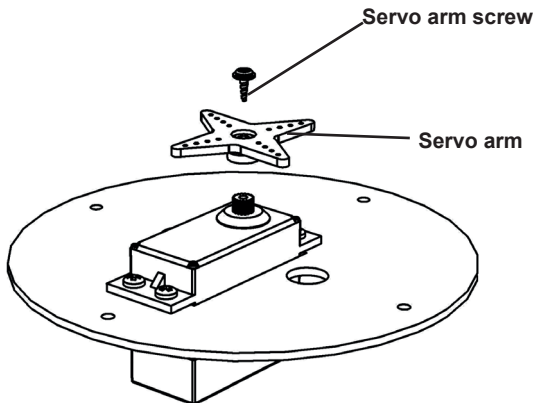
Fasten the servo exactly as described in the drawings.

---

## Mounting the servo arm:

Following parts are required:

- 1x Bottom plate with servo
- 1x Servo arm
- 1x Servo screw large M2.3x6



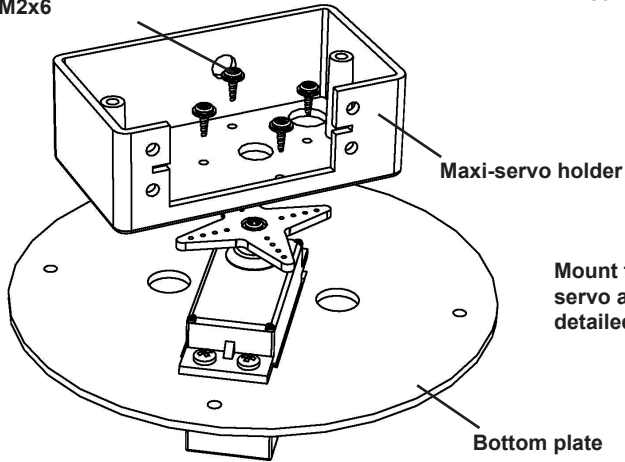
Fasten the servo arm on the servo, see detailed drawing!

## Mounting the bottom servo:

Following parts are required:

Selftapping screw  
M2x6

1x Bottom part  
1x Maxi-servo holder  
4x Servo screw small M2x6



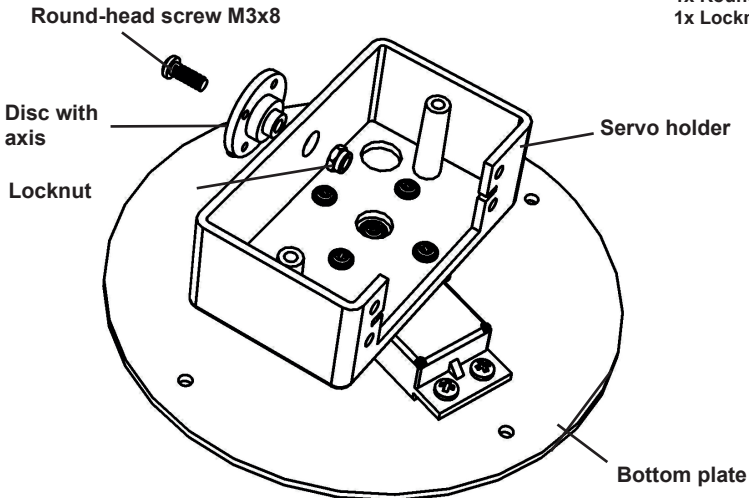
Mount the servo holder on the servo arm, please look at the detailed drawing!

---

## Mounting the servo holder:

Following parts are required:

1x Bottom plate with servo holder  
1x Disc with axis  
1x Round-head screw M3x8  
1x Locknut M3

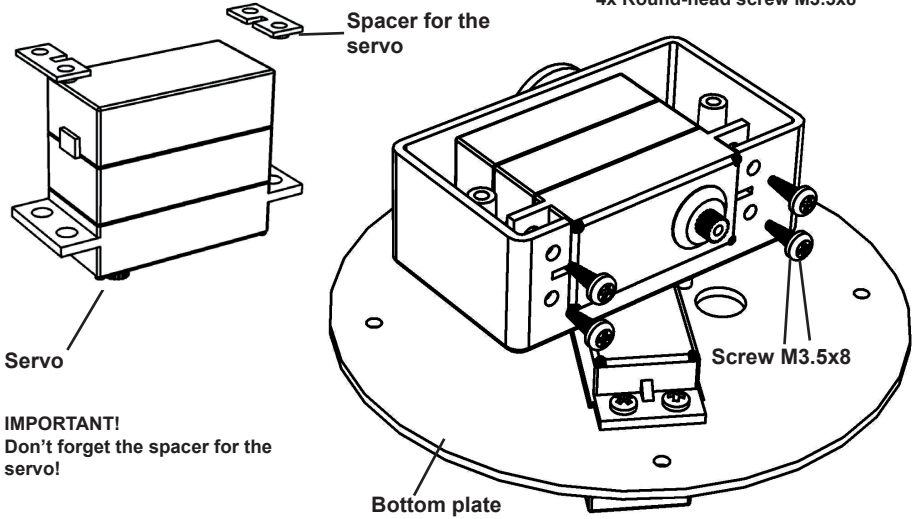


Mount the servo axis on the servo. Please refer to the detailed drawing!

## Mounting the servo:

Following parts are required:

- 1x Assembled bottom plate
- 1x Servo large
- 1x Servo spacer
- 4x Round-head screw M3.5x8

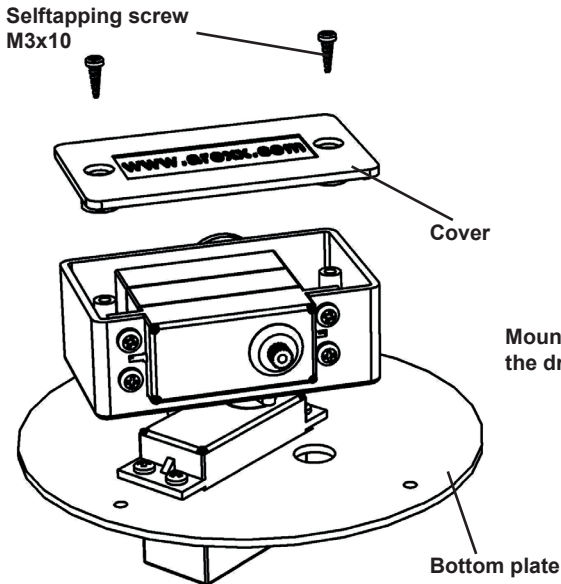


**IMPORTANT!**  
Don't forget the spacer for the servo!

## Mounting the cover for the servo holder:

Following parts are required:

- 1x Assembled bottom plate
- 1x Servo holder cover
- 1x Selftapping screw M3x10

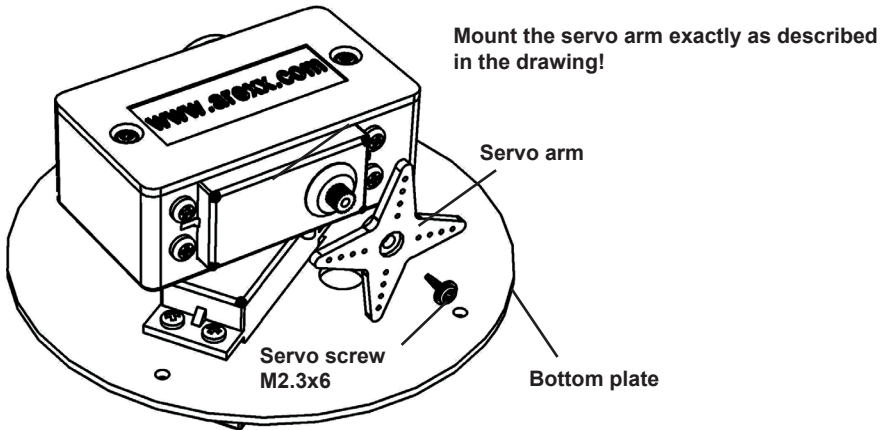


Mount the cover exactly as described in the drawing.

## Mounting the servo arm:

Following parts are required:

- 1x Assembled bottom plate
- 1x Servo arm
- 1x Servo screw large M2.3x6

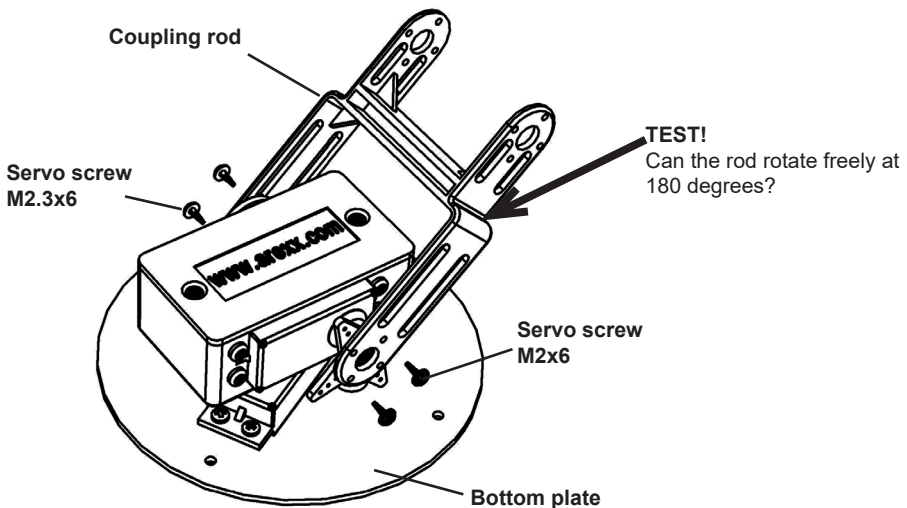


---

## Mounting the servo arm:

Following parts are required:

- 1x Assembled bottom plate
- 1x Servo coupling rod
- 1x Servo screw small M2x6
- 2x Servo screw large M2.3x6



Mount the servo arm exactly as described in the drawing!

# Mounting the dual servo:

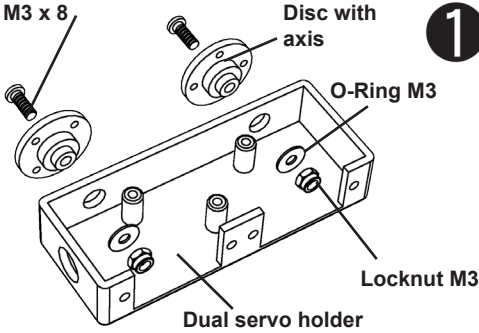
For the final assembly of the dual servo, following parts are required:

Round-head screw  
M3 x 8

Disc with  
axis

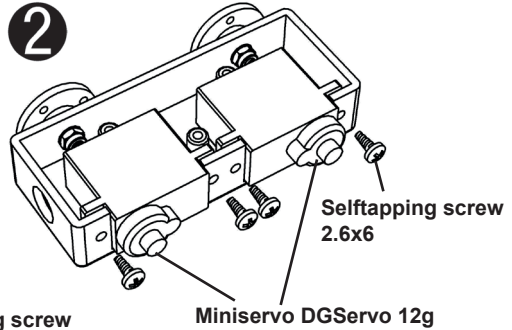
**1**

- 1x Dual servo holder
- 2x Disc with axis
- 2x Round-head screw M3 x 8
- 2x O-Ring M3
- 2x Locknut M3
- 4x Selftapping screw 2.6x6
- 1x Cover
- 3x Selftapping screw 2.3x8
- 2x Servo disc
- 2x Servo screw small M2x6
- 2x Servo DGServo 12g



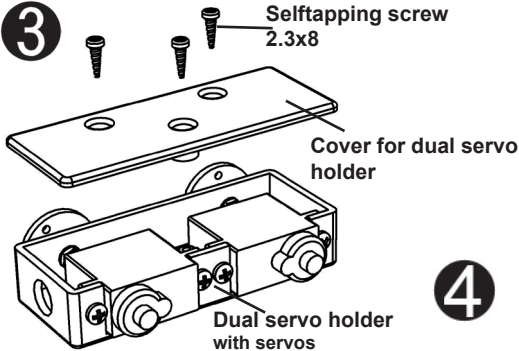
**2**

Mount the dual servo exactly and in the same order as described in the drawing!

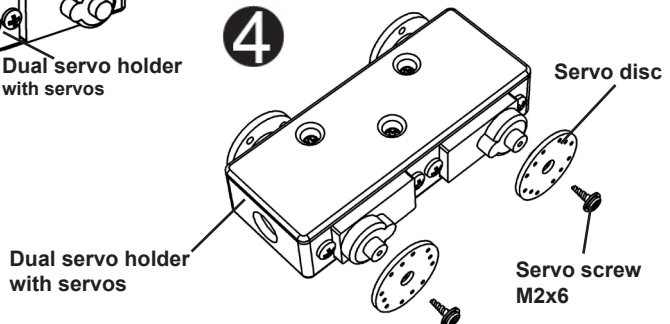


**3**

Selftapping screw  
2.3x8

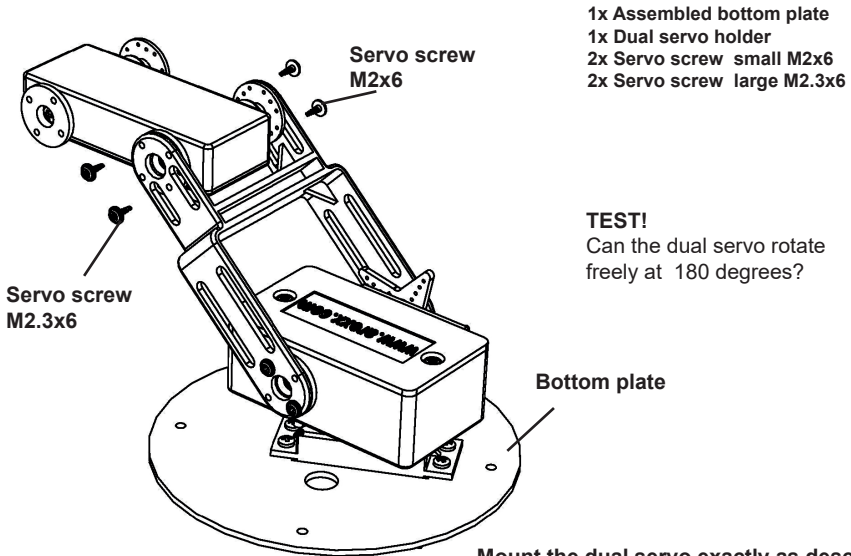


**4**



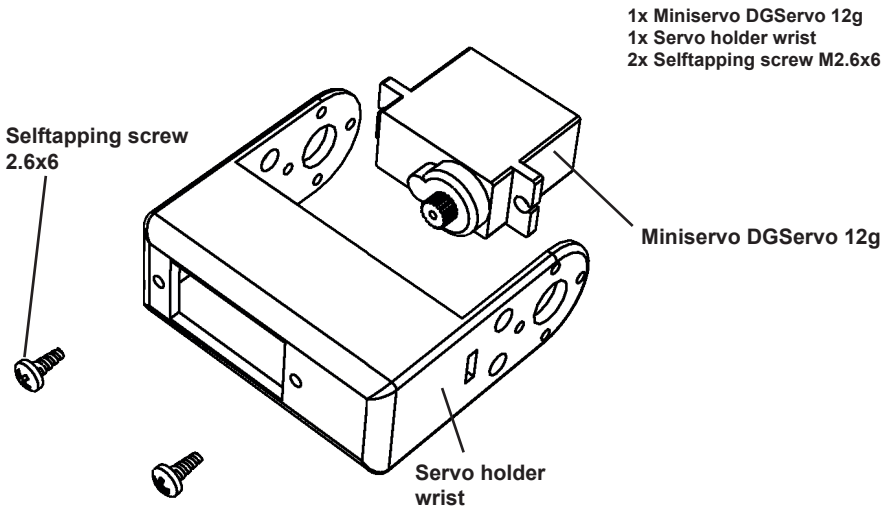
## Mounting the dual servo holder:

Following parts are required:



## Mounting the wrist servo:

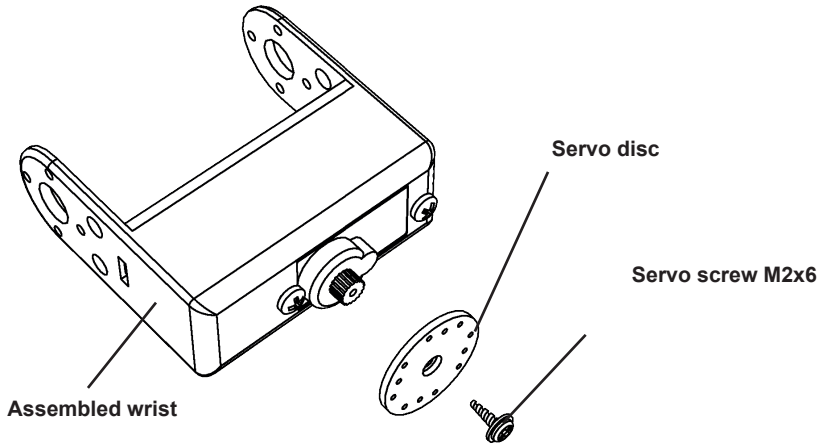
Following parts are required:



## Final assembly of the wrist servo:

Following parts are required:

- 1x Assembled wrist
- 1x Servo disc
- 1x Servo screw small M2x6



Mount the servo disc exactly as described in the drawing.

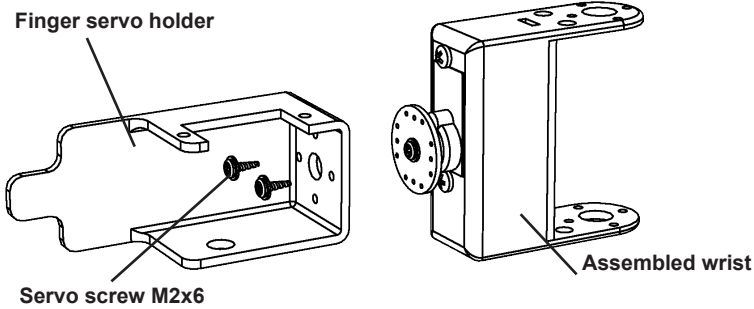
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## Mounting the finger servo holder:

Following parts are required:

- 1x Assembled wrist
- 1x Finger servo holder
- 2x Servo screw small M2x6



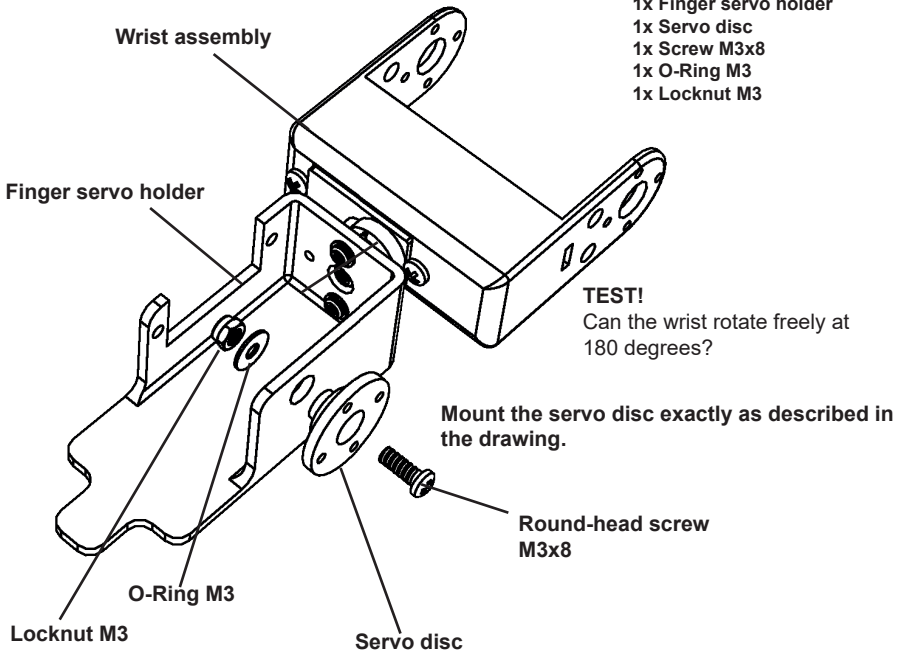
Mount the finger servo holder exactly as described in the drawing.

---

## Mounting the finger servo holder:

Following parts are required:

- 1x Assembled wrist
- 1x Finger servo holder
- 1x Servo disc
- 1x Screw M3x8
- 1x O-Ring M3
- 1x Locknut M3

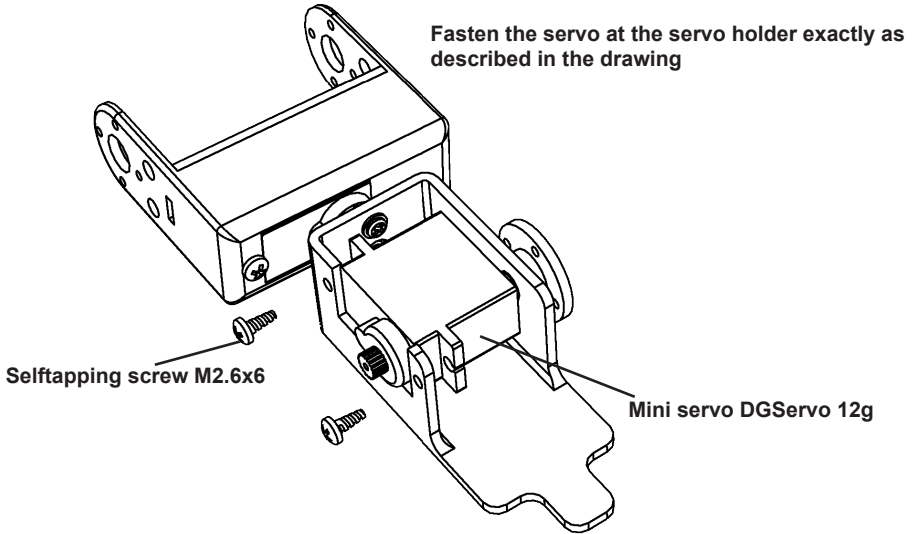




## Mounting the finger servo:

Following parts are required:

- 1x Assembled wrist
- 1x Mini servo DGServo 12g
- 2x Selftapping screw M2.6x6

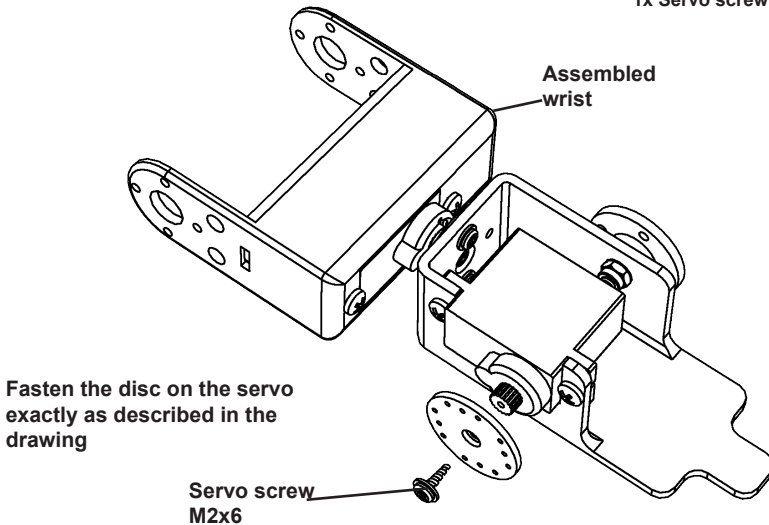


---

## Mounting the finger servo holder:

Following parts are required:

- 1x Assembled Wrist
- 1x Servo disc
- 1x Servo screw small M2x6

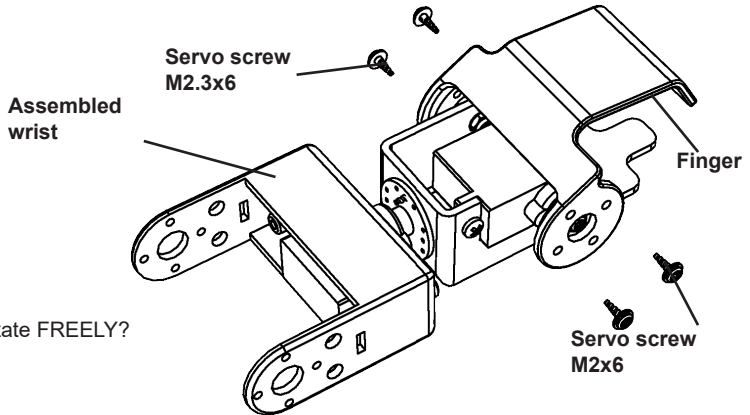


## Mounting the finger:

Following parts are required:

Mount the finger exactly as described in the drawing.

- 1x Assembled wrist
- 1x Finger
- 2x Servo screw small M2x6
- 2x Servo screw large M2.3x6



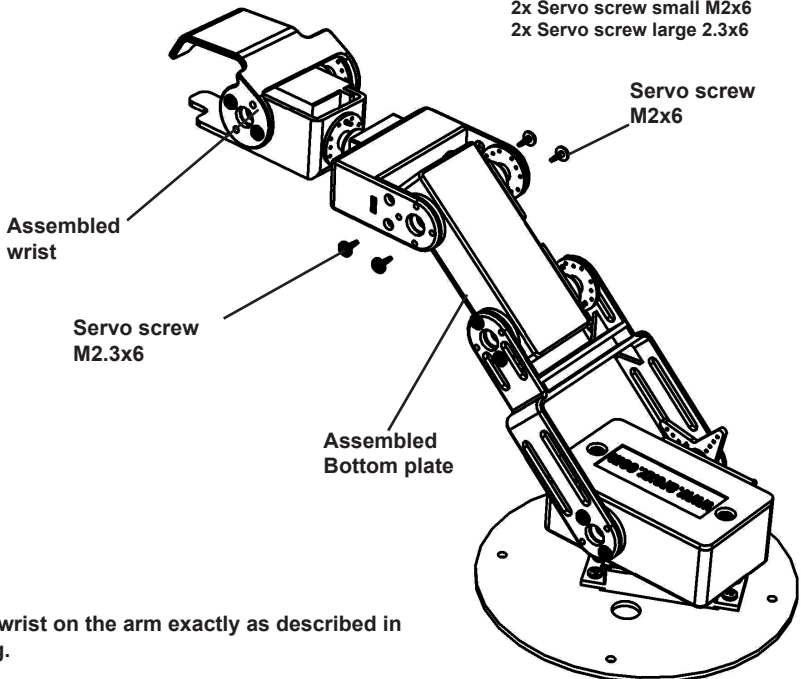
**TEST!**

Can the finger rotate FREELY?

## Final arm assembly:

Following parts are required:

- 1x Assembled wrist
- 1x Assembled bottom plate
- 2x Servo screw small M2x6
- 2x Servo screw large 2.3x6

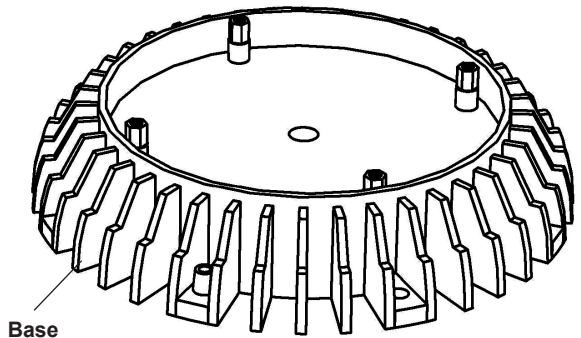
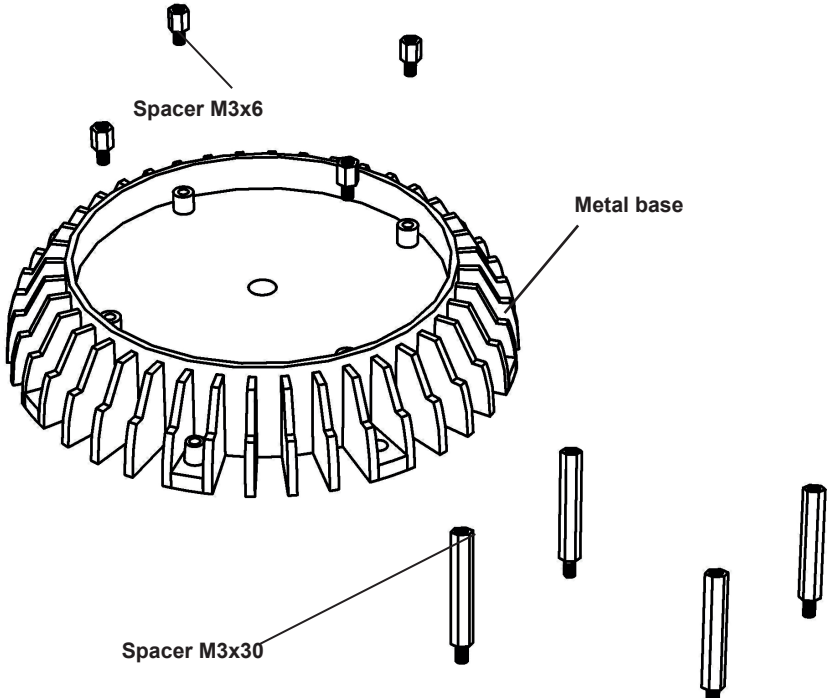


Fasten the wrist on the arm exactly as described in the drawing.

# Mounting the base and the PCB:

Following parts are required:

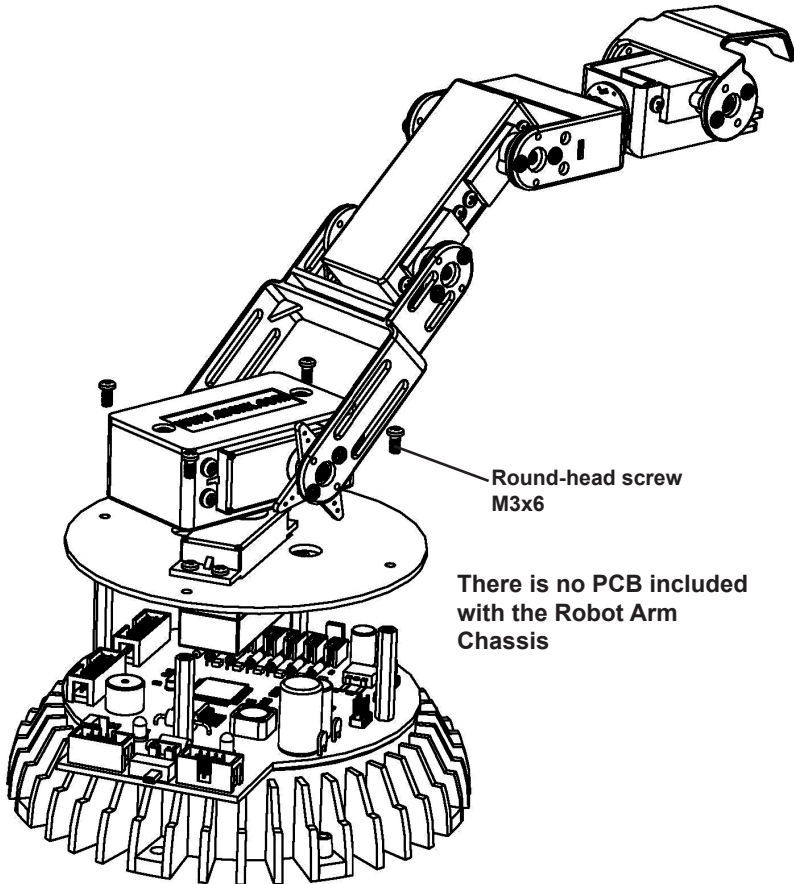
- 1x Metal base
- 4x Spacer M3x6
- 4x Spacer M3x30



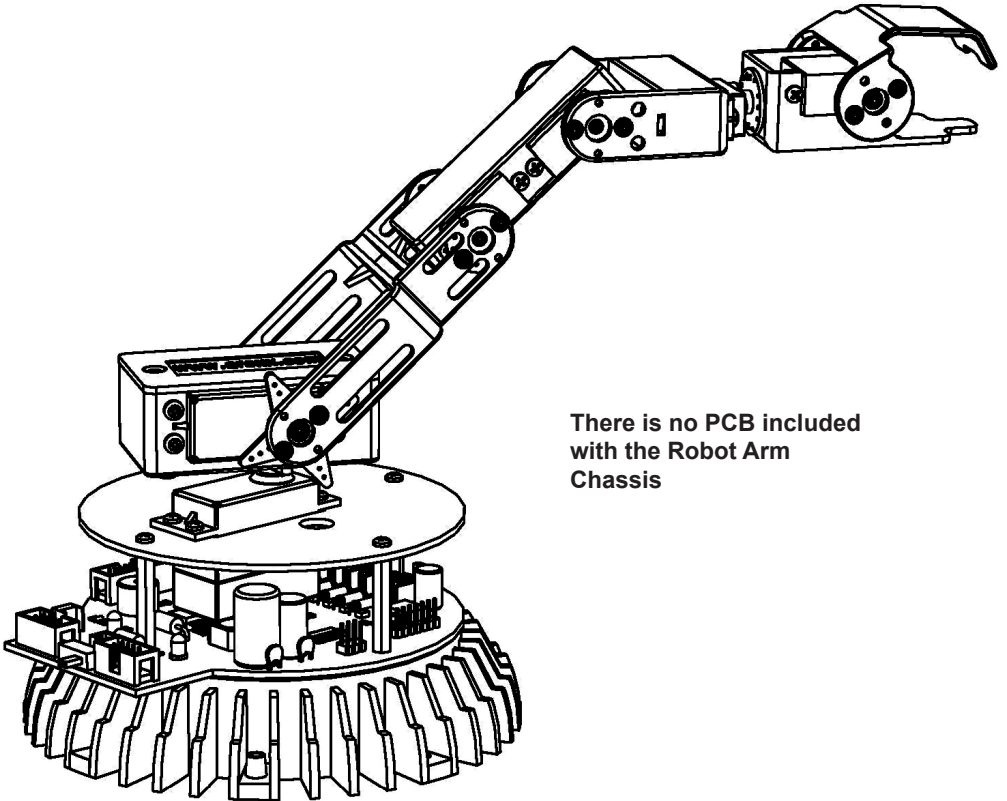
## Final assembly of the Robot Arm :

Following parts are required:

1x Base assembly  
1x ARM assembly  
4x Round-head screw M3x6



# READY !



There is no PCB included  
with the Robot Arm  
Chassis