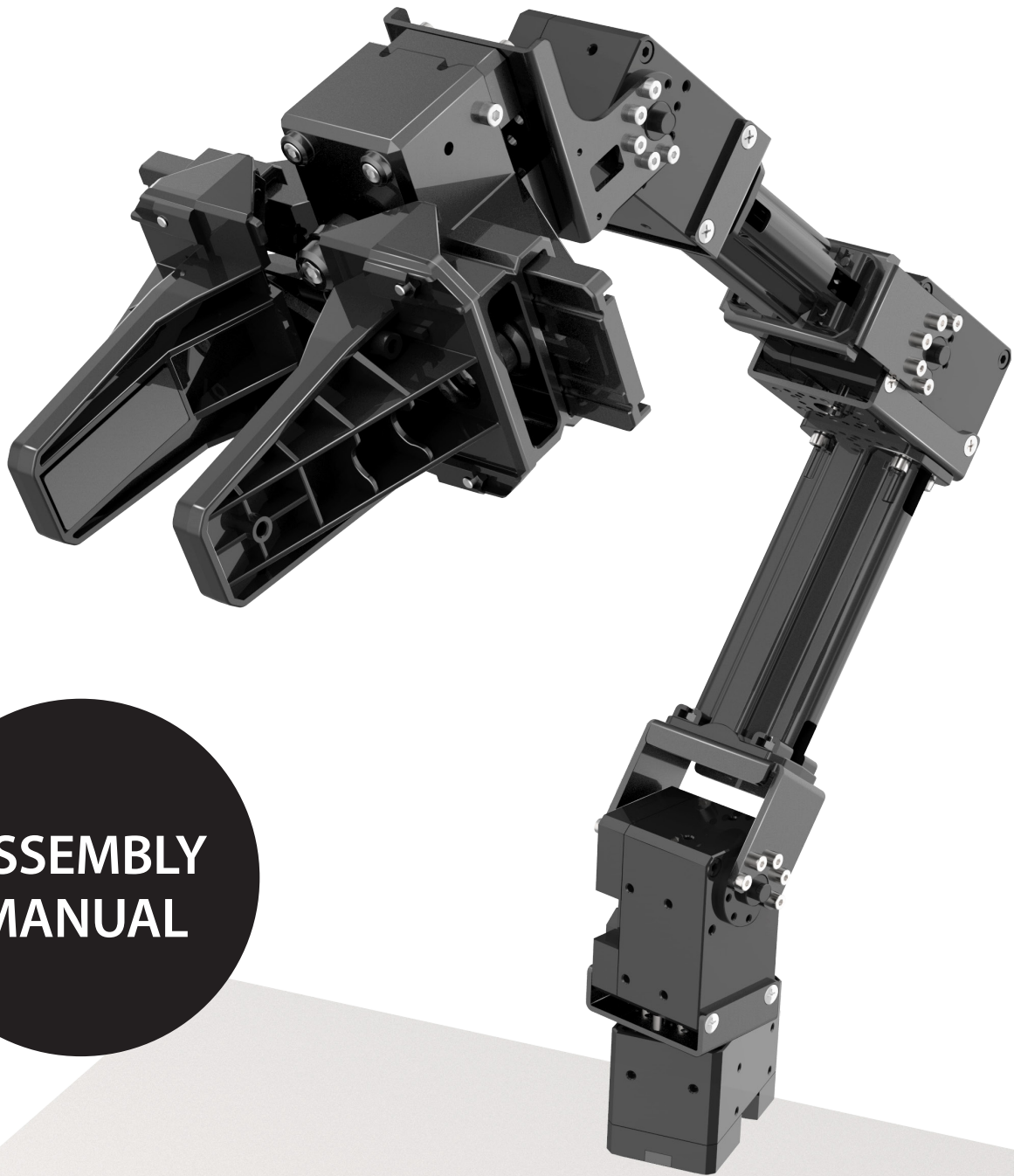


OpenManipulator-X



**ASSEMBLY
MANUAL**

ROBOTIS

DYNAMIXEL Preparations (XM430-W350-T)

⚠ CAUTION

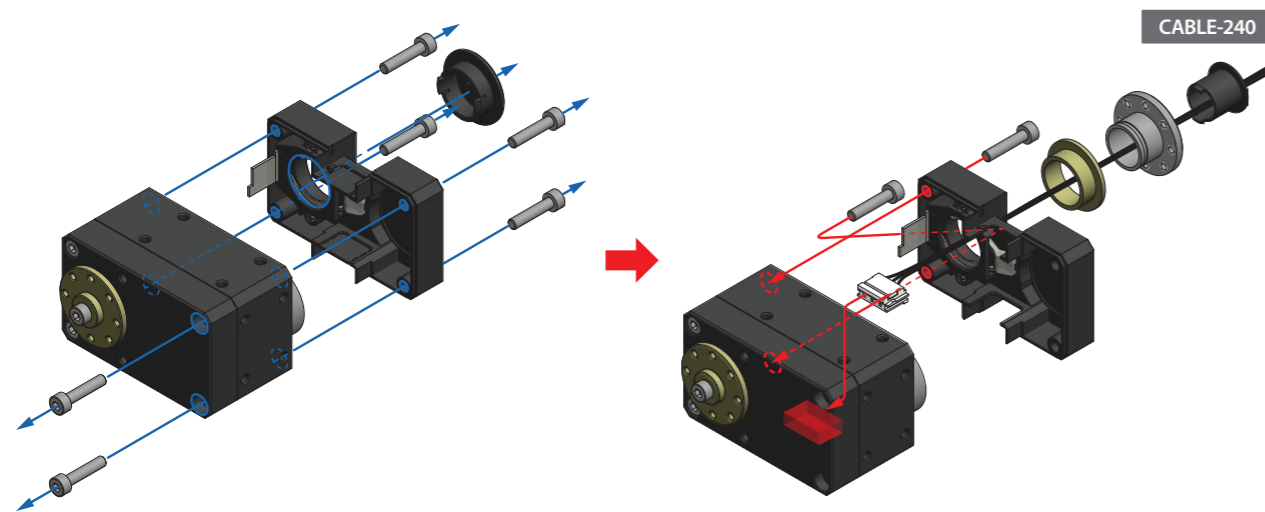
1. Please read the assembly manual carefully.
2. Please check DYNAMIXEL IDs and lengths of cables, and assemble DYNAMIXELs.
3. Please confirm the directions of DYNAMIXELs and the gripper are correct.

[DYNAMIXEL **ID 11**, **ID 15**] Remove described bolts.

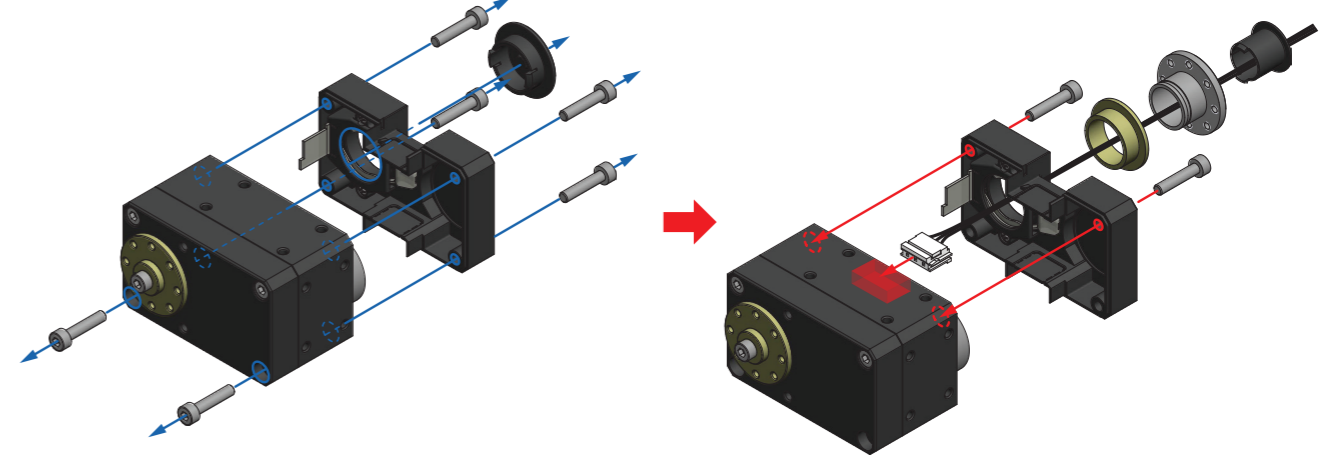
[DYNAMIXEL **ID 12**, **ID 13**, **ID 14**] Pass the cable through hollow back case, DC12-IDLER, DC12-IDLER-CAP and DC12-P-BEARING and connect it into DYNAMIXEL.



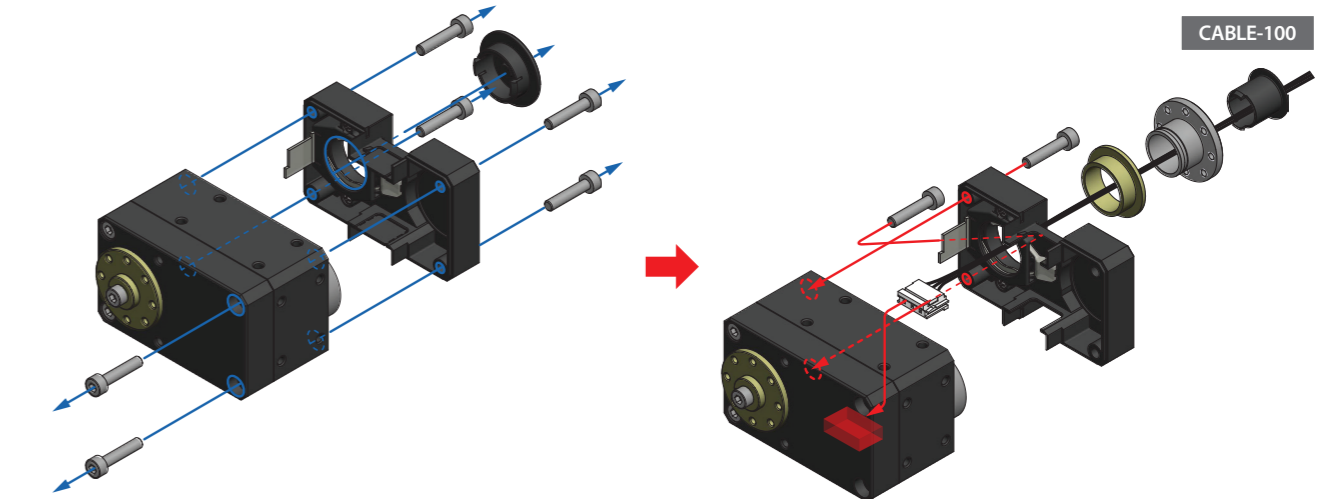
ID 12



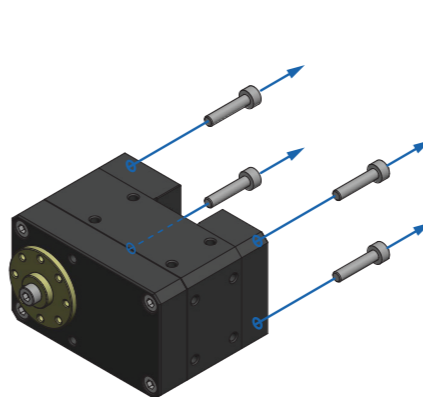
ID 13



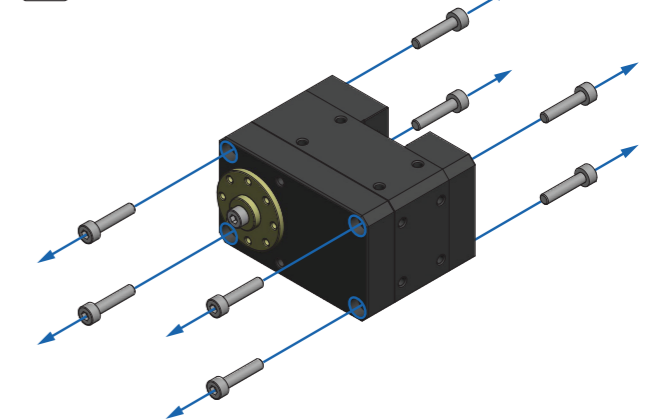
ID 14

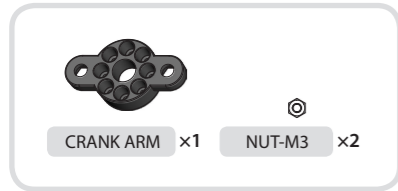


ID 11

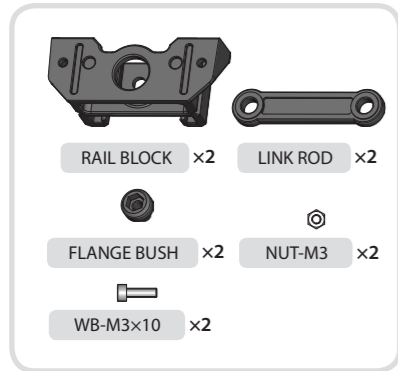
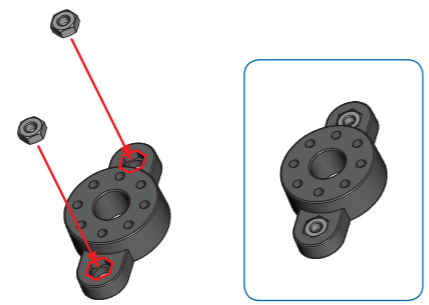


ID 15

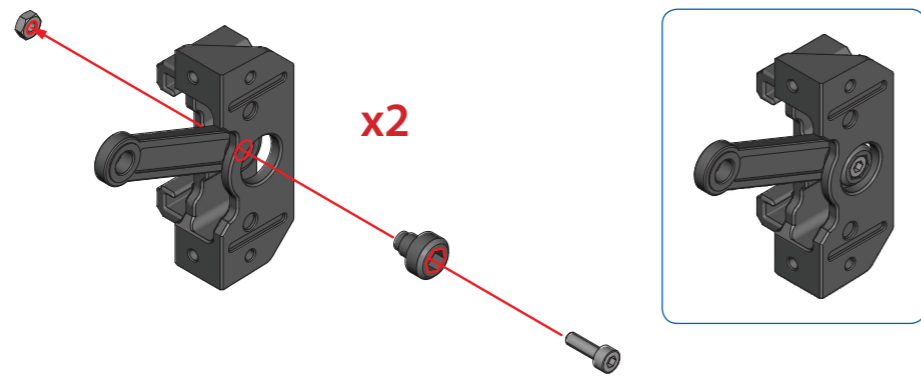




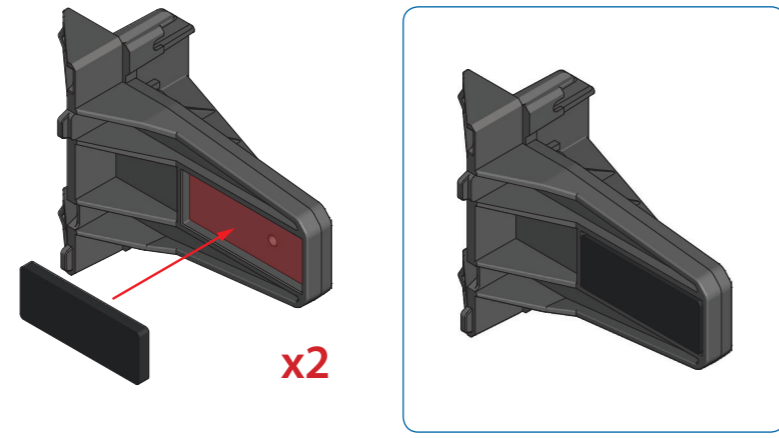
1 Insert **NUT-M3** from underneath the **CRANK ARM**



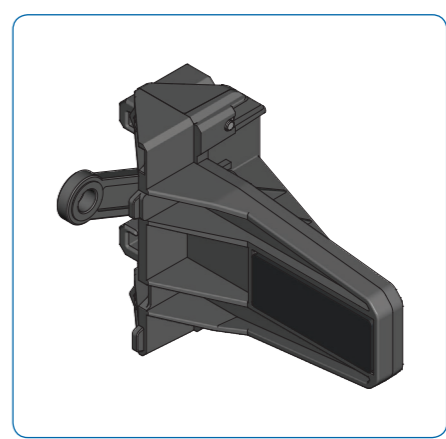
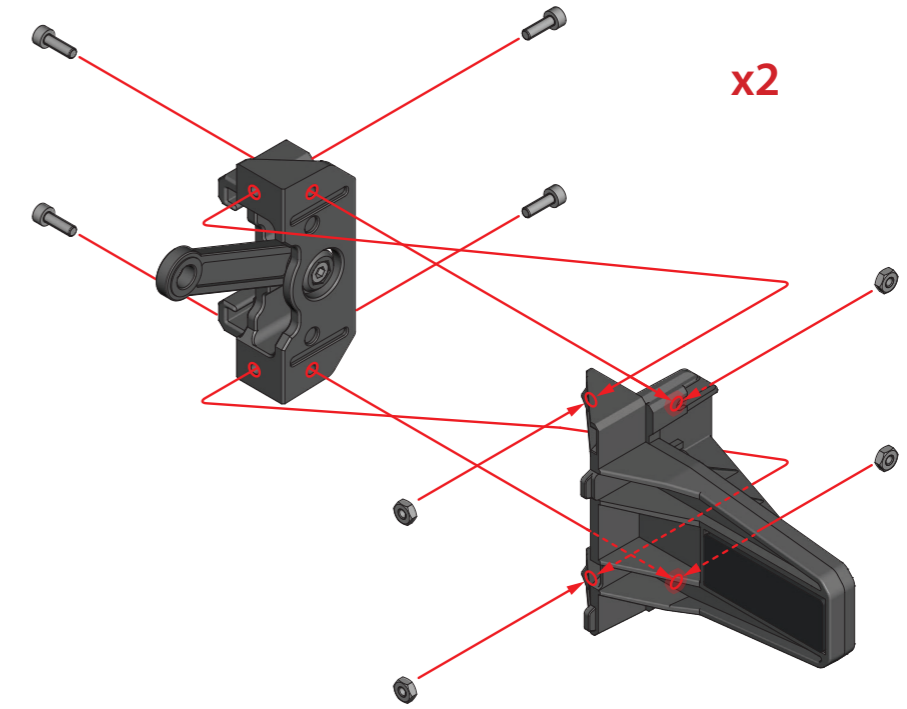
2 Assemble **LINK ROD** in the middle of the **RAIL BLOCK** using **FLANGE BUSH** and **WB-M3x10**

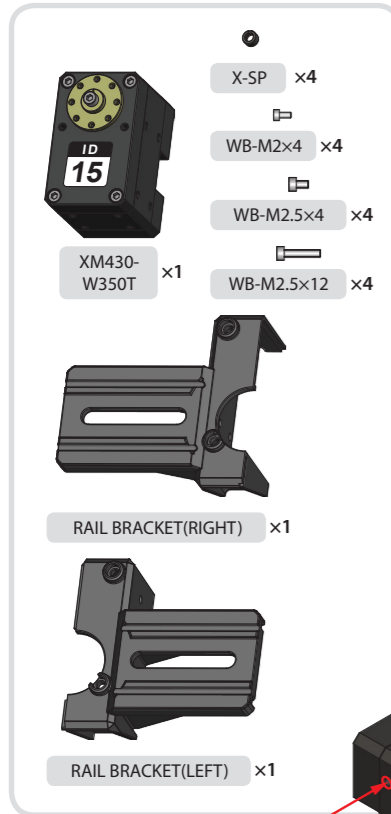


3 Attach **RUBBER PAD** to the inner side of the **PALM GRIPPER**

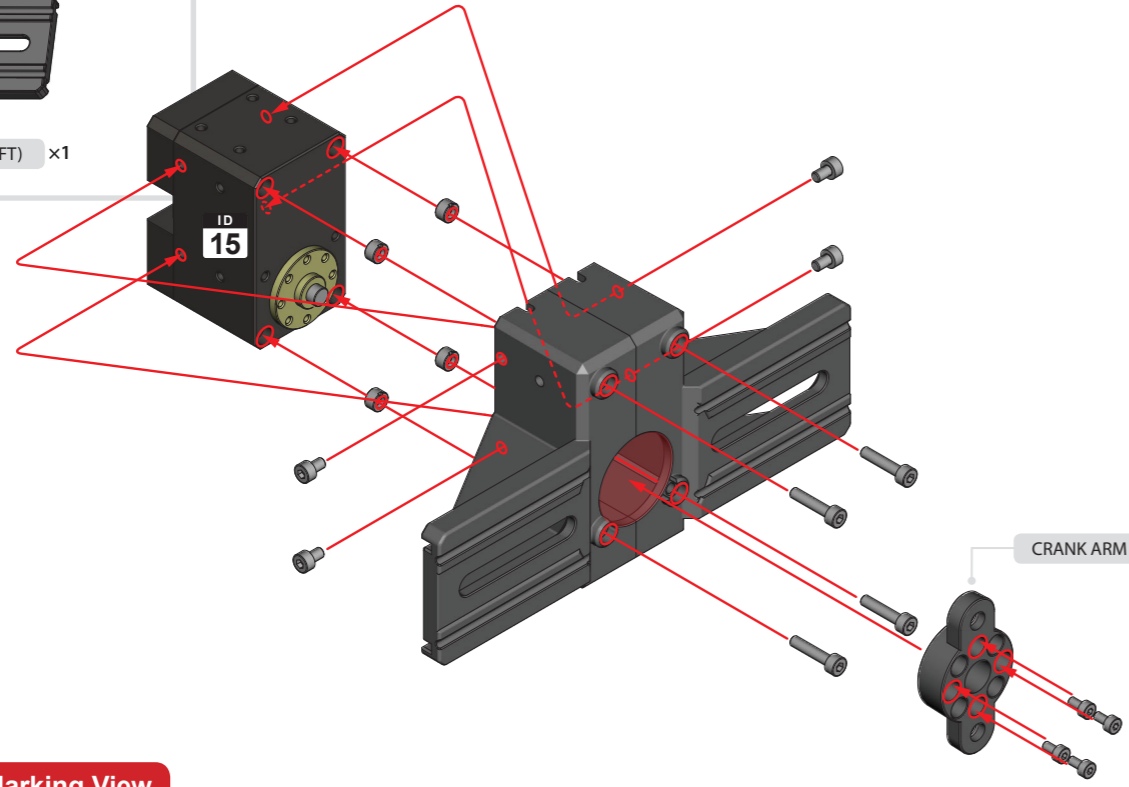


4 Assemble **LINK ROD** + **RAIL BLOCK** and **PALM GRIPPER** using **WB-M2.5x8** and **NUT-M2.5**

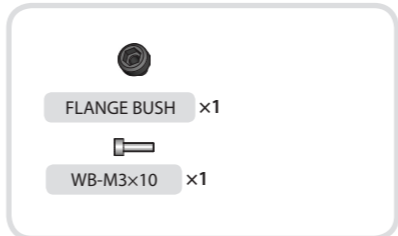
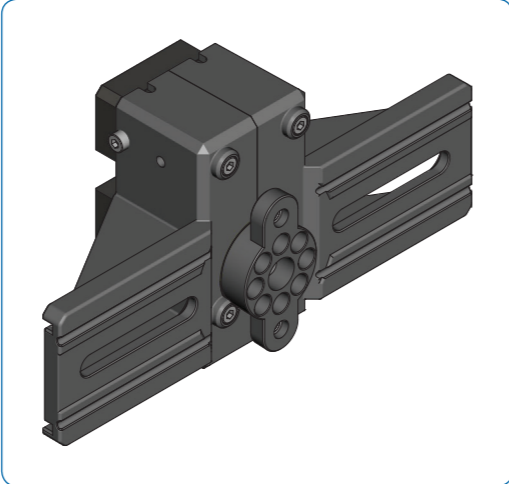
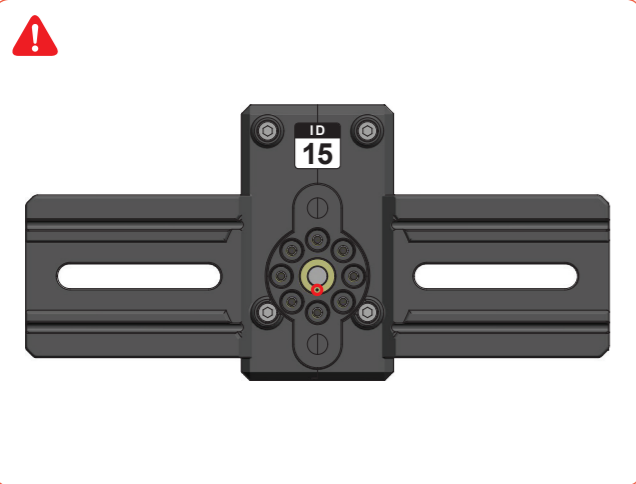




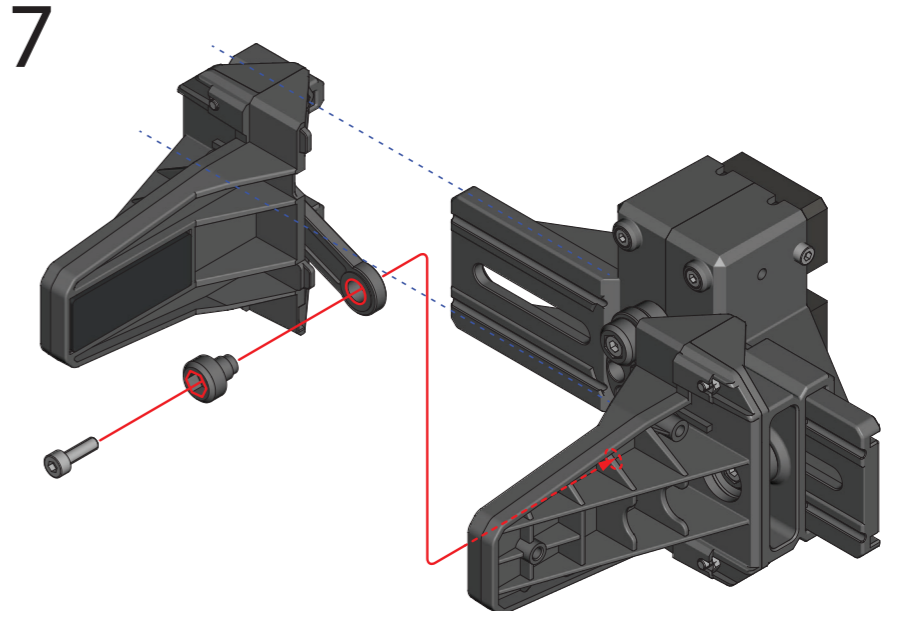
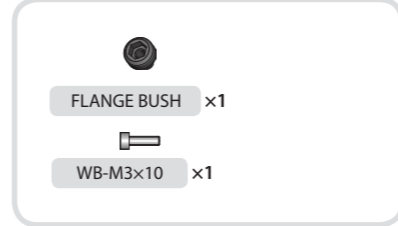
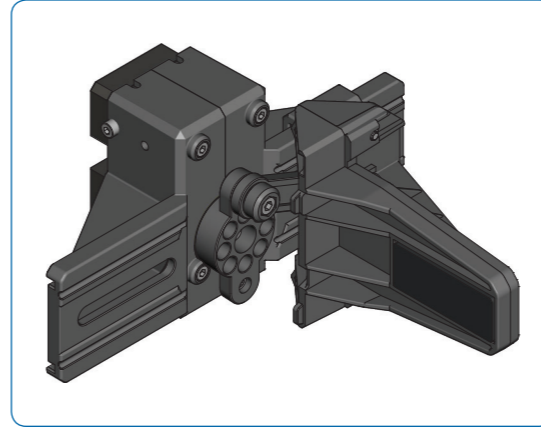
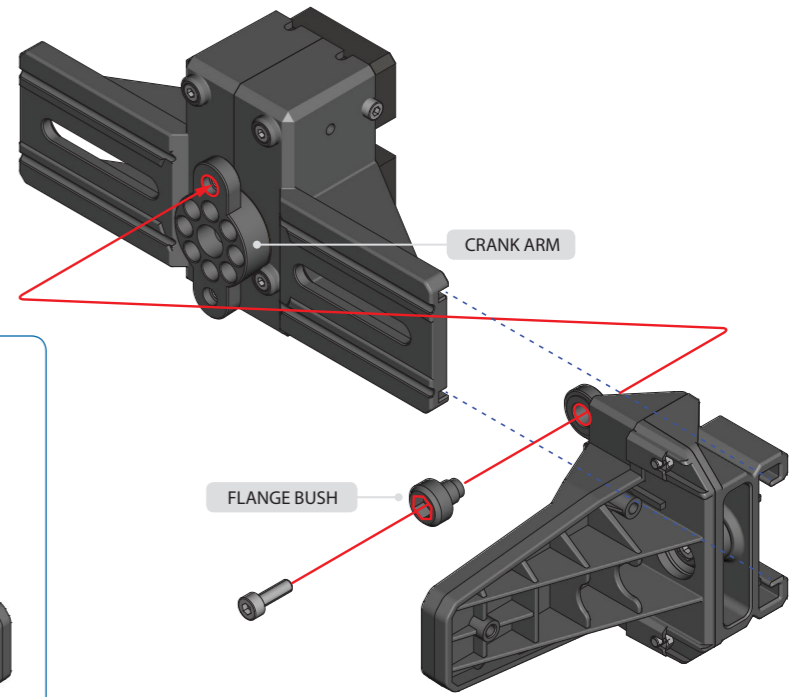
5 Assemble **RAIL BRACKET(RIGHT)** to **RAIL BRACKET(LEFT)**
 Assemble **DYNAMIXEL(ID 15)** to **RAIL BRACKET(RIGHT) + RAIL BRACKET(LEFT)** using **WB-M2.5x12** and **WB-M2.5x4**
 Assemble **CRANK ARM** to the horn of **DYNAMIXEL(ID 15)** using **WB-M2x4**

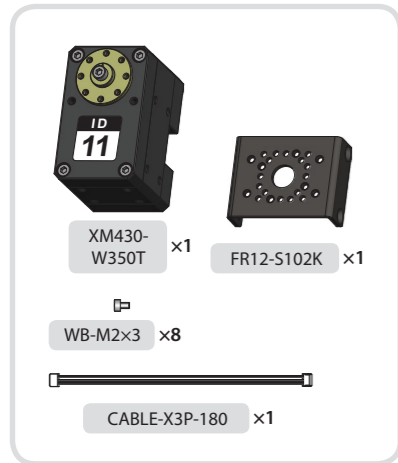
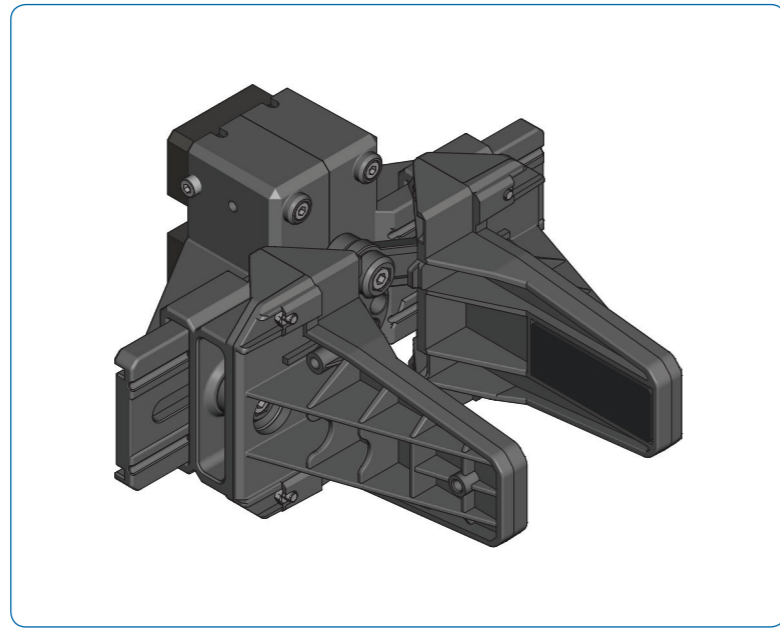


Horn Align Marking View



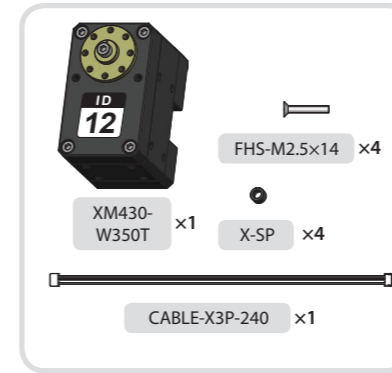
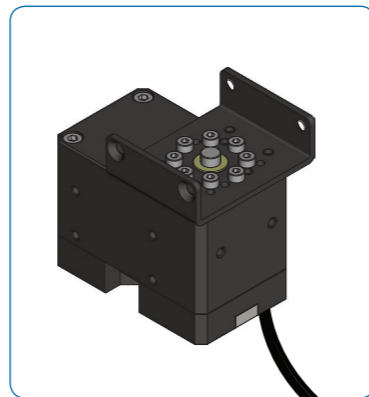
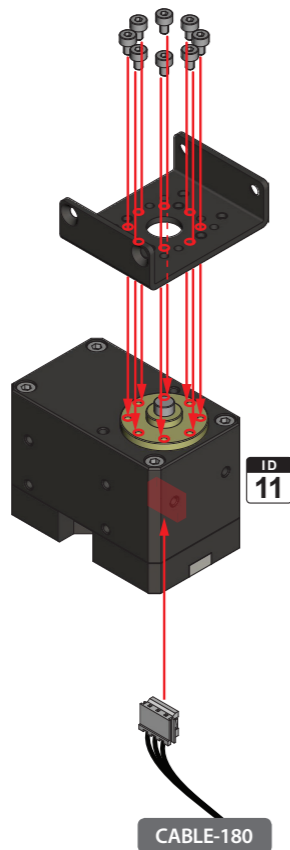
6 Slide **LINK ROD + RAIL BLOCK + PALM GRIPPER** into **RAIL BRACKET** Assemble **FLANGE BUSH** to **CRANK ARM** and **LINK ROD** using **WB-M3x10**





8 Assemble **FR12-S102K** and **DYNAMIXEL(ID 11)** using **WB-M2x3**

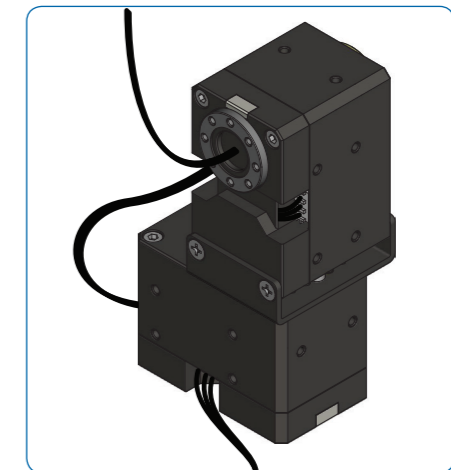
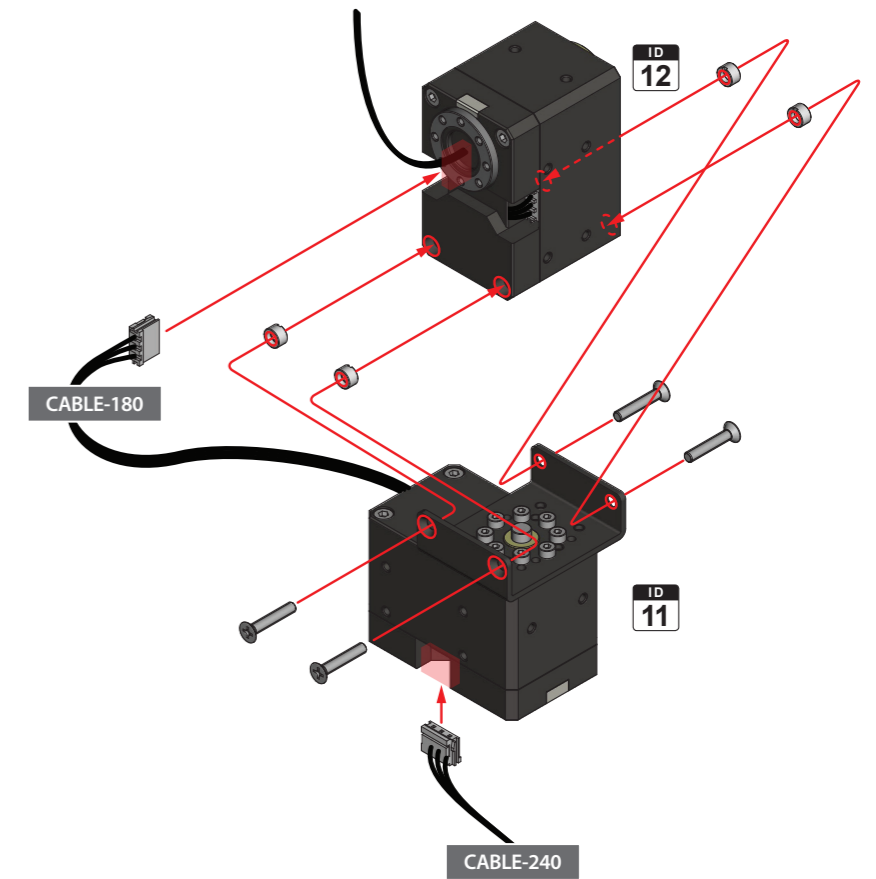
Connect **CABLE-X3P-180** to **DYNAMIXEL(ID 11)**



9 Insert **X-SP** into the bolt holes of **DYNAMIXEL(ID 12)** and assemble to **FR12-S102K** using **FHS-M2.5x14**

Connect **DYNAMIXEL(ID 12)** and **DYNAMIXEL(ID 11)** using **CABLE-X3P-180**

Connect **CABLE-X3P-240** to **DYNAMIXEL(ID 11)**

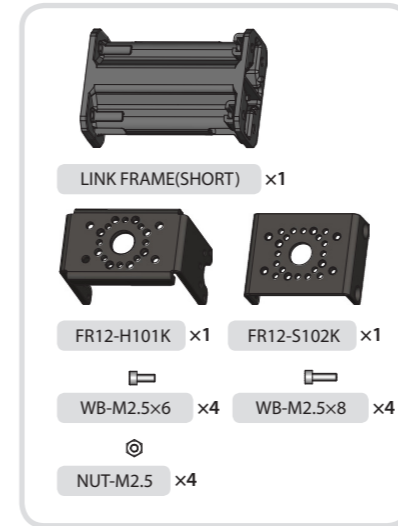
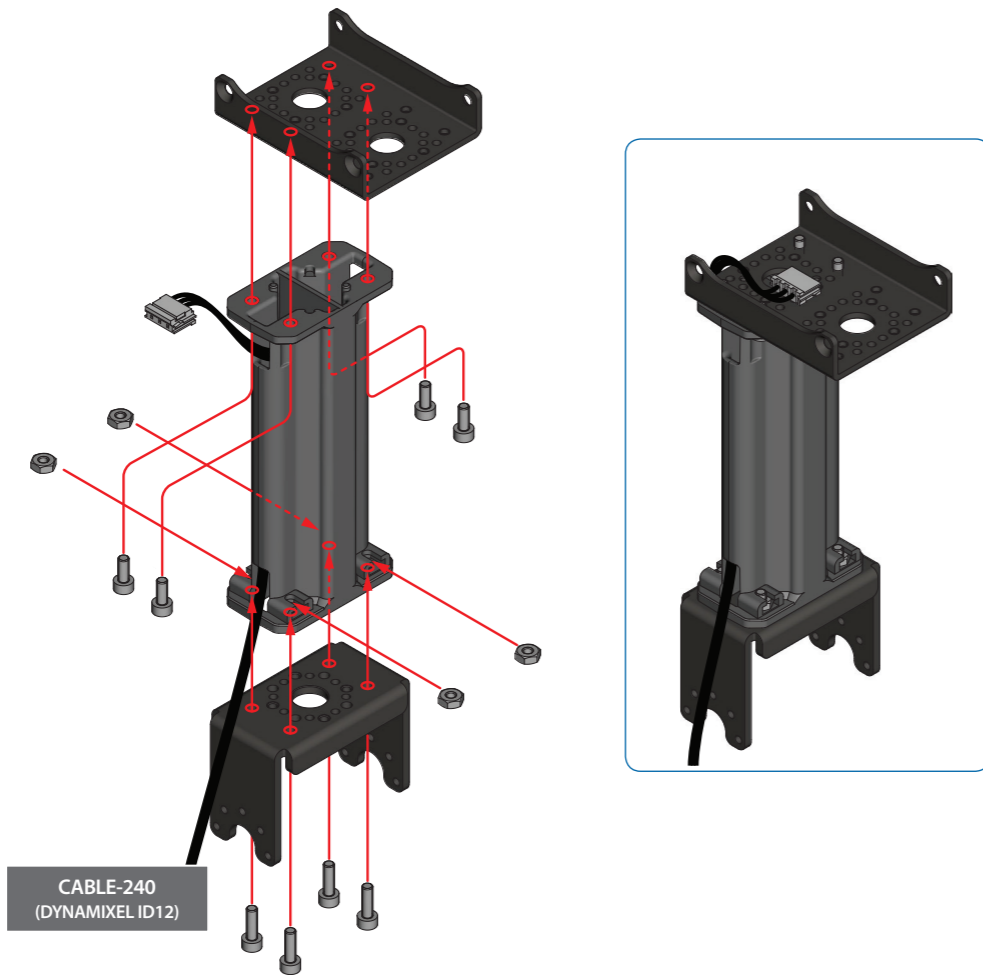




10 Pass **CABLE-X3P-240** from **DYNAMIXEL(ID 12)** through the hole of **LINK FRAME(LONG)**

Assemble **FR12-H101K** to **LINK FRAME(LONG)** using **WB-M2.5x8** and **NUT-M2.5**

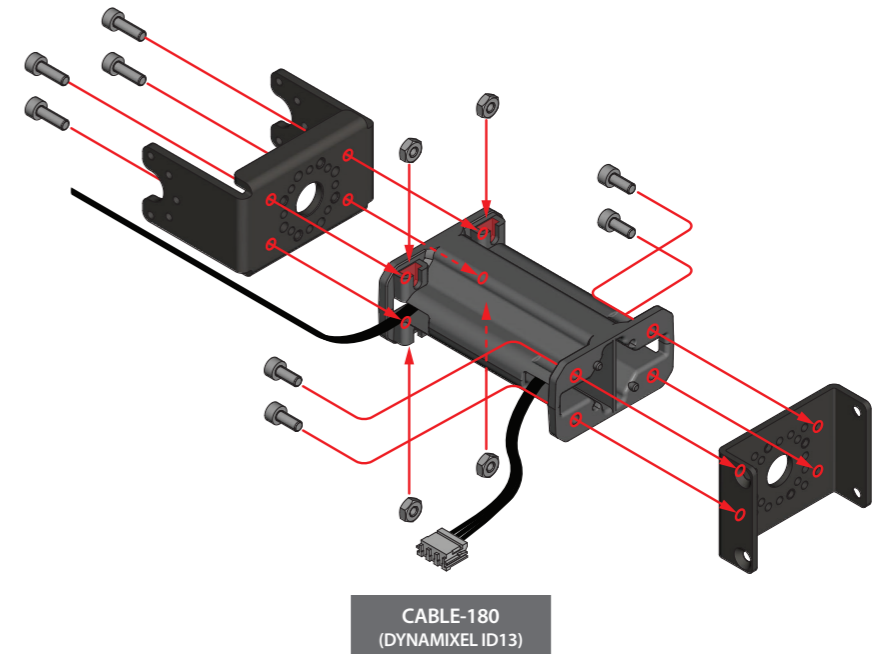
Assemble **LINK FRAME(LONG)** to **FR12-S101K** using **WB-M2.5x6**



11 Pass **CABLE-X3P-180** from **DYNAMIXEL(ID 13)** through the hole of **LINK FRAME(SHORT)**

Assemble **FR12-H101K** to **LINK FRAME(SHORT)** using **WB-M2.5x8** and **NUT-M2.5**

Assemble **LINK FRAME(SHORT)** to **FR12-S102K** to using **WB-M2.5x6**

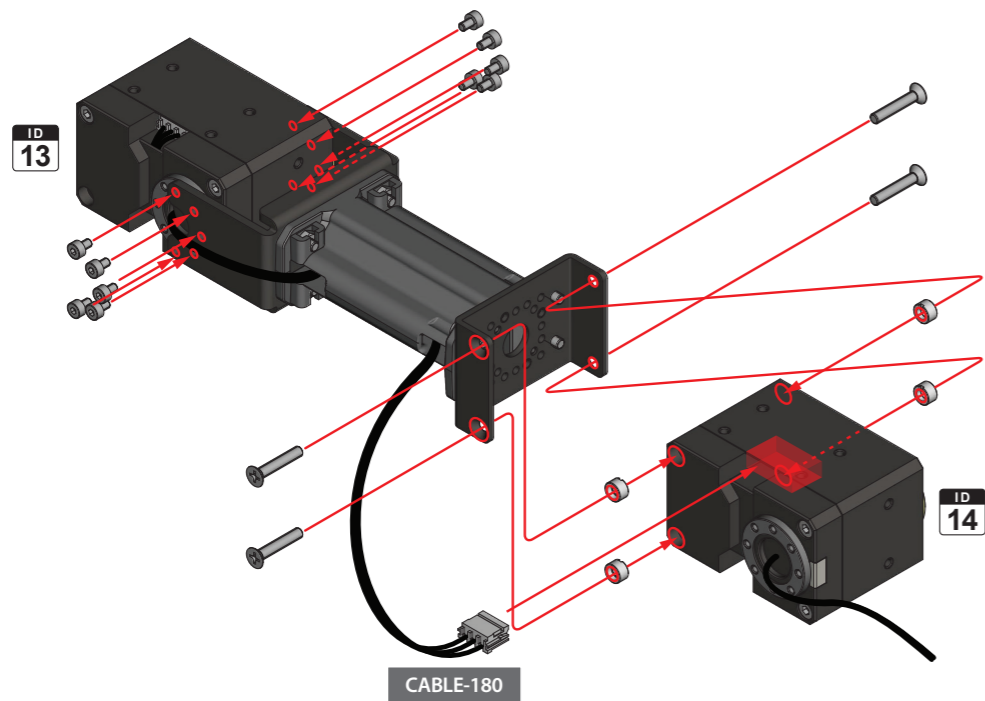




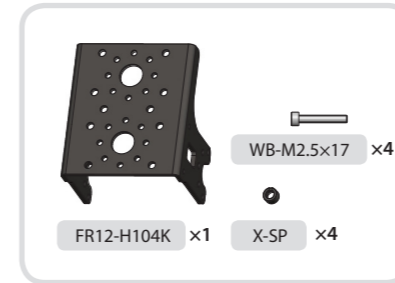
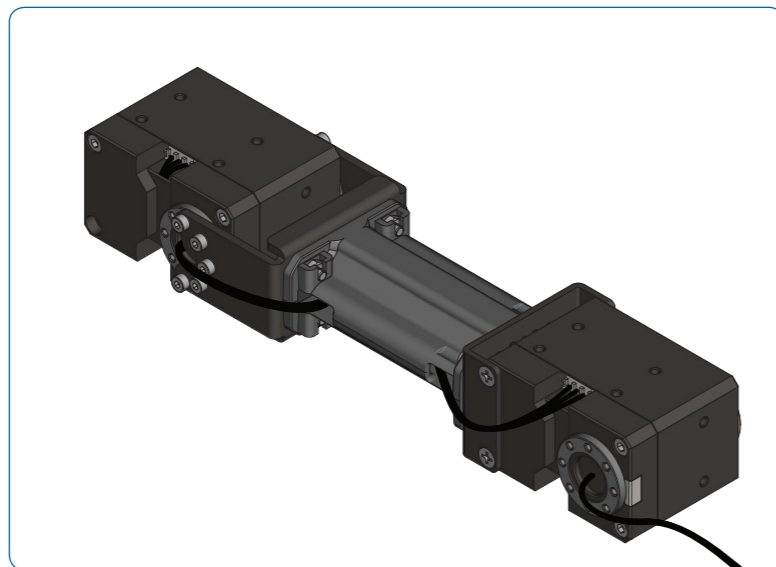
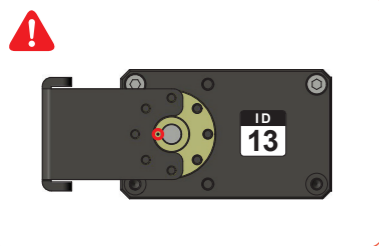
12 Assemble **DYNAMIXEL(ID 13)** to **FR12-H101K** using **WB-M2x3**

Insert **X-SP** into the bolt holes of **DYNAMIXEL(ID 14)** and assemble to **FR12-S102K** using **FHS-M2.5x14**

Connect **DYNAMIXEL(ID 13)** and **DYNAMIXEL(ID 14)** using **CABLE-X3P-180**

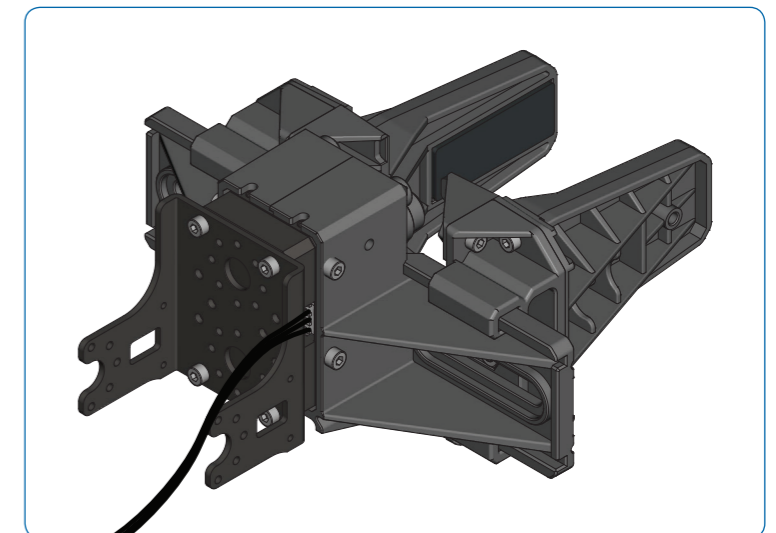
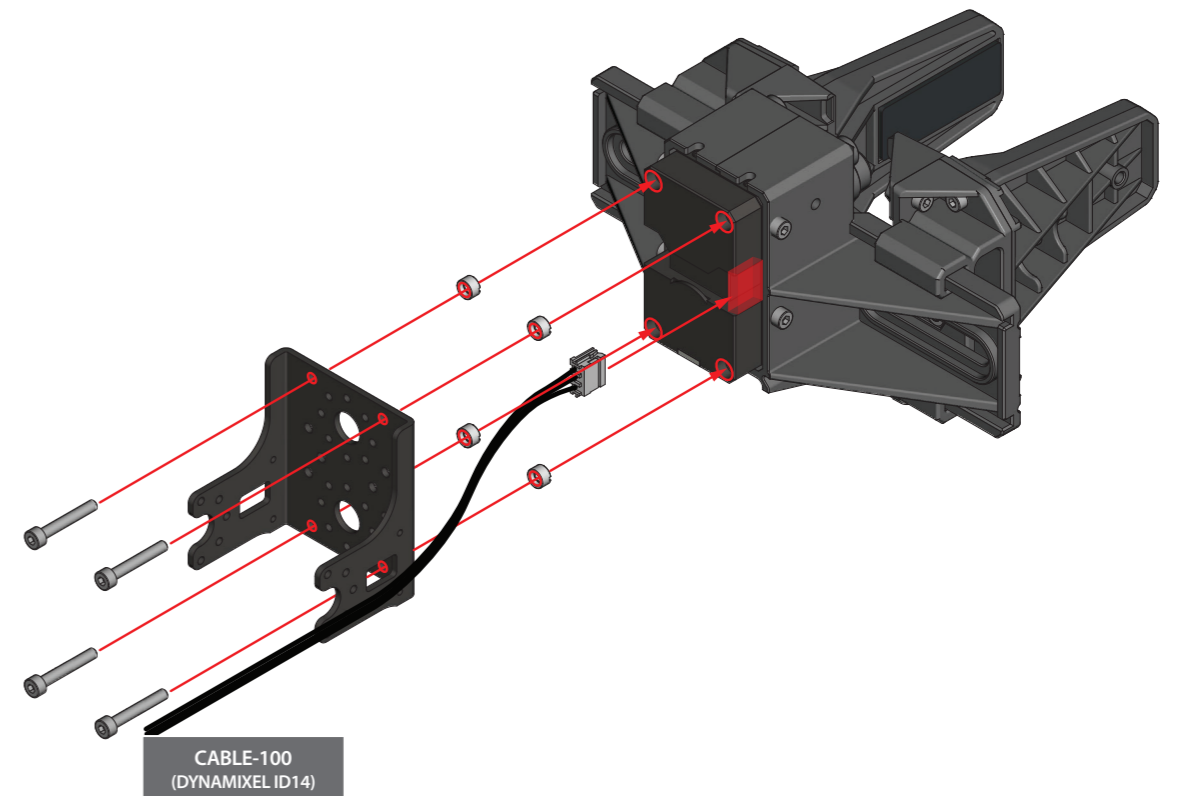


Horn Align Marking View



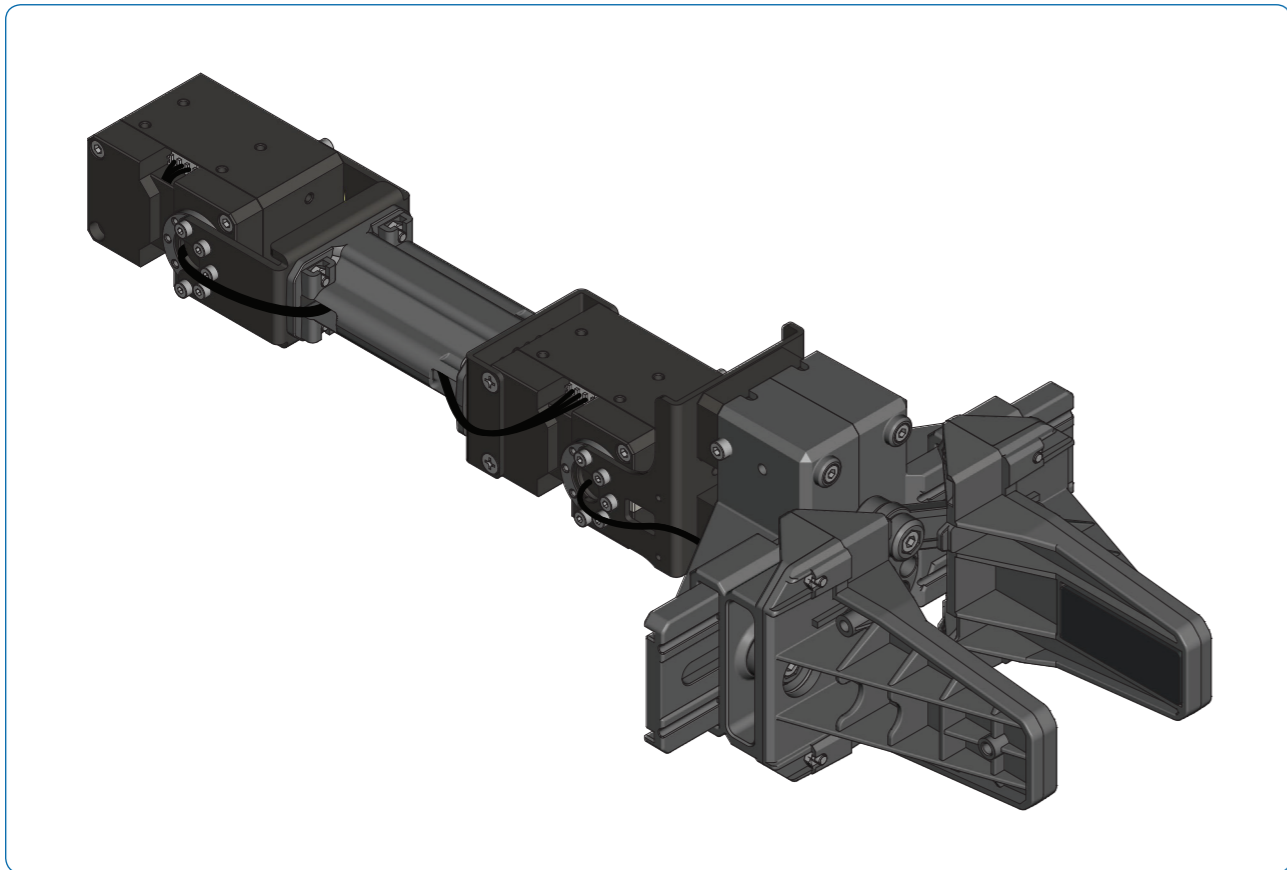
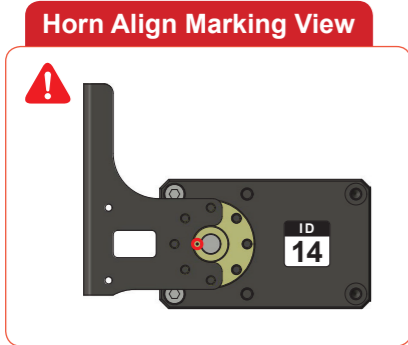
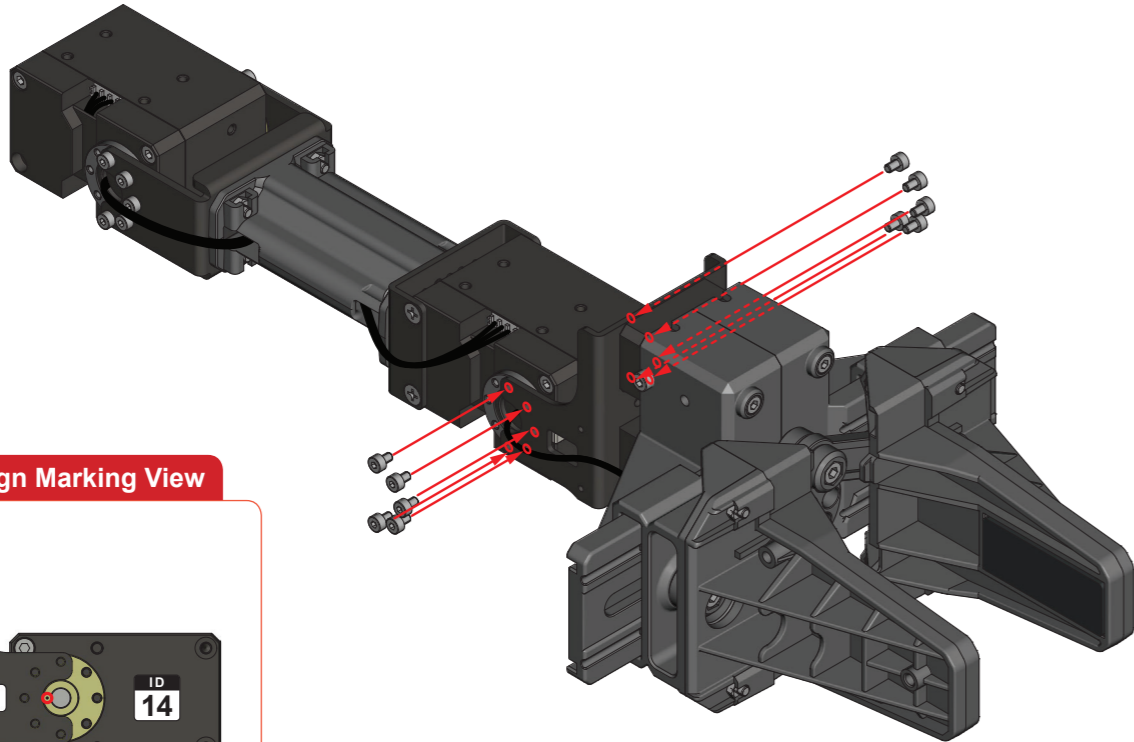
13 Connect **DYNAMIXEL(ID 14)** and **DYNAMIXEL(ID 15)** using **CABLE-X3P-100**

Insert **X-SP** into the bolt holes of **DYNAMIXEL(ID 15)** and assemble **FR12-H104K** to Gripper using **WB-M2.5x17**



WB-M2x3 x10

14 Assemble **DYNAMIXEL(ID 14)** and Gripper using **WB-M2x3**

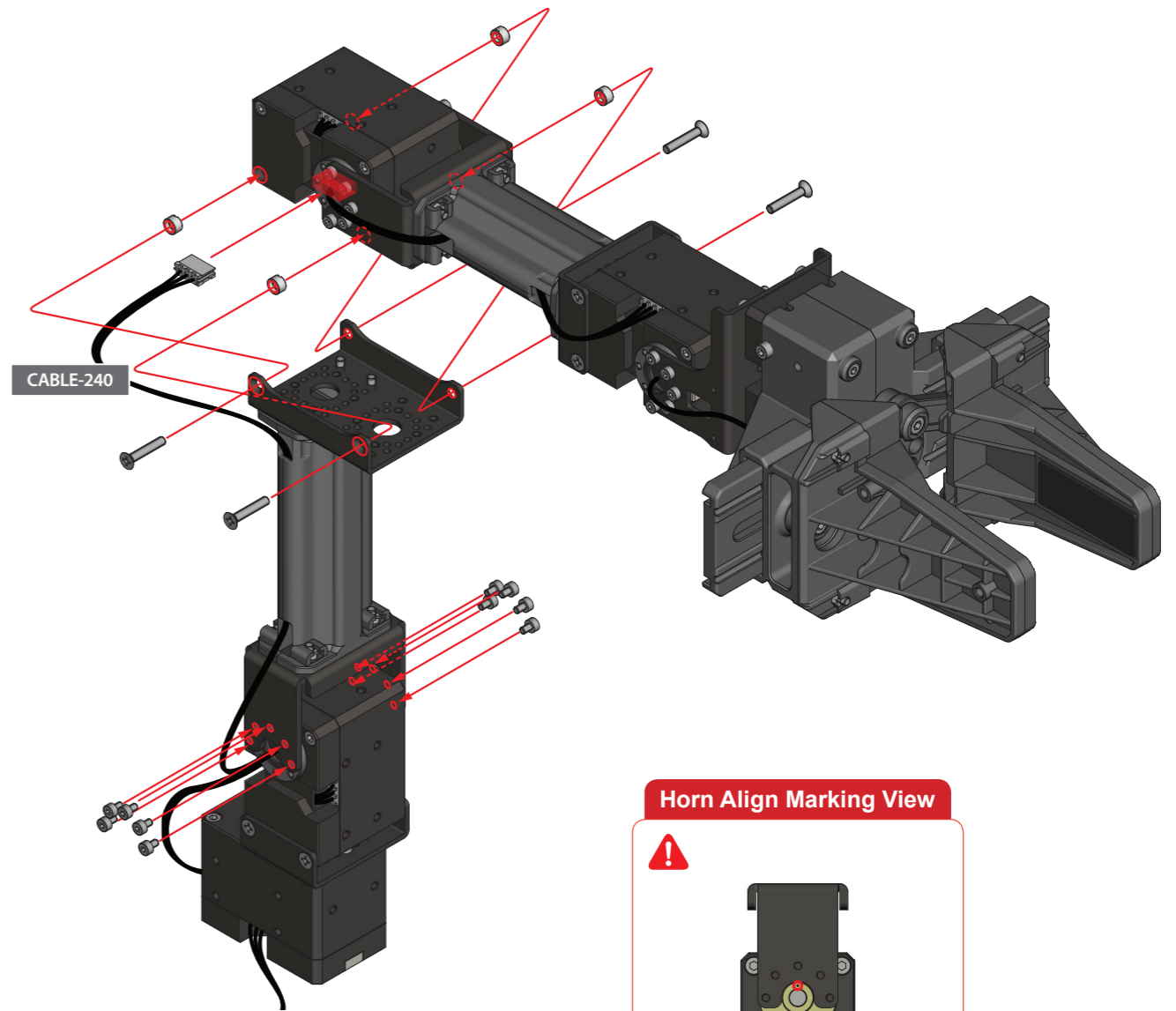


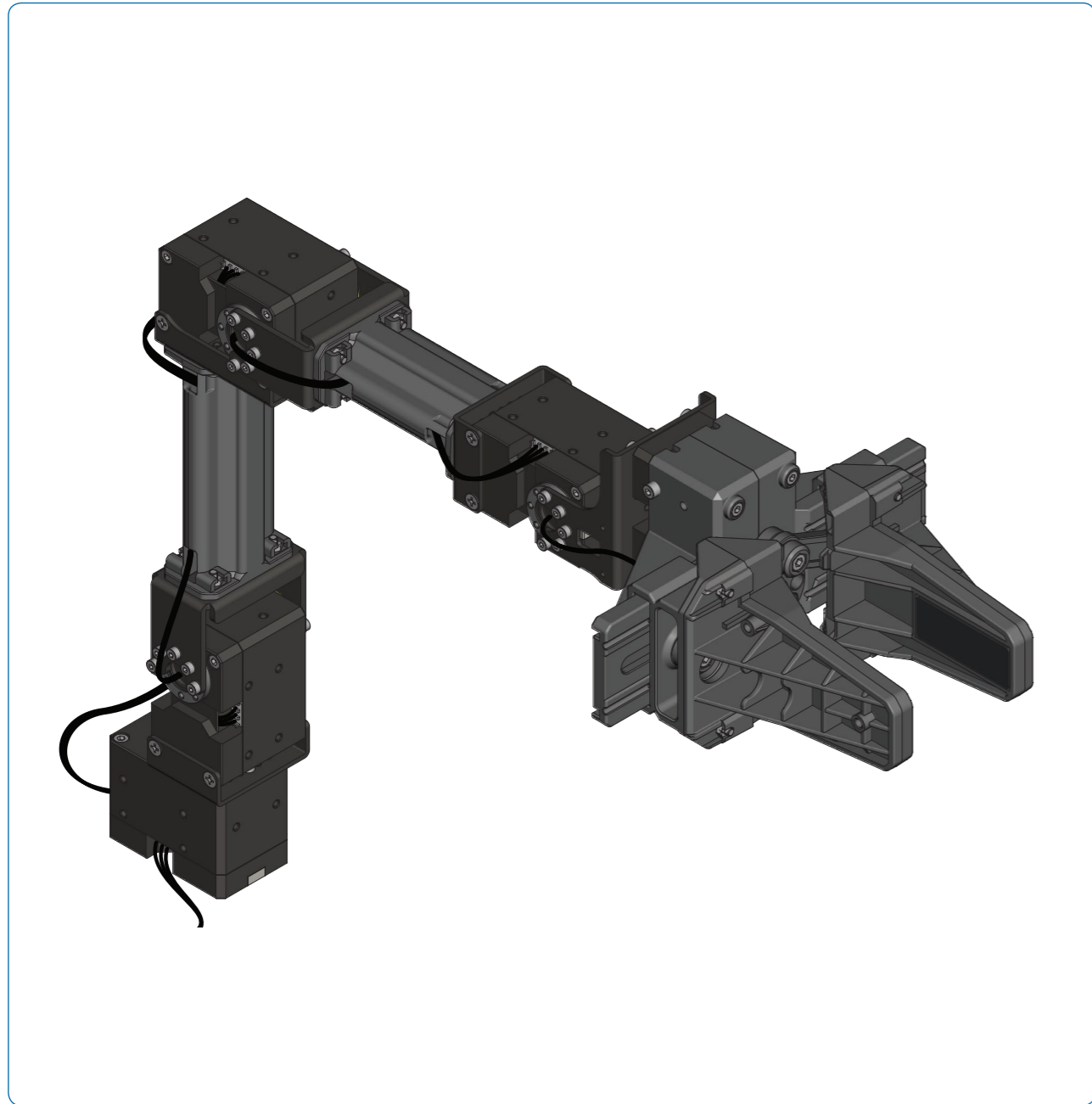
WB-M2x3 x10 FHS-M2.5x14 x4
X-SP x4

15 Connect **DYNAMIXEL(ID 12)** and **DYNAMIXEL(ID 13)** using **CABLE-180**

Assemble **DYNAMIXEL(ID 12)** using **WB-M2x3**

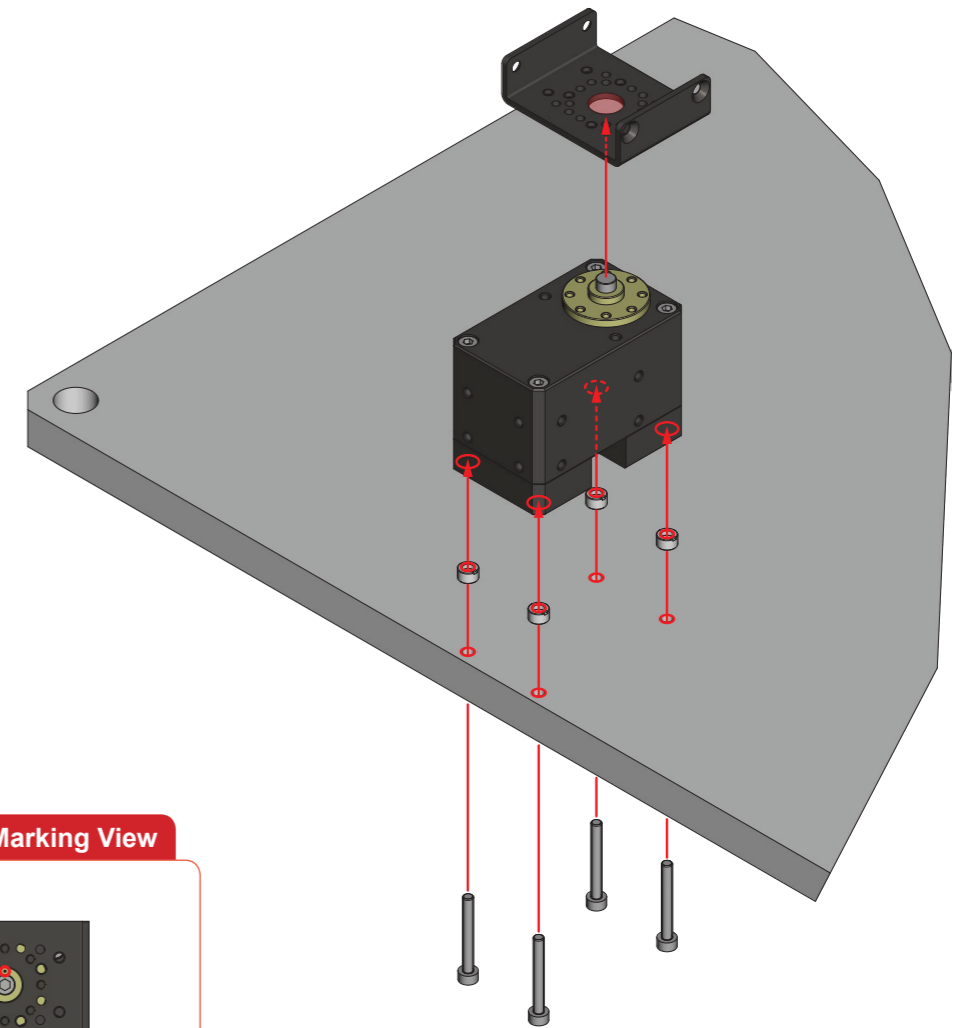
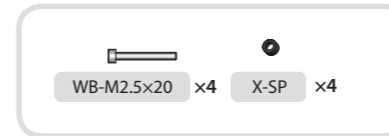
Assemble **DYNAMIXEL(ID 13)** using **FHS-M2.5x14** through **X-SP**





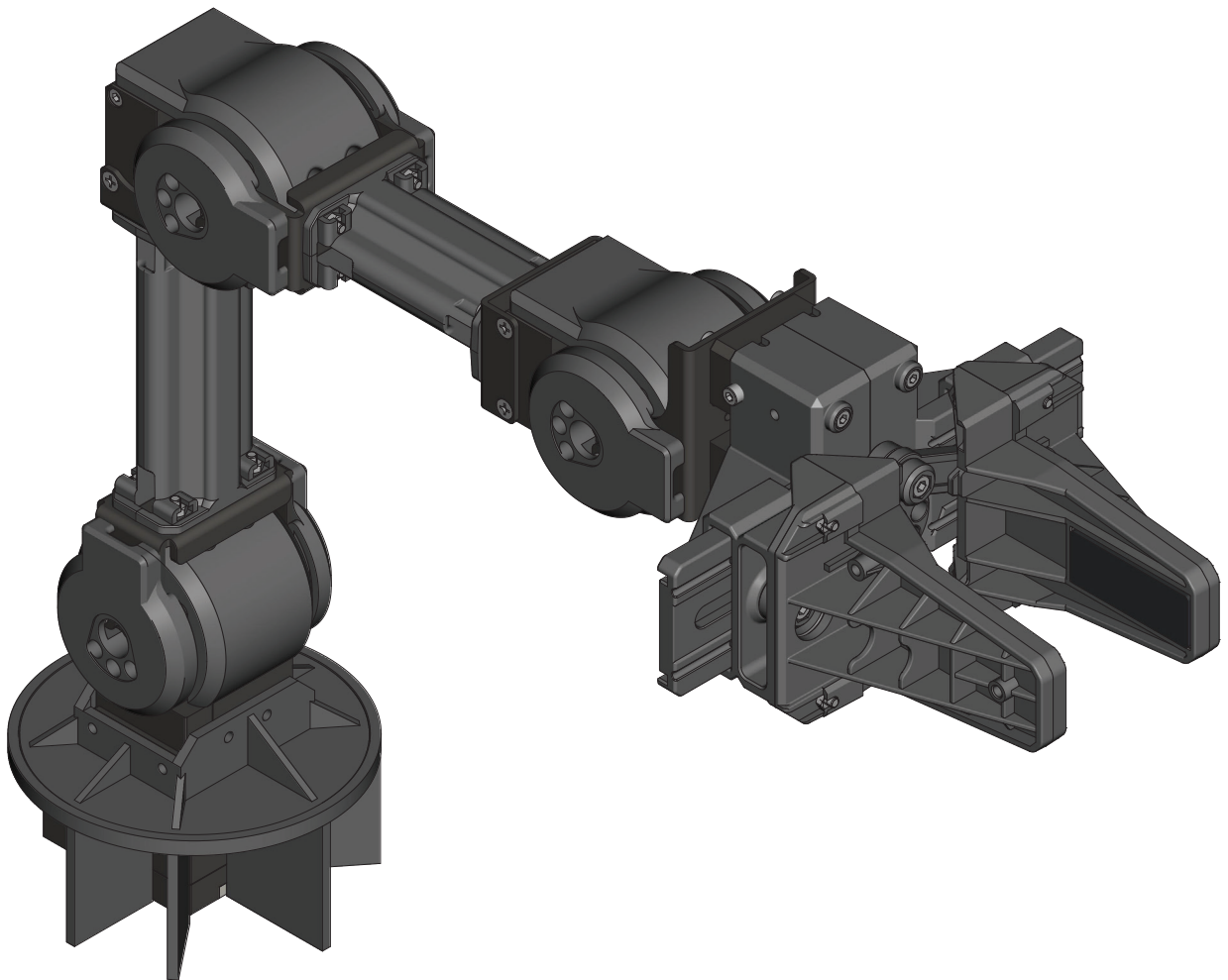
Appendix 1

Assemble **DYNAMIXEL(ID 11)** and **Base Plate-02** using **WB-M2.5x20**



Appendix 2

To prevent substance from getting caught between the DYNAMIXEL and frame, 3D printed optional parts can be attached to OpenManipulator-X. These parts can be downloaded from Thingiverse or Onshape. Please check the QR codes below.



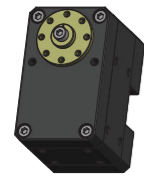
Thingiverse



Onshape

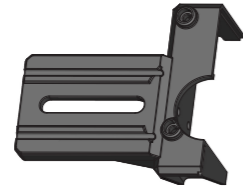


Parts List

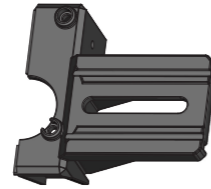


ID 11 ~ ID 15

XM430-W350-T x5



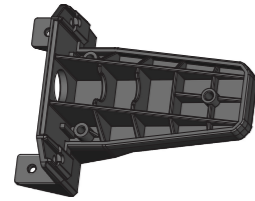
RAIL BRACKET(RIGHT) x1



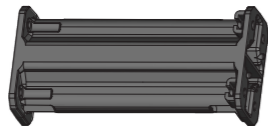
RAIL BRACKET(LEFT) x1



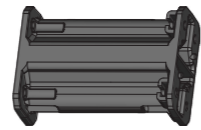
RAIL BLOCK x2



PALM GRIPPER x2



LINK FRAME(LONG) x1



LINK FRAME(SHORT) x1



CRANK ARM x1



FLANGE BUSH x4



LINK ROD x2



RUBBER PAD x2



X-SP x24



DC12-IDLER x3



DC12-IDLER-CAP x3



DC12-P-BEARING x3



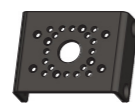
FR12-H101K x2



FR12-H104K x1



FR12-S101K x1



FR12-S102K x2

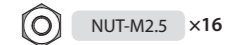
1:1



FHS-M2.5x14 x12



WB-M2x3 x38



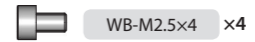
NUT-M2.5 x16



WB-M2x4 x4



NUT-M3 x4



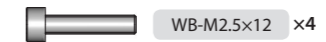
WB-M2.5x4 x4



WB-M2.5x6 x8



WB-M2.5x8 x16



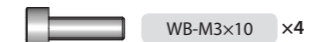
WB-M2.5x12 x4



WB-M2.5x17 x4



WB-M2.5x20 x4



WB-M3x10 x4

1:1



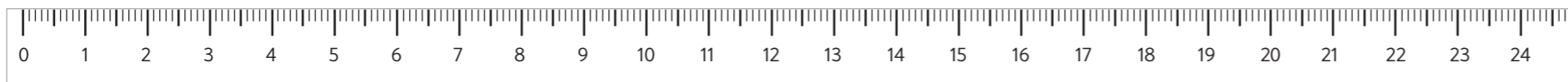
CABLE-X3P-100 x1



CABLE-X3P-180 x2



CABLE-X3P-240 x2





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