

SERVICE INSTRUCTION

- E-bot PRO -

Model: EB100P

Ver 1.0

September 2014

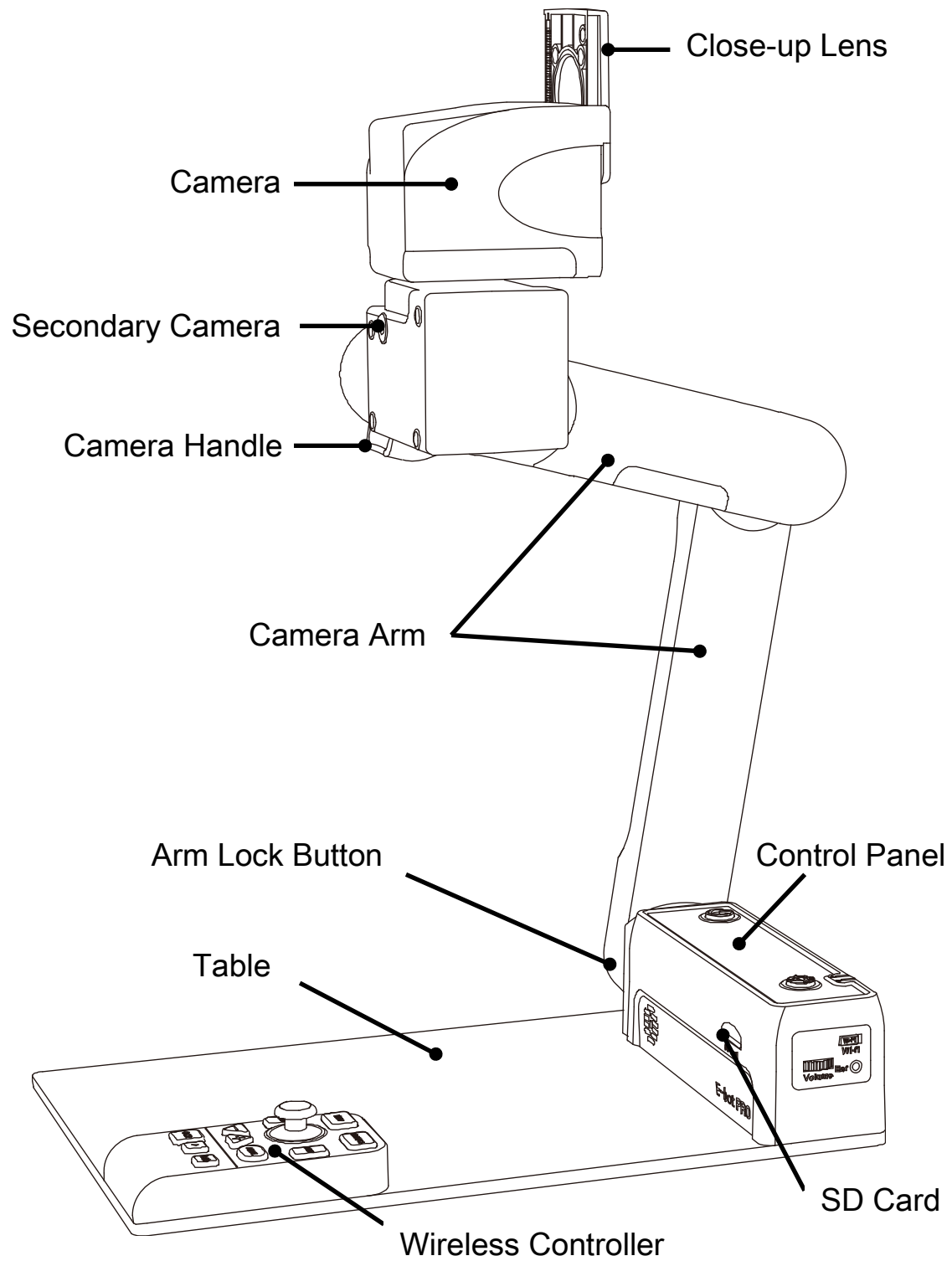
HIMS International Corporation

Contents

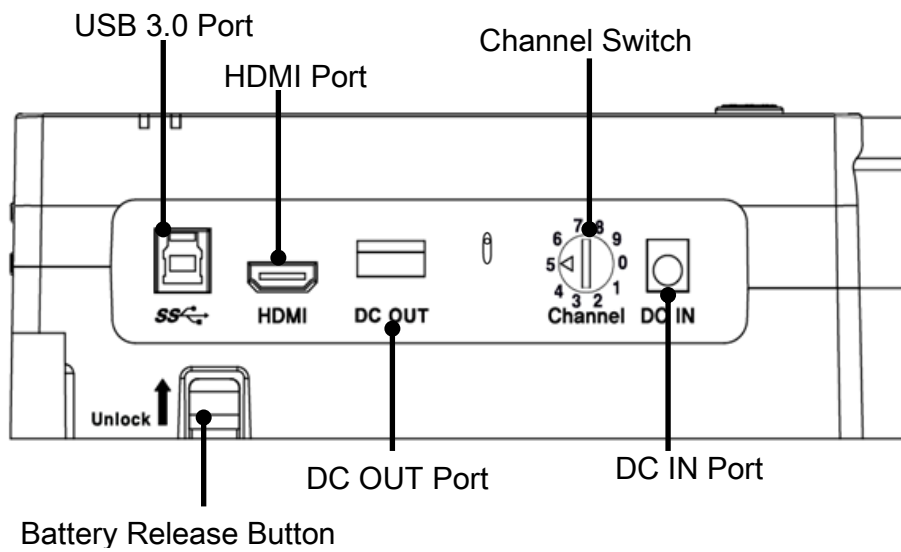
1. Hardware structure.....	3
A. Overview of E-bot PRO	3
B. Back Side of E-bot PRO.....	4
C. Side of E-bot PRO	4
D. Front of E-bot PRO	4
2. Assembly	5
A. Disassembling	5
B. Assembling	22
3. Checking Powers on the Boards	53
A. Voltage check point	53
B. How to repair the voltage failure	55
4. Diagnoses of Troubles	57
5. Screw	62
6. Part List	68
7. Contact Information	82

1. Hardware structure

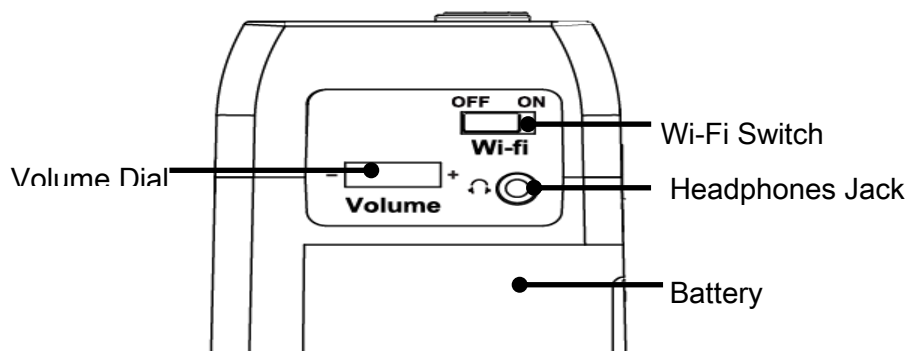
A. Overview of E-bot PRO



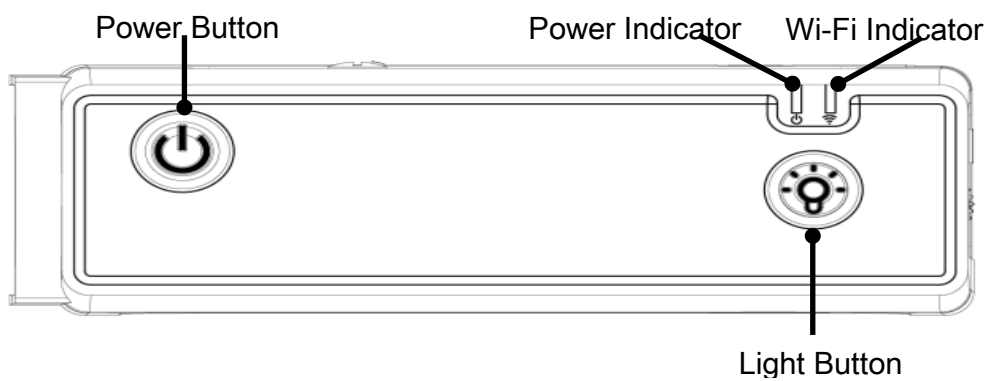
B. Back Side of E-bot PRO



C. Side of E-bot PRO



D. Front of E-bot PRO



Before you repair the unit

Please disconnect AC adapter from the E-bot PRO, turn off the power of E-bot PRO before disassembling the unit.

2. Assembly

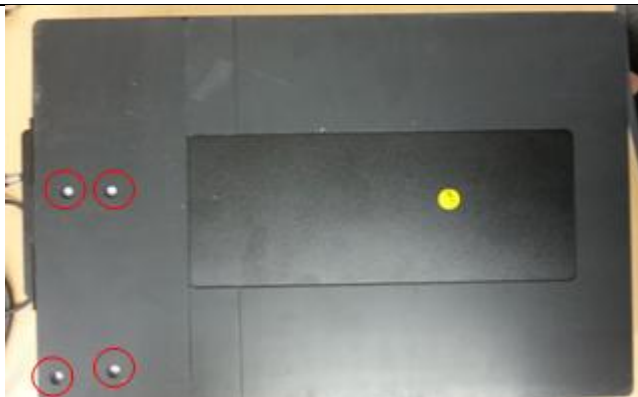
A. Disassembling

1) UI PCB CASE module



Picture 1

① Separates the body and the battery shown in Picture 1.



Picture 2

② Unscrew the screws shown in Picture 2.



No.1

No.2



Picture 3

③ "Upper Case" lifts up shown in Picture 3.



Picture 4

④ Take out the "Plate-Rear-Port" and "Knob-ID-Select" shown in Picture 4.





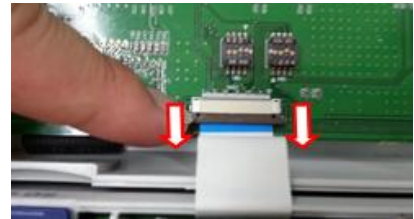
Picture 5

- ⑤ Take out the "6P HARNESS_100mm Cable" shown in Picture 5.



Picture 6

- ⑥ Take out the FF Cable shown in Picture 6.



Picture 7

- ⑦ Take out the Cables and unscrew the screws shown in Picture 7.



Picture 8

- ⑧ Pressing the "Power button" and "Light button" to disassemble the "UI Board" and "Upper case" shown in Picture 8.



Picture 9

- ⑨ Take out the Button knobs shown in Picture 9.



Picture 10

⑩ The part of "UI PCB module" after disassembly shown in Picture 10.

2) Main, Power PCB Case module



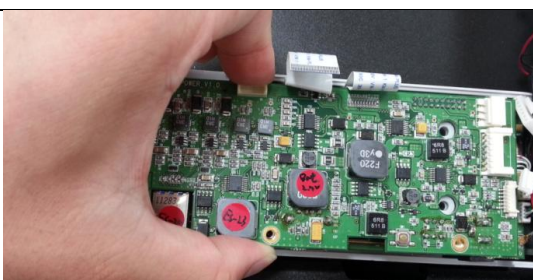
Picture 11

① Take out the Cables connected to the "Power Board" shown in Picture 11.



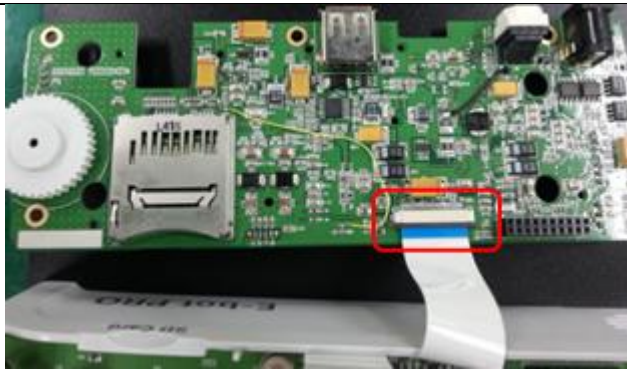
Picture 12

② Unscrew the screws shown in Picture 12.



Picture 13

③ Take out the "Power Board" using hands shown in Picture 13.



Picture 14

- ④ Take out the FF Cable shown in Picture 14.



Picture 15

- ⑤ Take out the "EMI Absorber" shown in Picture 15.



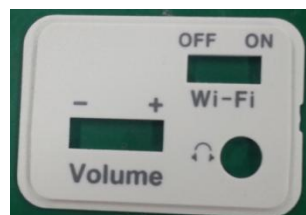
Picture 16

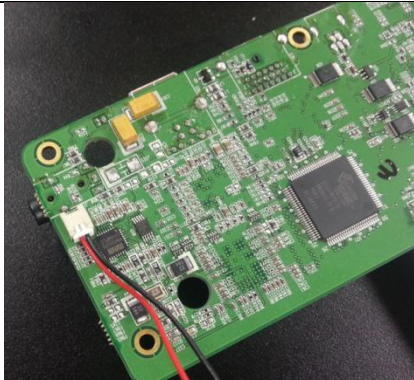
- ⑥ Remove the screws shown in Picture 16.



Picture 17

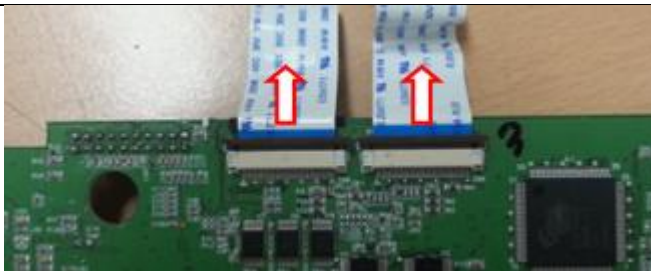
- ⑦ Separate "Plate-Side-Port" and turn "Main Board" over shown in Picture 17.





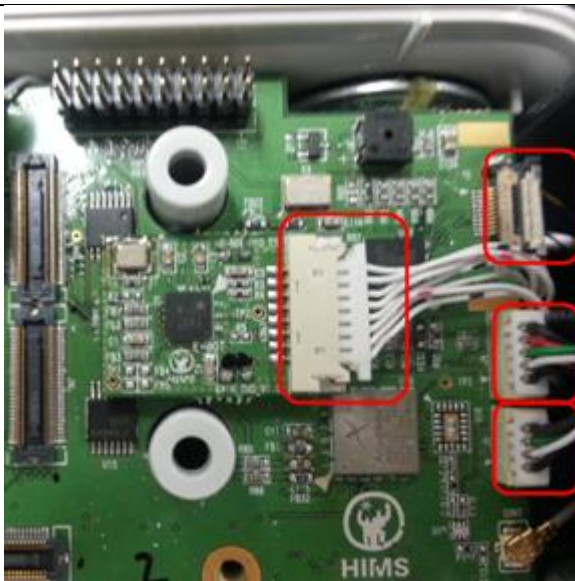
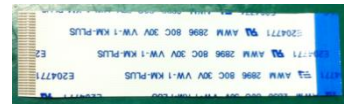
Picture 18

- ⑧ Separate "Speaker Harness" shown in Picture 18.



Picture 19

- ⑨ Separate FF Cables shown in Picture 19.



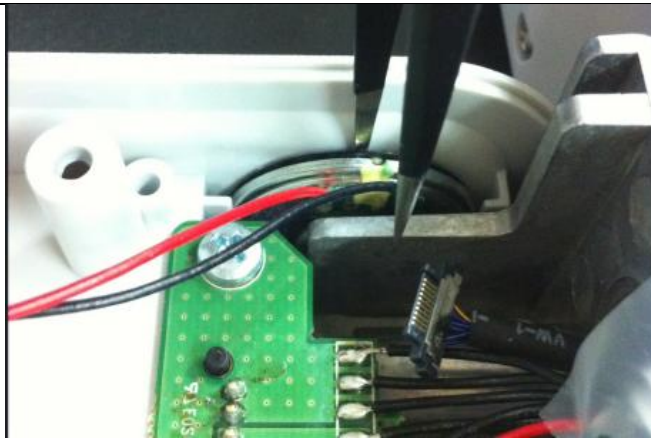
Picture 20

- ⑩ Separate Cables shown in Picture 20. (HDMI Harness, 5P_Sheild Harness, 4P_Sheild Harness, Wi-Fi-Antenna, 8P_Sheild Harness)



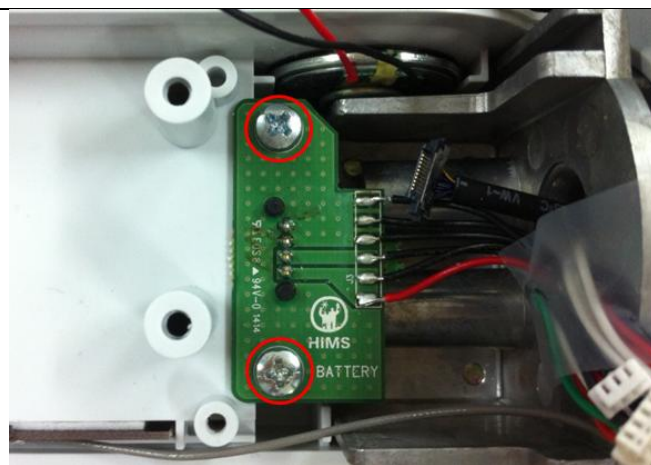
Picture 21

- ⑪ Separate "CPU Module" shown in Picture 21.
※ Remove the "CPU Module" using the tweezers into the CN3.



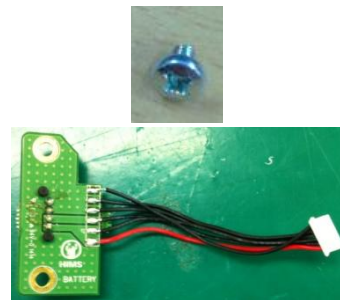
Picture 22

- ⑫ Replace speaker shown in Picture 22.
 ※ Remove the speaker using the tweezers
 ※ You cannot reuse the Speaker which is separated



Picture 23

- ⑬ Remove the screws and separate "battery connection board" shown in Picture 23.



Picture 24

- ⑭ Separate "Wi-Fi Antenna" shown in Picture 24.



Picture 25

- ⑮ Main and Power PCB Case Module degradation Photo shown in Picture 25.

3) Arm Module



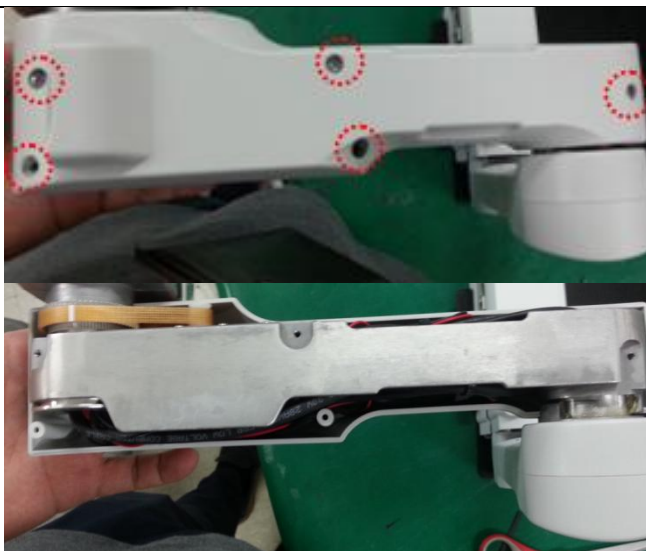
Picture 26

- ① Remove the screws as shown on Picture 26.



Picture 27

- ② Separate the "STAND ARM CASE R" and the "KNOB LEVER" from "STAND ARM" shown in Picture 27.



Picture 28

- ③ Remove the screws shown in Picture 28.





Picture 29

- ④ Remove the screws shown in Picture 29.



Picture 30

- ⑤ Remove the screws shown in Picture 30.

※ Note the screw assembly sequence.

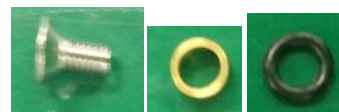




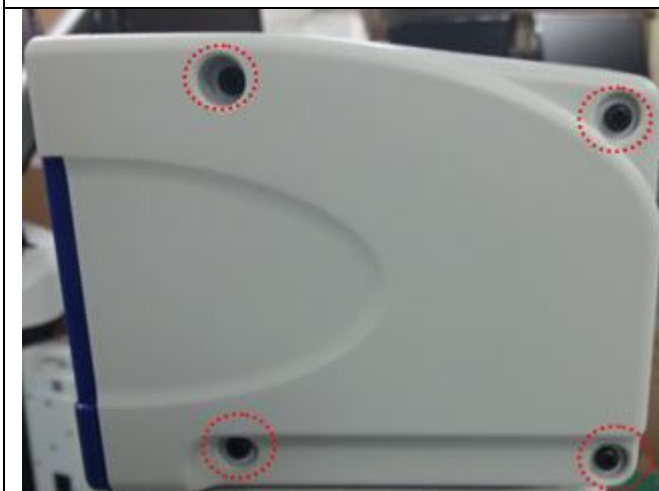
Picture 31

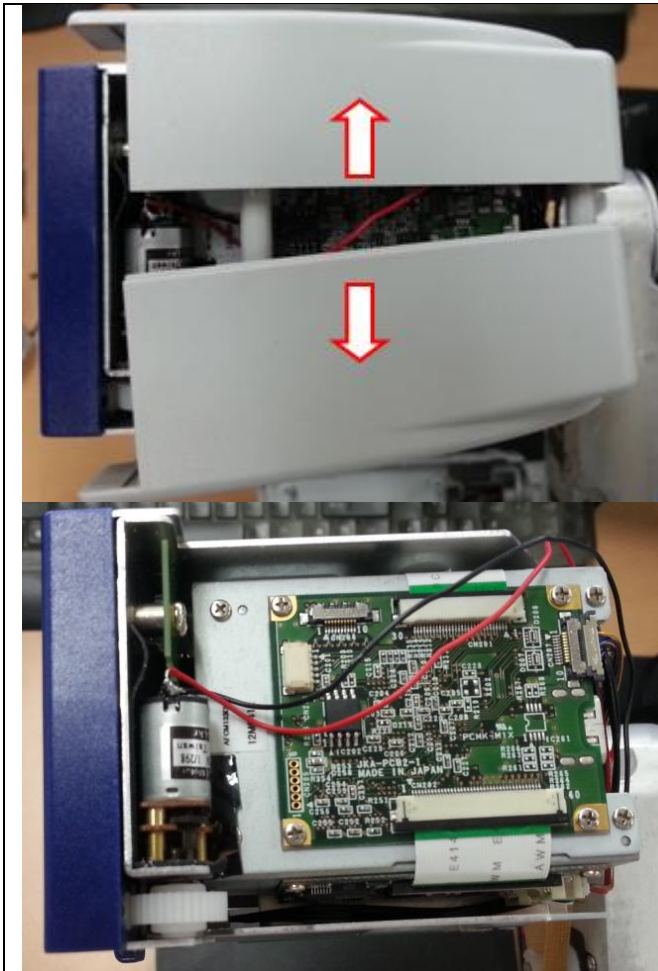
⑥ Remove the screws shown in Picture 31.

※ Note the screw assembly sequence.

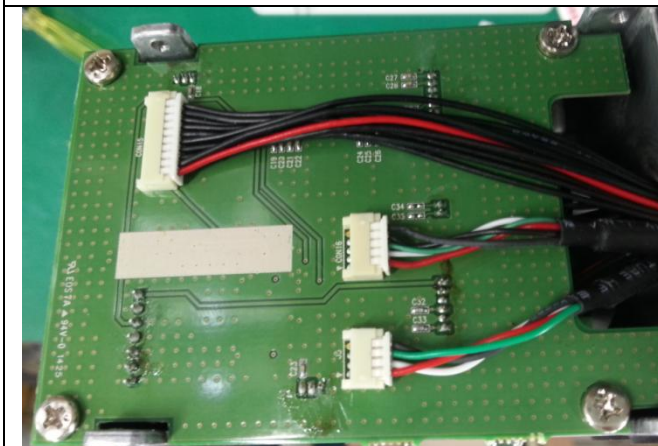


⑦ Remove the screws and Separate the Camera Case shown in Picture 32.



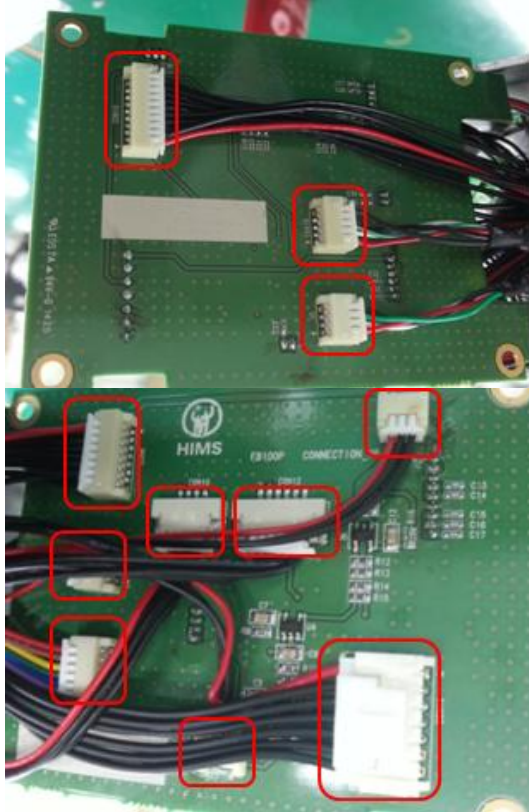


Picture 32



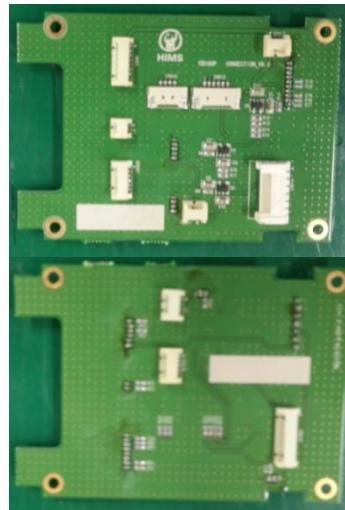
Picture 33

- ⑧ Remove the screws shown in Picture 33.



Picture 34

- ⑨ Separate the cables shown in Picture 34.



Picture 35

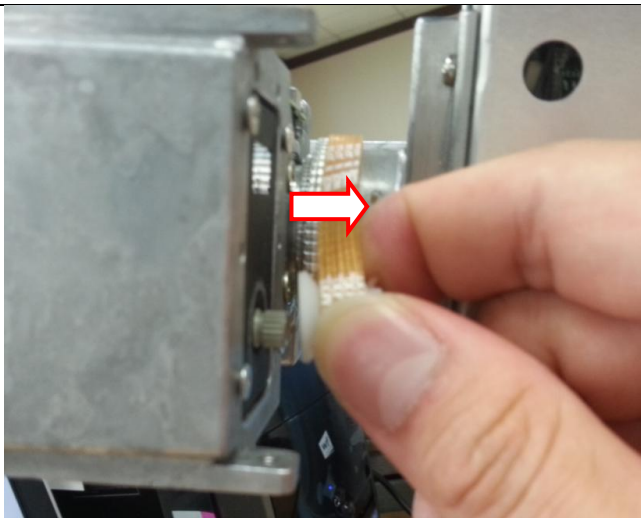
- ⑩ Remove the screws and Separate the cables shown in Picture 35.





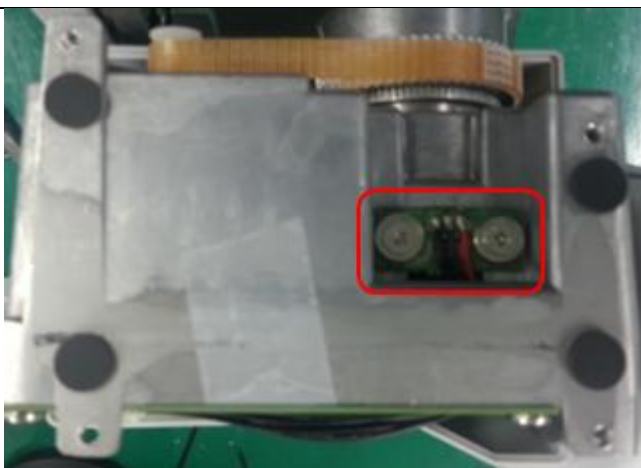
Picture 36

⑪ Remove the screw shown in Picture 36.

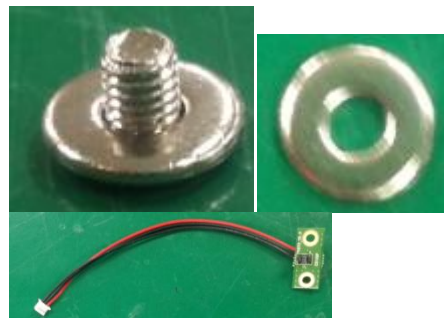


Picture 37

⑫ Separate the "PULLY-S" shown in Picture 37.



⑬ Separate the screws and the "X-axis Photo Sensor" shown in Picture 38.

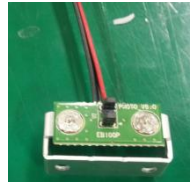




Picture 38



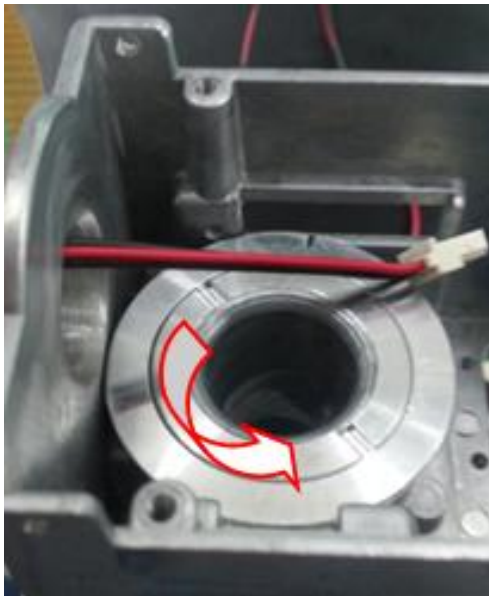
- ⑭ Separate the screws and the "Y-axis Photo Sensor" shown in Picture 39.





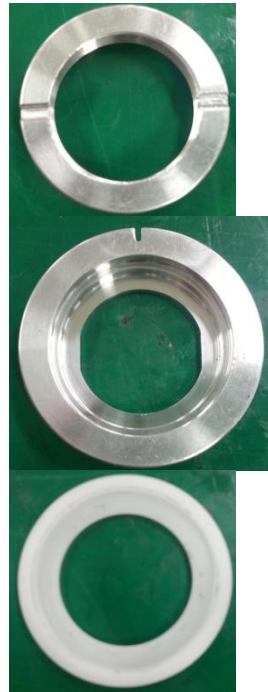
Picture 39

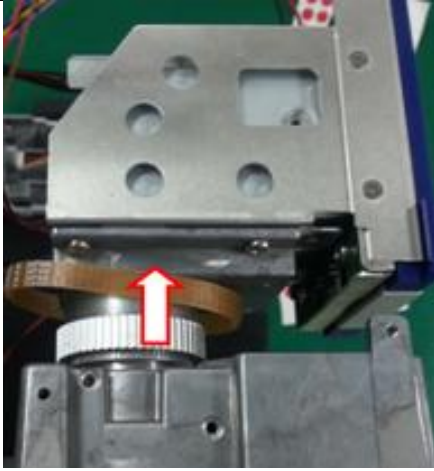
4) Camera Module



Picture 40

- ① Separate "DISK-NUT", "DISK-BRAKE", "DISK-SHAFT" shown in Picture 40.





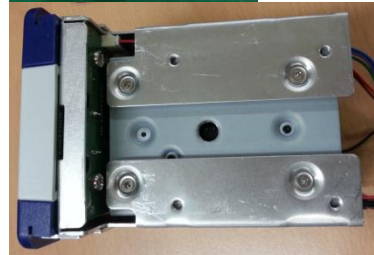
Picture 41

- ② Separate the camera module shown in Picture 41.



Picture 42

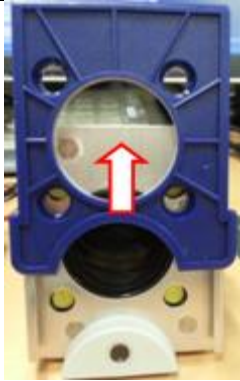
- ③ Remove the screws shown in Picture 42.



Picture 43

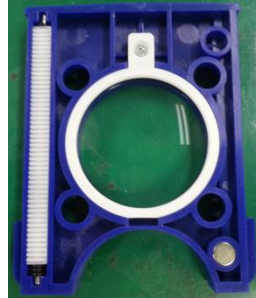
- ④ Separate the cables shown in Picture 43.





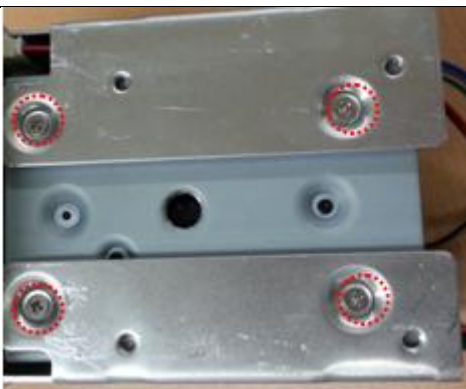
Picture 44

- ⑤ Remove the "lens keeper" shown in Picture 44.



Picture 45

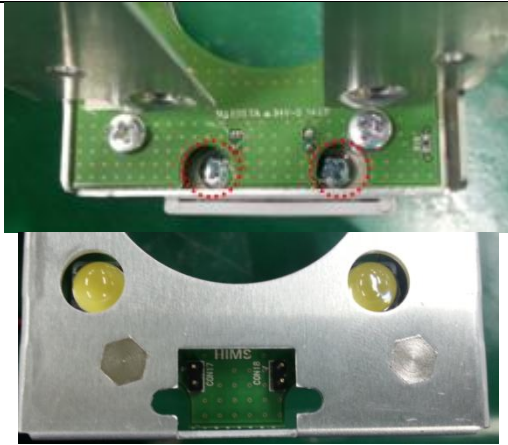
- ⑥ Remove the screws shown in Picture 45.



Picture 46

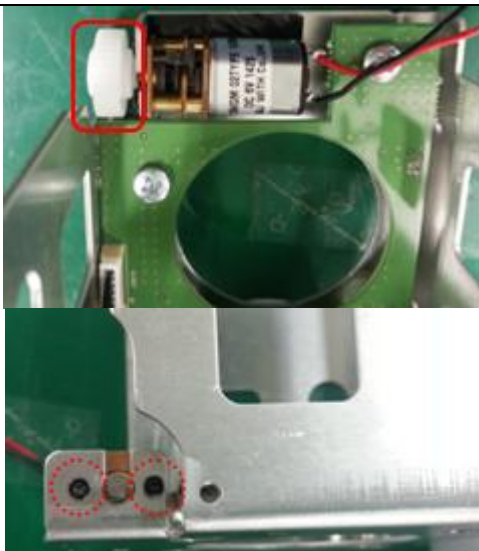
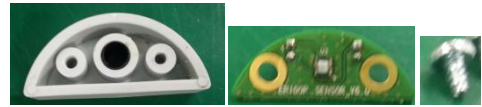
- ⑦ Remove the screws shown in Picture 46.





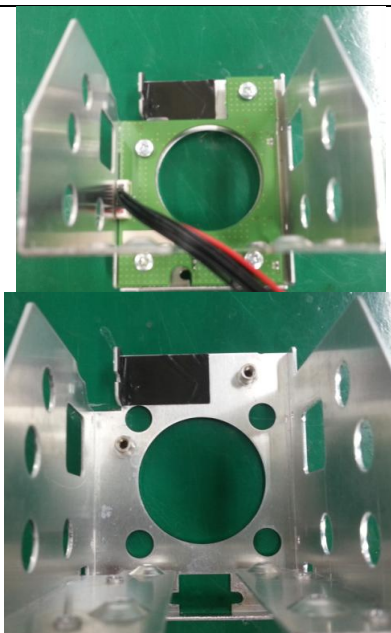
Picture 47

⑧ Remove the screws shown in Picture 47.



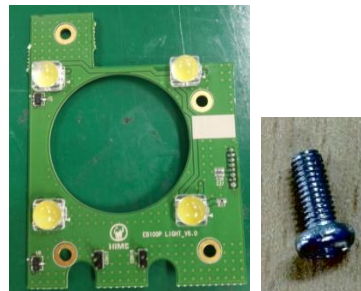
Picture 48

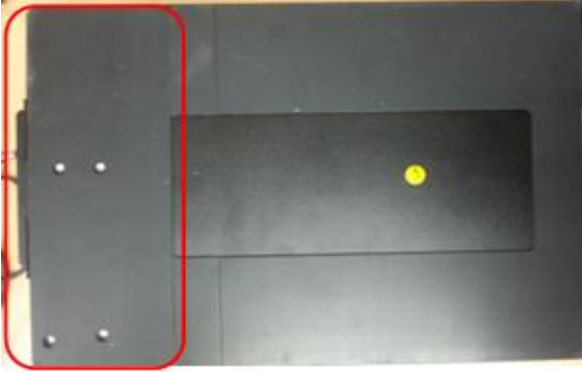
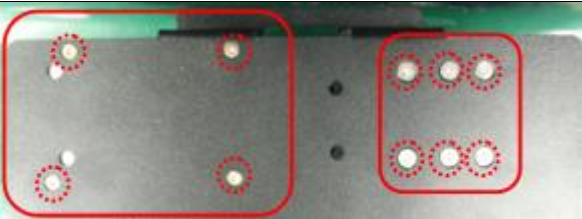


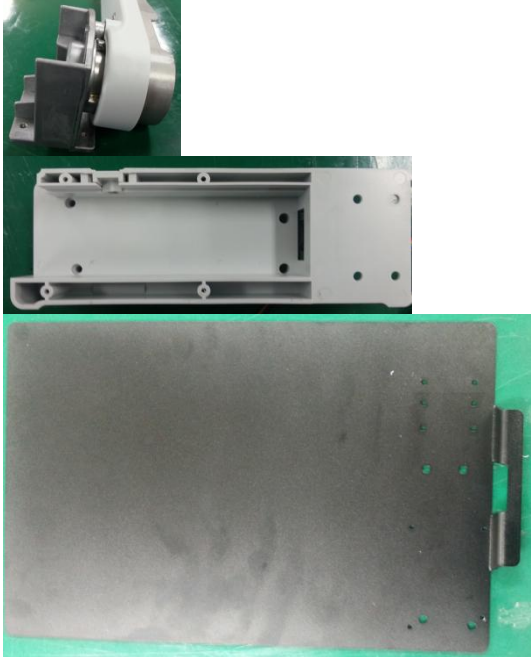
⑨ Separate the "PINION RACK" and Remove the screws shown in Picture 48.



Picture 49

⑩ Remove the screws shown in Picture 49.

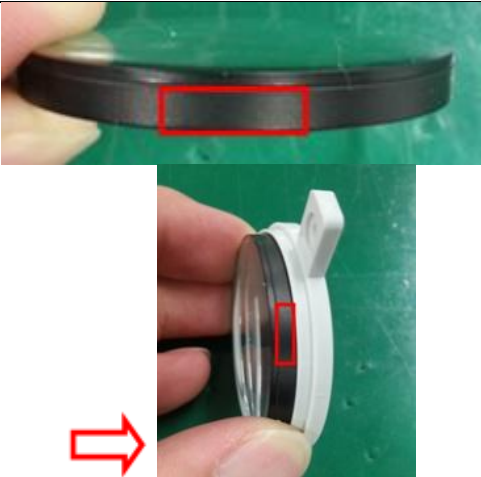
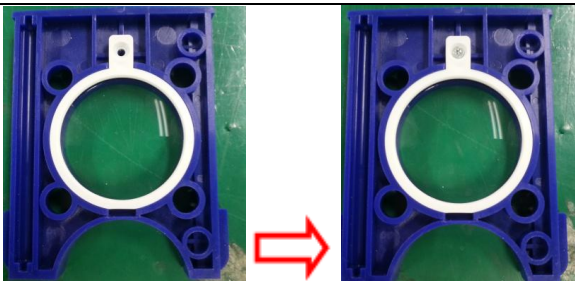


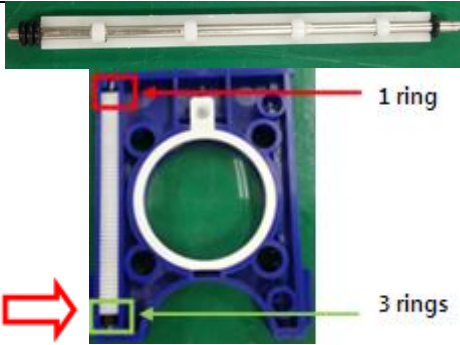



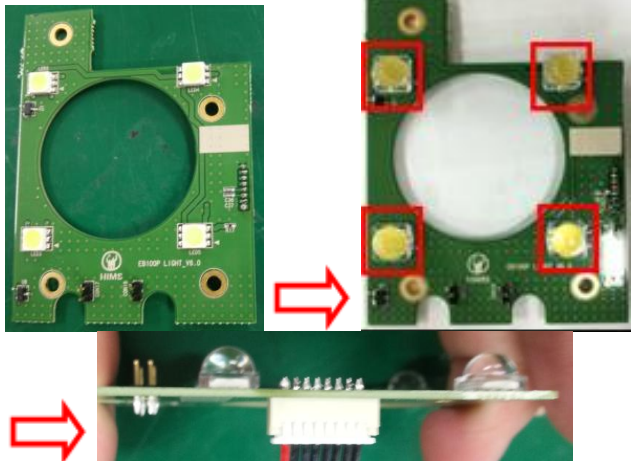


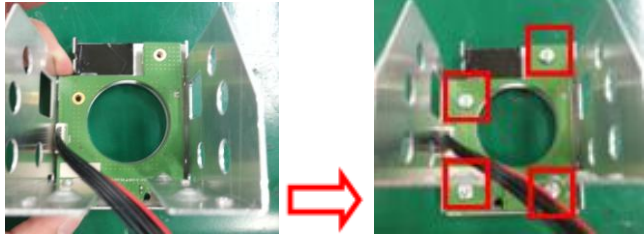

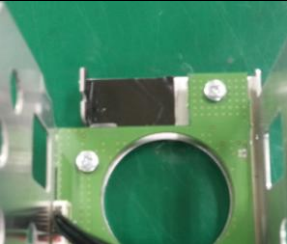

 <p style="text-align: center;">Picture 50</p>	<p>⑪ Remove the Pad shown in the red zone of Picture 50.</p>
 <p style="text-align: center;">Picture 51</p>	<p>⑫ Remove the screws in Picture 51.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>No. 1</p> </div> <div style="text-align: center;">  <p>No. 2</p> </div> </div> 

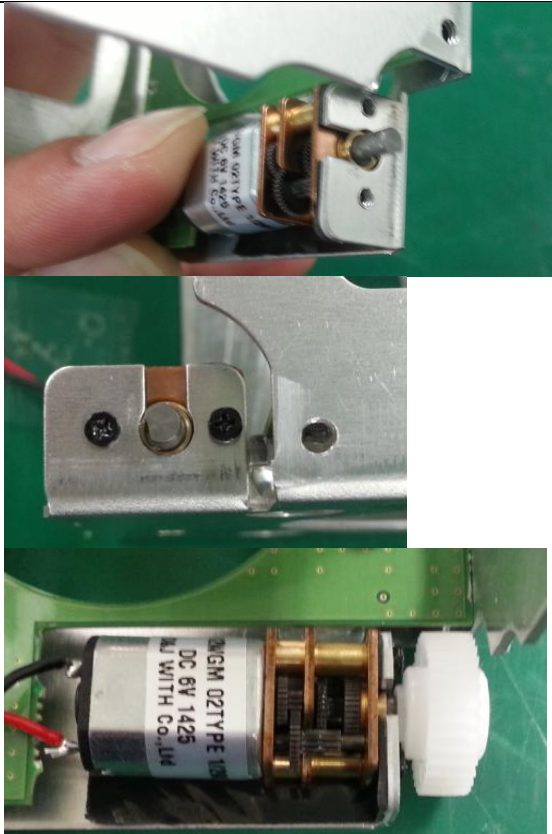
B. Assembling

- Assembly is a reverse sequence of disassembly; the followings are major check points while assembling.

1) Assembling the Camera module

 <p style="text-align: center;">Picture 52</p>	<p>① Assemble the "Close up Lens" and the "LENS CAP" shown in Picture 52.</p> <p>※ Note the "Close up Lens" direction</p>
 <p style="text-align: center;">Picture 53</p>	<p>② Put on the "Close up Lens" into the "Lens Keeper" and assemble the screw shown in Picture 53.</p>
 <p style="text-align: center;">Picture 54</p>	<p>③ Glued the part in red box shown in Picture 54.</p>
 <p style="text-align: center;">Picture 55</p>	<p>④ Combine "RACK-GEAR-SHAFT" with "RACK GEAR" and attach "3 of O-ring (2x1)" to the left side of "Rack gear" and attach one to the right side of "Rack gear".</p>
 <p style="text-align: center;">Picture 56</p>	<p>⑤ Assemble the "RACK GEAR" and the "Lens Keeper" shown in Picture 56.</p> <p>※ Note the number of "O-ring (2x1)".</p>

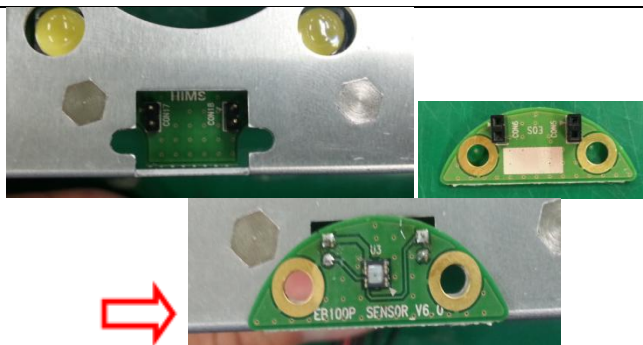
 <p>Picture 57</p>	<p>⑥ Put on the magnets (2ea) into the "Lens Keeper" shown in Picture 57.</p>
 <p>Picture 58</p>	<p>⑦ Attach condensing lens on the 4 LEDs on the "Light Board" and apply threadlock. Then connect "8P_LIGHT HARNESS_280mm" cable to Connector(CON19)</p> 
 <p>Picture 59</p>	<p>⑧ Attached "Cushion-DC motor" to "PLATE-LENS-MOVING" like left picture.</p>
 <p>Picture 60</p>	<p>⑨ Attach "Light Board" to "PLATE-LENS-MOVING" and fix them by screwing 4 screws on them.</p> 
	<p>⑩ Assemble the "DC Motor" shown in Picture 61.</p>  <p>※ Apply lubricant to Tooth wheel of "DC</p>



Picture 61

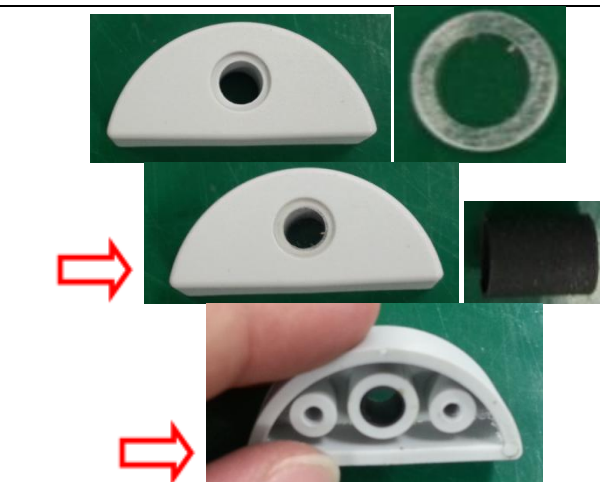
Motor".

※ Make sure "DC motor" be well attached.



Picture 62

⑪ Combine CON17 and CON18 of "Light Board" with "Ambient Sensor Board".



Picture 63

⑫ Combine "SENSOR CAP" with "CAP PLATE" and insert "Tube" inside of it.
 ※ When inserting "Tube", the tube should be close to PCB of "Ambient Sensor Board" in that way the "CAP PLATE" is not pushed away.

 <p>Picture 64</p>	<p>⑬ Put "SENSOR CAP" on the PCB of "ambient sensor". Then fix them by 2 screws on the back side of "PLATE-LENS MOVING".</p> 
 <p>Picture 65</p>	<p>⑭ Put "HD CAMERA" on the "PLATE-LENS MOVING" and fix them by 4 screws.</p> 
 <p>Picture 66</p>	<p>⑮ Assemble the "GUIDE-LENS-R" and the "GUIDE-LENS-L" and fix them with 4 screws.</p> <p>※ When combining them, watch the the direction of the "GUIDE-LENS-R and L".</p>



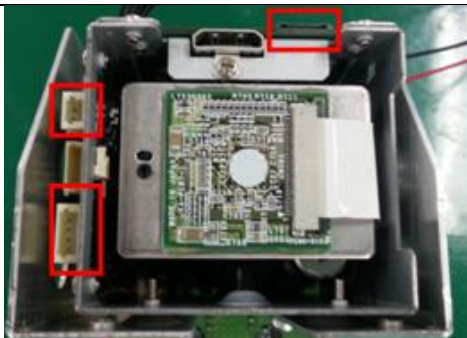
Picture 67

- ⑩ Put on the "Lens Keeper" into the "GUIDE-LENS" shown in Picture 67.
 ※ The required space between "Camera module" and "Lens Keeper" is almost the same thickness of the 2 business cards.

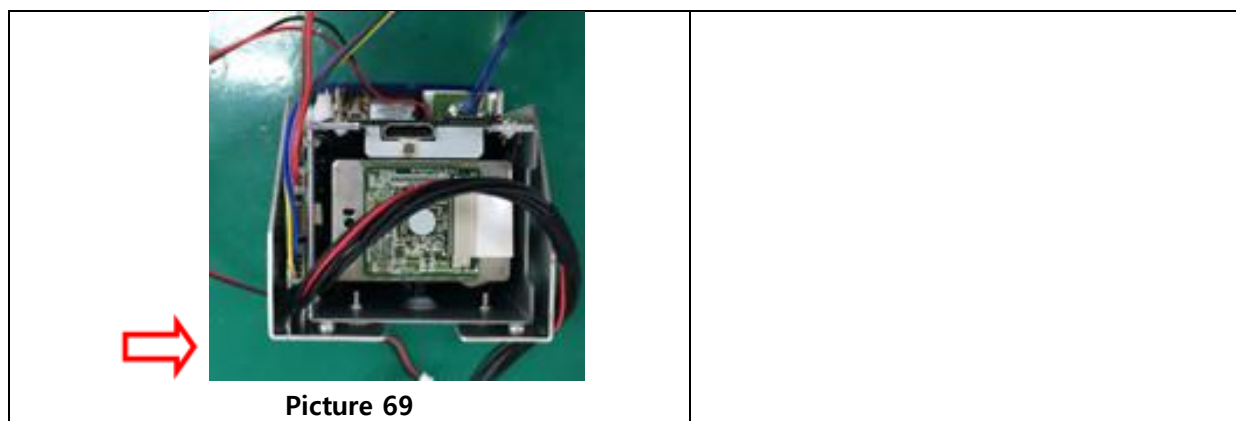


Picture 68

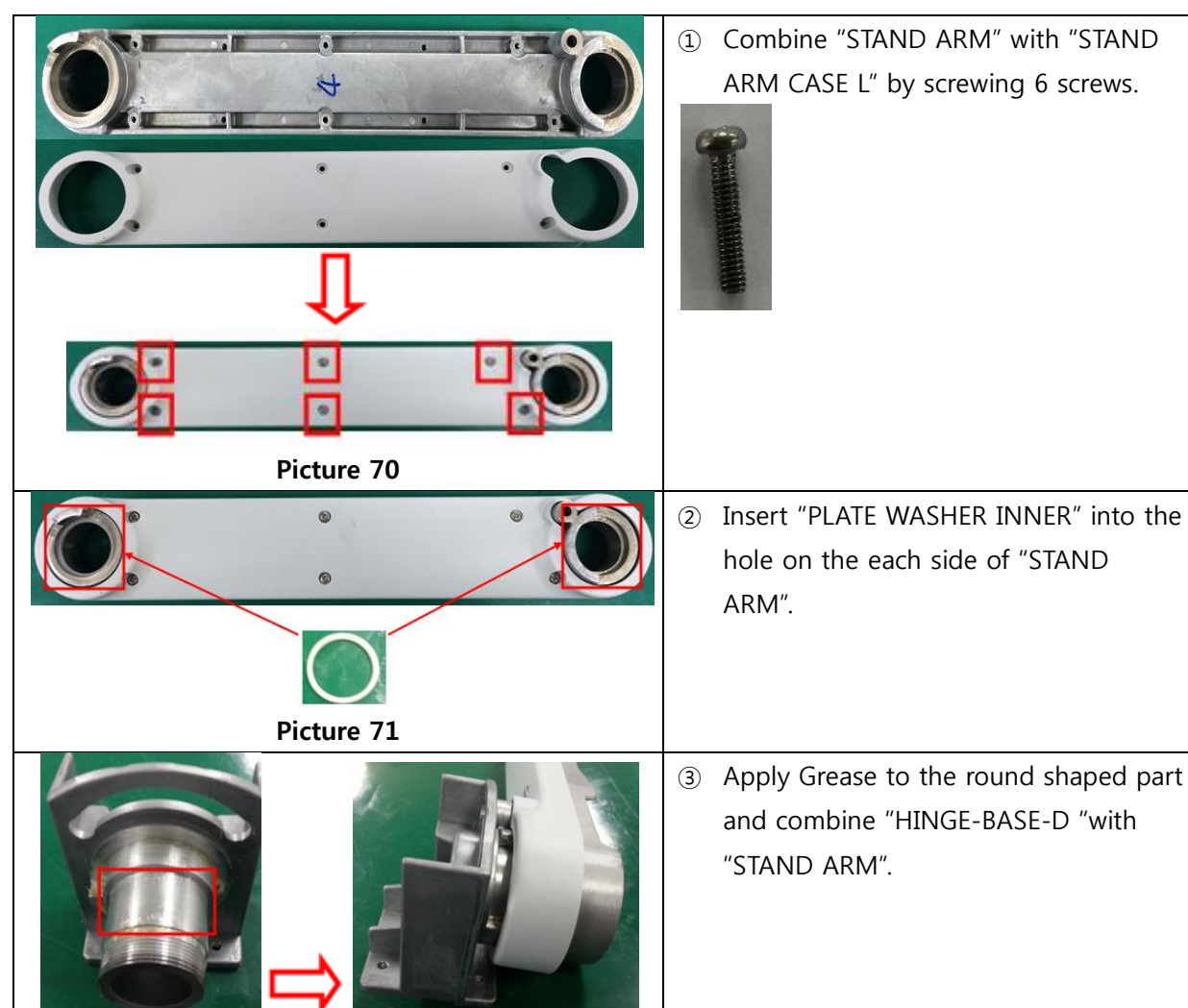
- ⑪ Apply threadlock to 4 screws of "GUIDE-LENS-R", "GUIDE-LENS-L".

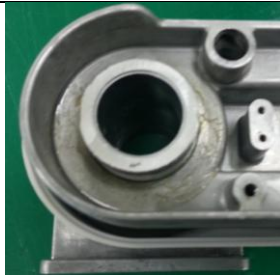


- ⑫ Connect cables to "HD CAMERA".
 ○ B Connector of "HD CAMERA" is to be connected to "HDMI Harness"
 ○ E, G Connector of "HD CAMERA" is to be connected to "Camera cable"

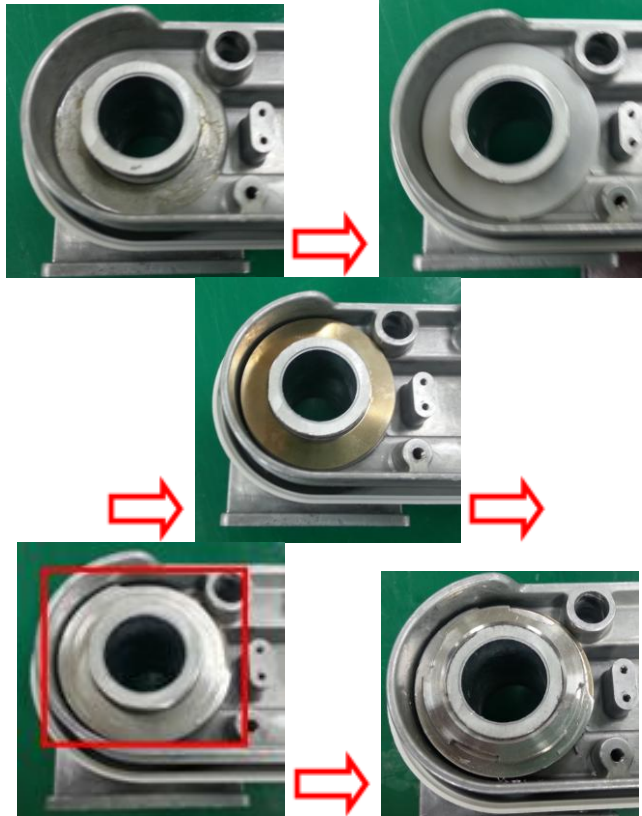


2) Assembling the Stand ARM module





Picture 72

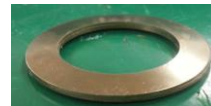


Picture 73

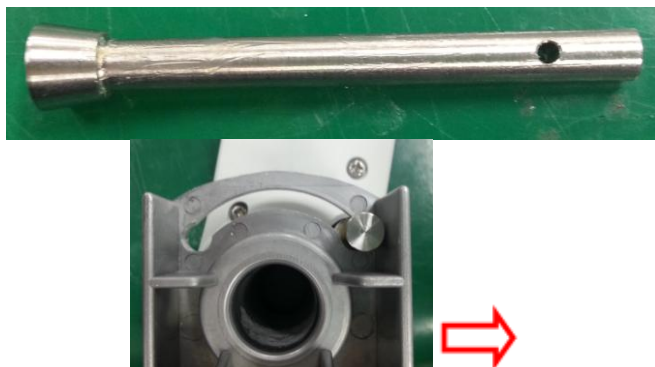
- ④ Combine parts with the combination of "HINGE-BASE-D" and "STAND ARM". Parts should be combined by this sequence. (the sequence: PLATE WASHER -> DISK SPRING 4EA -> WASHER HINGE H1)

Then tighten and loose the "NUT" around 5 times by torque driver at 16kgfcm.

- ※ As "DISK SPRING" is not even, make sure any blank not be made when 4EA of "DISK SPRING" are combined.



- ※ As "WASHER HINGE H1" has a direction, check the picture left carefully to assemble it correctly.

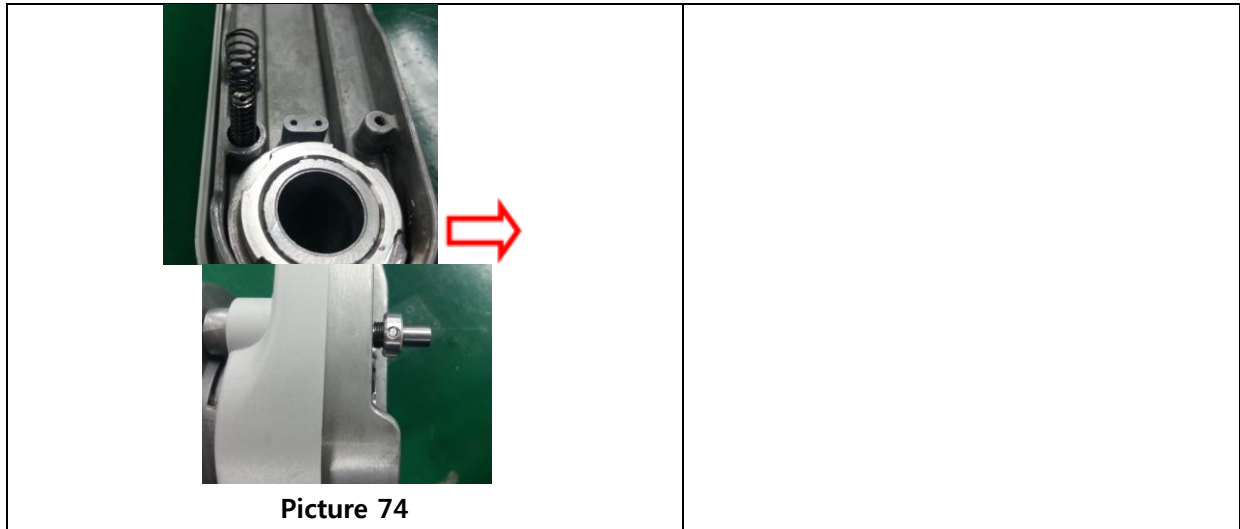


- ⑤ Put the "LOCK PIN" inside of the hole, which is in the combination of "HINGE-BASE-D" and "STAND ARM". Then attach "SPRING-2" to the combination.

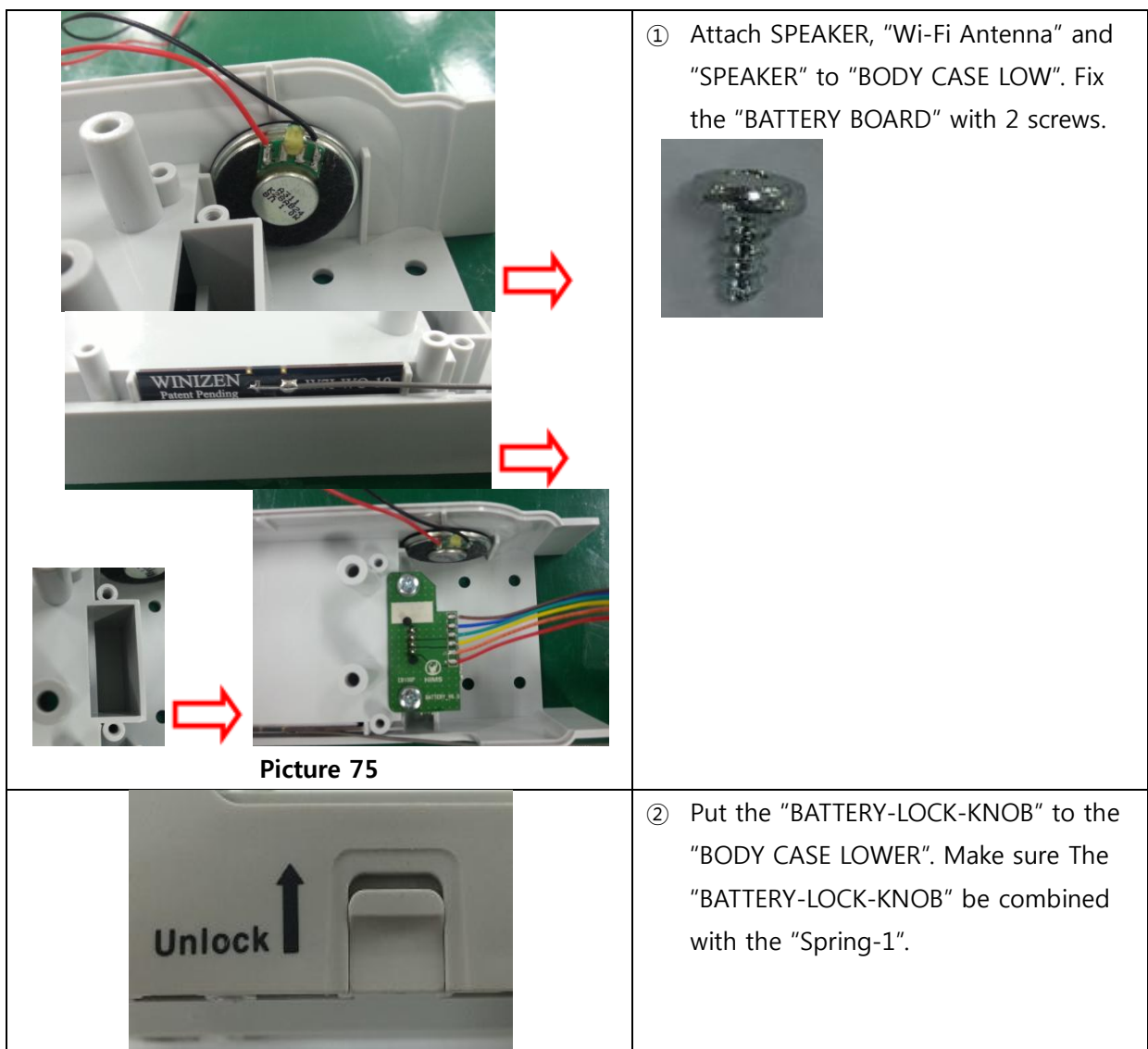
Then combine the "WASHER LOCK" with it tightly by inserting "PIN 2P".

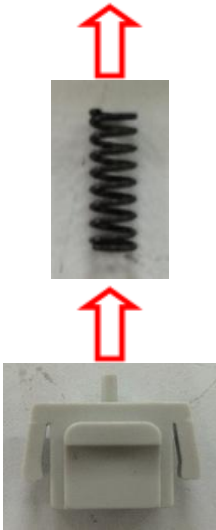
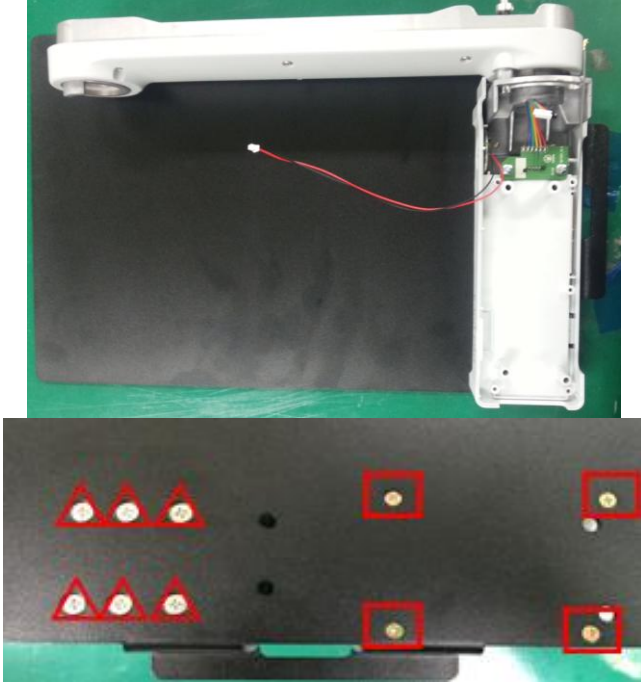
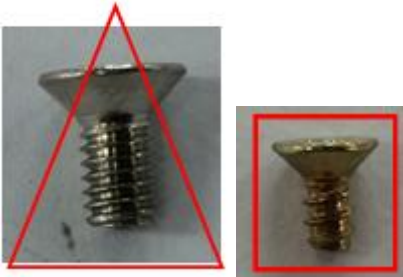
- ※ Be careful of the direction of "LOCK PIN".

- ※ When inserting "PIN 2P", make sure "LOCK PIN" and the hole of "WASHER LOCK" be aligned directly.

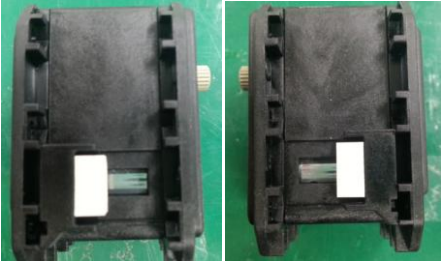



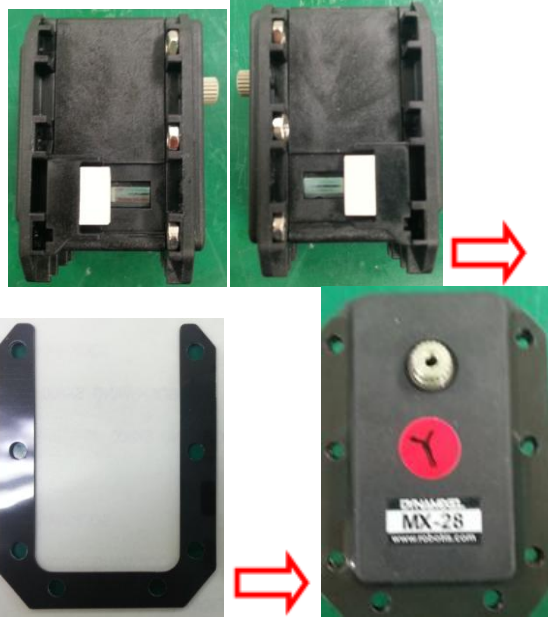
3) Assembling the BODY CASE LOW module



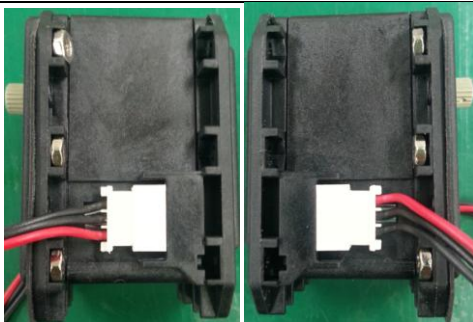
 <p>Picture 76</p>	
 <p>Picture 77</p>	<p>③ Put the "BODY CASE LOW" and combination of the "STAND ARM" on the "BASE PLATE" and fix on the behind with screws.</p> 

4) Assembling the Swing ARM module

	<p>① Put 6 "Nuts" in the grooves of each Motor ((MX-28T) X-axis, Y-axis). Then attach "Cushion-Motor" in the front of the motor.</p> 
---	---

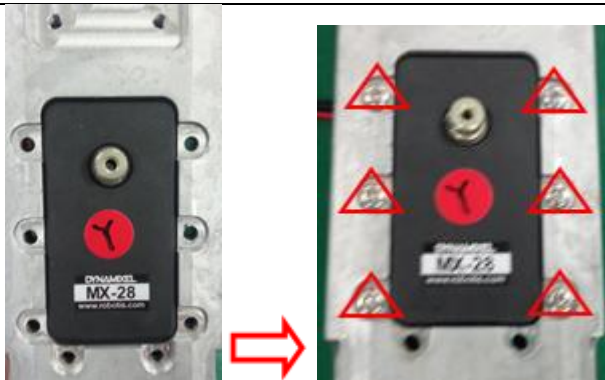


Picture 78



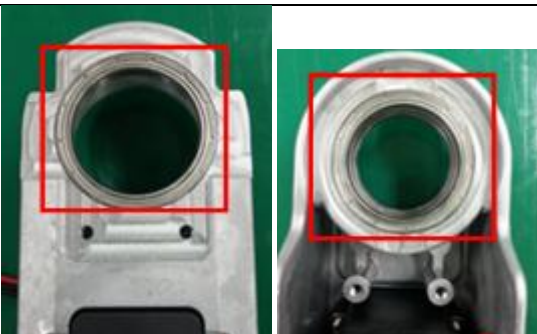
Picture 79

- ② Connect "3P_MOTOR HARNESS_680mm" and "3P_MOTOR HARNESS_250mm" Cable to the left/right side of the "Y-axis motor".

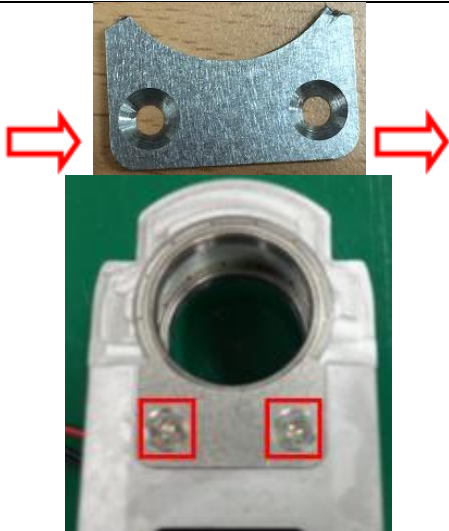


Picture 80

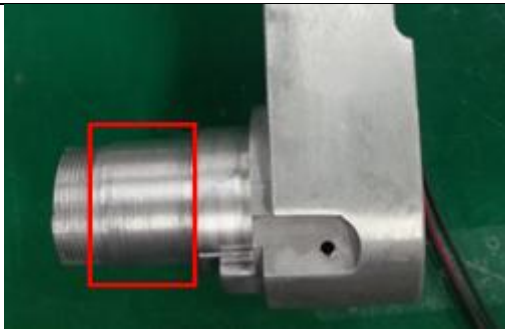
- ③ Put "Y-axis motor" close to the grooves of "SWING ARM" and fix them with 6 screws.



- ④ Insert a "bearing (6705ZZ)" in the each side of the hole, which is in the upper side of the "SWING ARM". Then attach the "STOPER PLATE 1" on it and fix it with 2 screws.



Picture 81



Picture 82

- ⑤ Apply Grease to the point where round part of the "SWING ARM" and round part of the "STAND ARM" meet and combine "SWING ARM" with "STAND ARM".

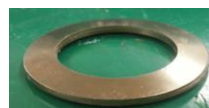


Picture 83

- ⑥ Combine parts with the combination of "SWING and STAND ARM". Parts should be combined by this sequence. (the sequence: PLATE WASHER -> DISK SPRING 4EA -> WASHER HINGE H2)

Then tighten and loose the NUT around 5 times by torque driver at 16kgfcm.

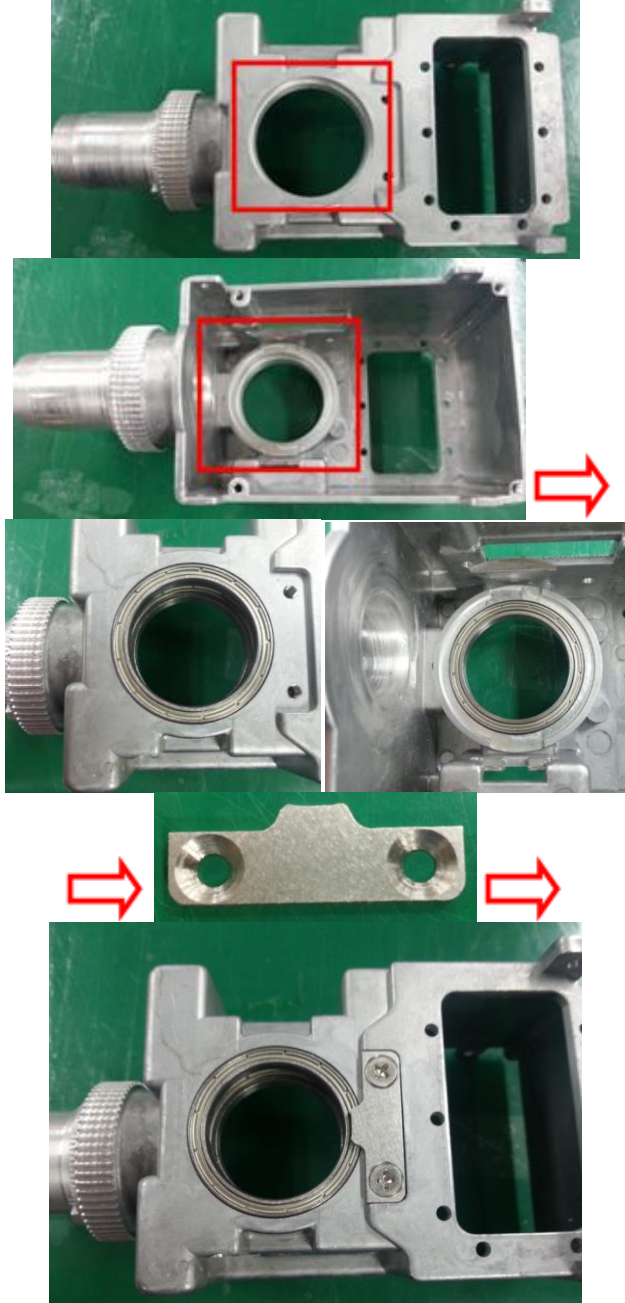

- ※ As "DISK SPRING" is not even, make sure any blank not be made when 4EA of "DISK SPRING" are combined.

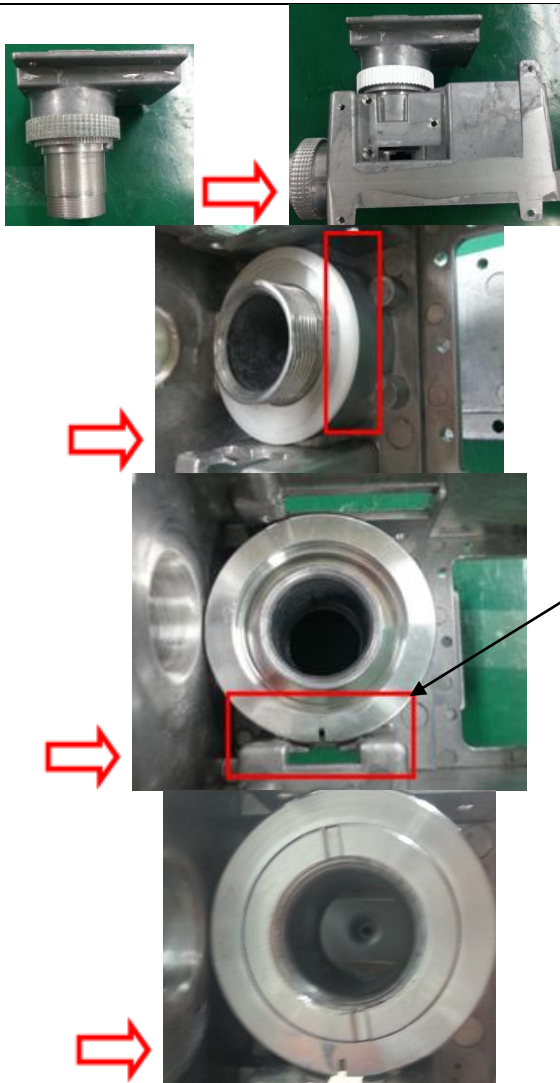


- ※ As "WASHER HINGE H1" has a direction, check the picture left carefully to assemble

it correctly.

5) Assembling the Tilt base module

 <p data-bbox="451 1787 584 1821">Picture 84</p>	<p data-bbox="871 495 1385 658">① Put 1EA of "bearing" on the each upside/downside of round groove in the "TILT BASE". Then combine it with "STOPER PLATE 2" with 2 screws.</p>  <p data-bbox="871 891 1362 1016">※ Make sure bearings are attached horizontally. If "bearing" is tilted, cannot be fit in the groove.</p>
--	--



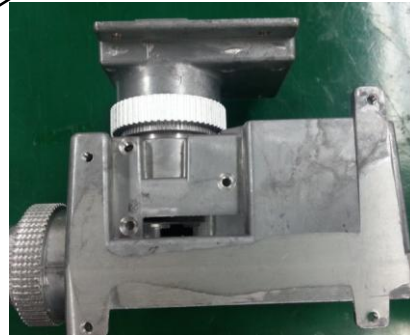
Picture 85

- ② Combine "TILT-SHAFT" with "TILE BASE" and combine other parts with it in the sequence introduce below.
(sequence: DISK-SHAFT -> DISK-BRAKE -> DISK-NUT)

※ Make sure "DISK-SHAFT" is closely attached without space.

※ When combining "DISK BRAKE", leave the part like below picture

※ The groove in the circle must be located like left picture.

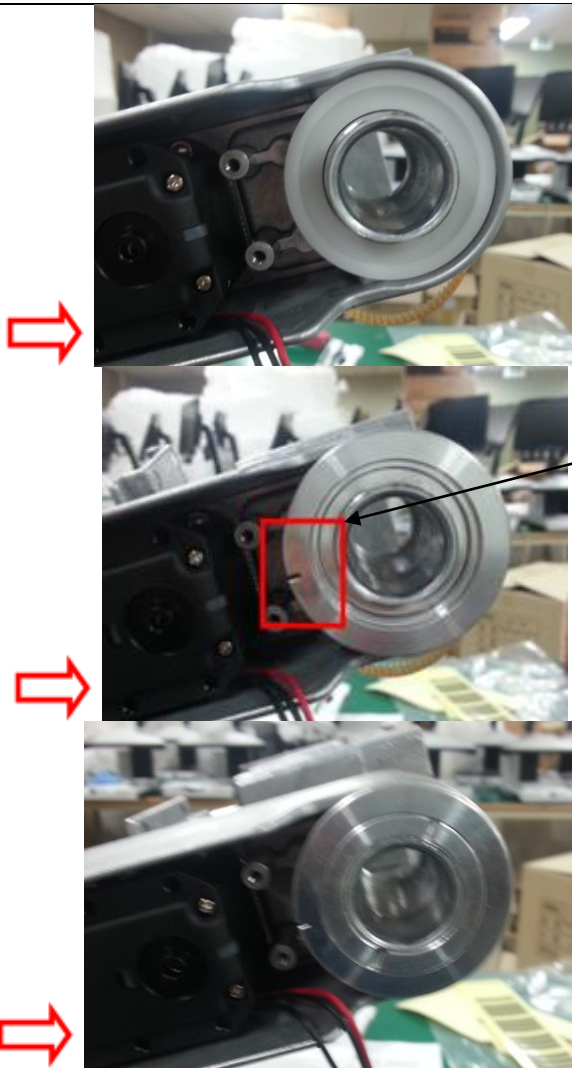


※ Combine "DISK-NUT" by torque driver at 4kgfcm.



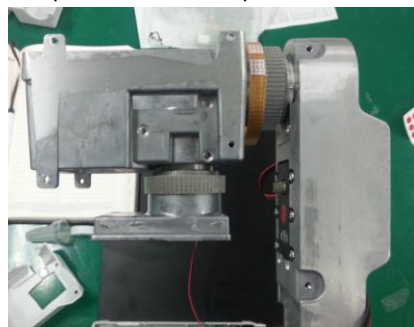
- ③ Put the "timing belt (TUN85MXL025_INFO11560)" on the "TILT BASE" like left picture. Then combine "TILT BASE" with "SWING ARM". Then combine parts with it like below sequence introduced..
(sequence: DISK-SHAFT -> DISK-BRAKE -> DISK-NUT)

※ Make sure "DISK-SHAFT" be closely attached.



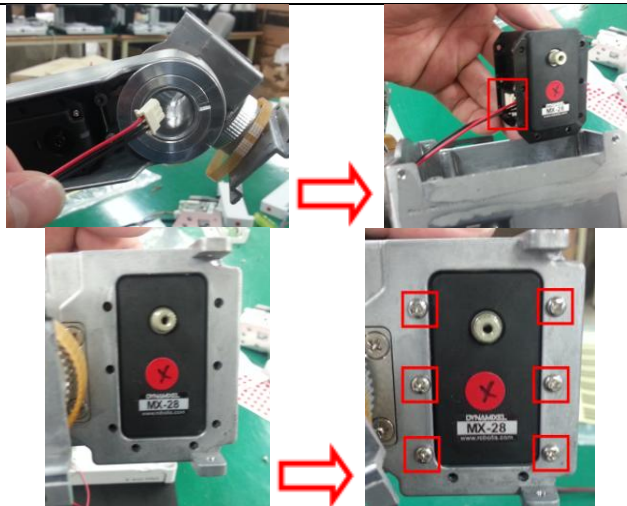
Picture 86

※ When combining "DISK BRAKE", leave the part like below picture



※ The groove in the circle must be located like left picture.

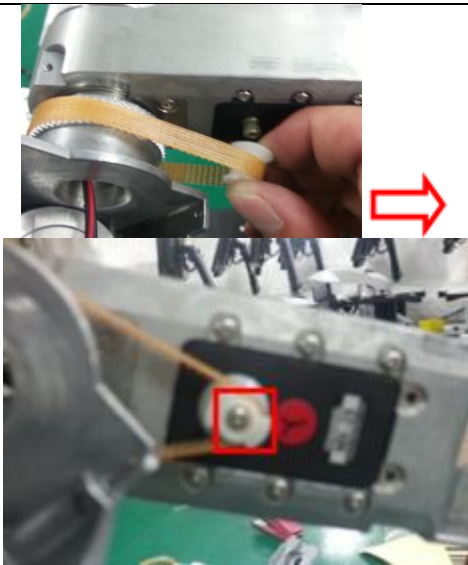
※ Combine "DISK-NUT" by torque driver at 4kgfcm.



Picture 87

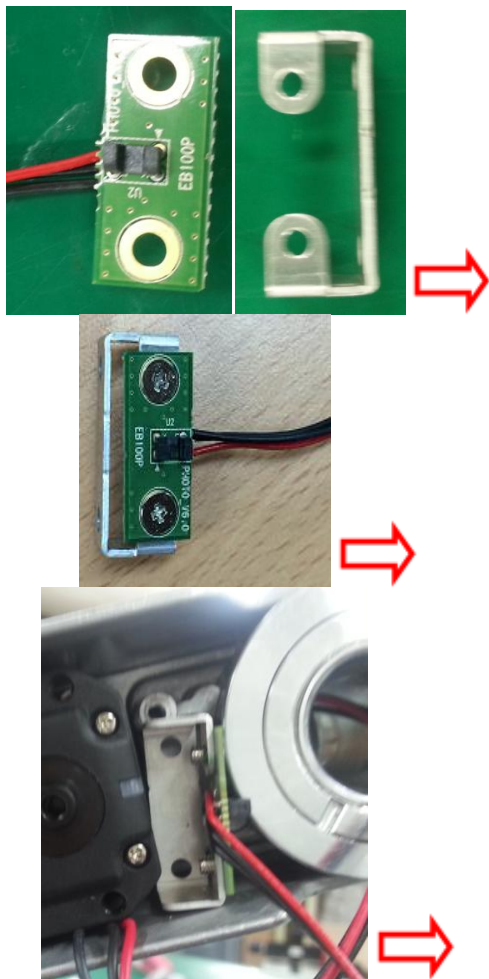
- ④ Penetrate the hole with "3P_MOTOR HARNESS_250mm" Cable which is connected to "Y-axis motor" and connect this cable to the left side of the "X-axis motor".
Then attach "X-axis motor" to "TILT BASE" with 6 screws.



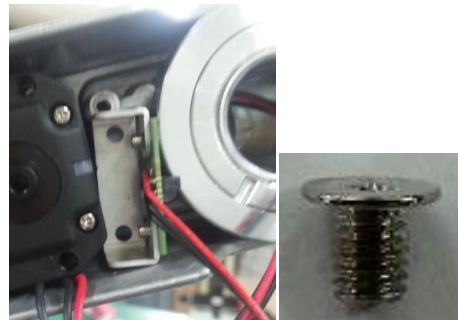


Picture 88

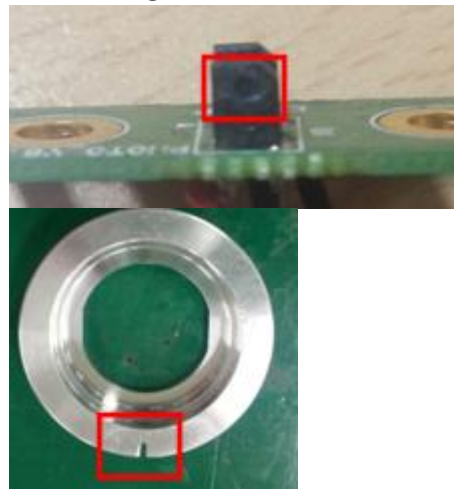
- ⑤ Put "PULLY-S" on "Y-axis timing belt" and combine "PULLY-S" with "Y-axis motor" by 1 screw.

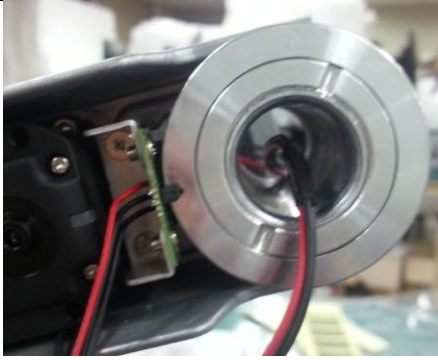


- ⑥ Combine "Y-axis Photo Sensor" with "SENSOR BRACKET" by 2 screws and put "Y-axis sensor" like below picture. Then fix it with "SWING ARM" by 2 screws.



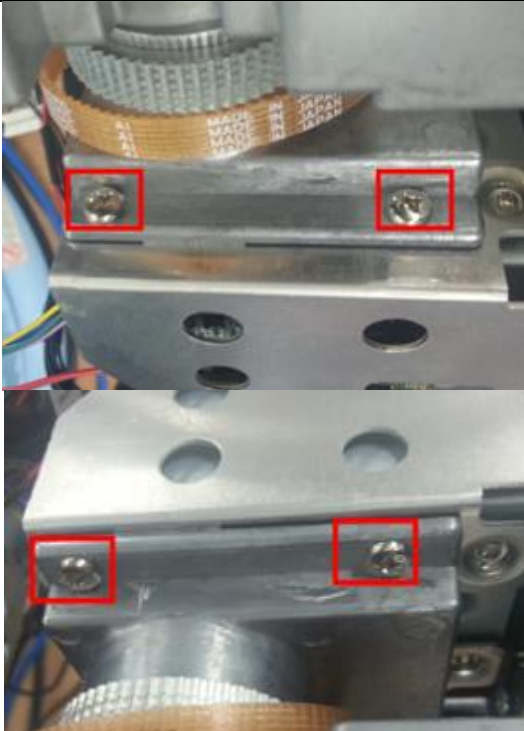
※ Check that the circle of "Y-axis sensor" is fit in the groove of "DISK-BRAKE".





Picture 89

※ Be careful that "PCB of Y-axis sensor" is lined in the right direction.



Picture 90

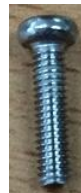
⑦ Combine CAMERA with "TILT-SHAFT" by 4 screws.

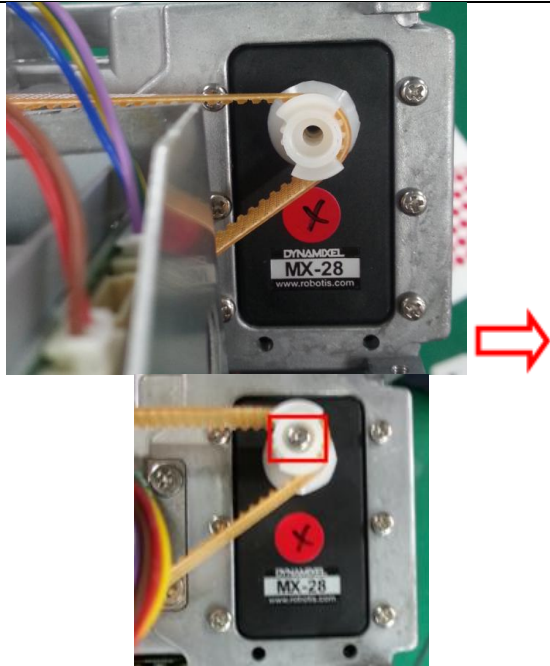


※ Watch the direction of CAMERA.

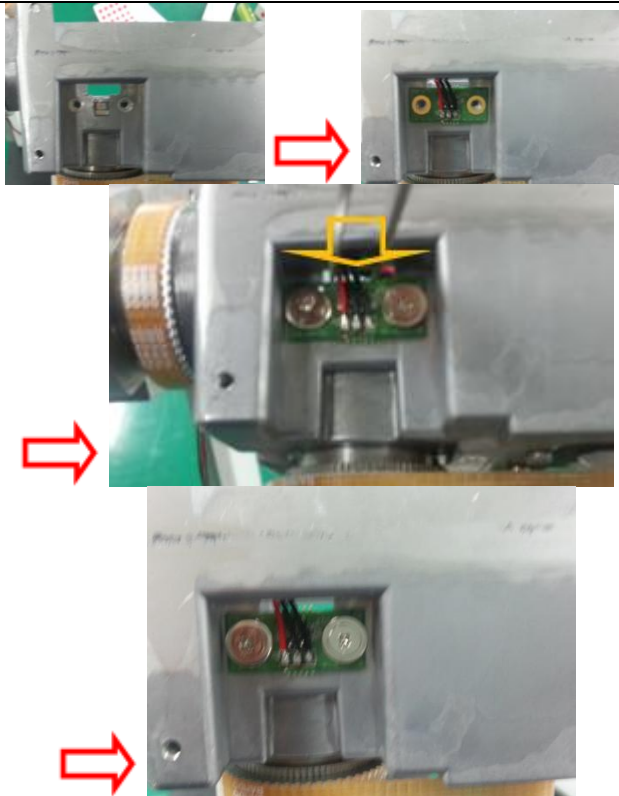


⑧ Put the "PULLY-S" on the "X-axis timing belt". Then combine "X-axis motor" with "PULLY-S" by 1 screw.





Picture 91



Picture 92

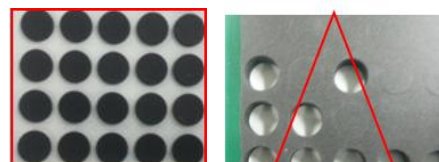
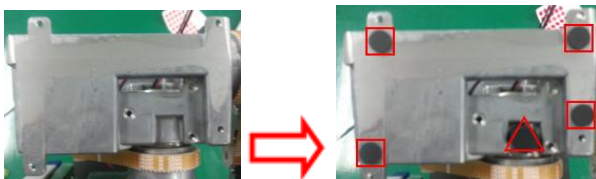
- ⑨ Fit "X-axis Photo Sensor" in the TILT BASE's screw hole. Then put a washer on each screw.

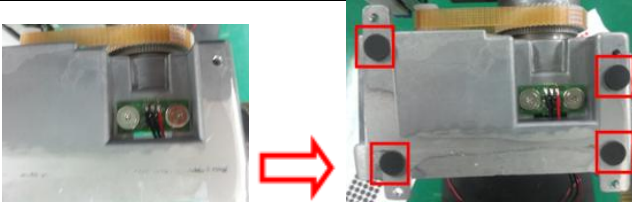
When the screw is not tightly fixed, push the PCB away to the direction of the arrow and finish fixing screws.

- ※ Watch the direction of "X-axis sensor".
- ※ Check if "X-axis sensor" is fit in the groove of "DISK-BRAKE" as same as "X-axis sensor".

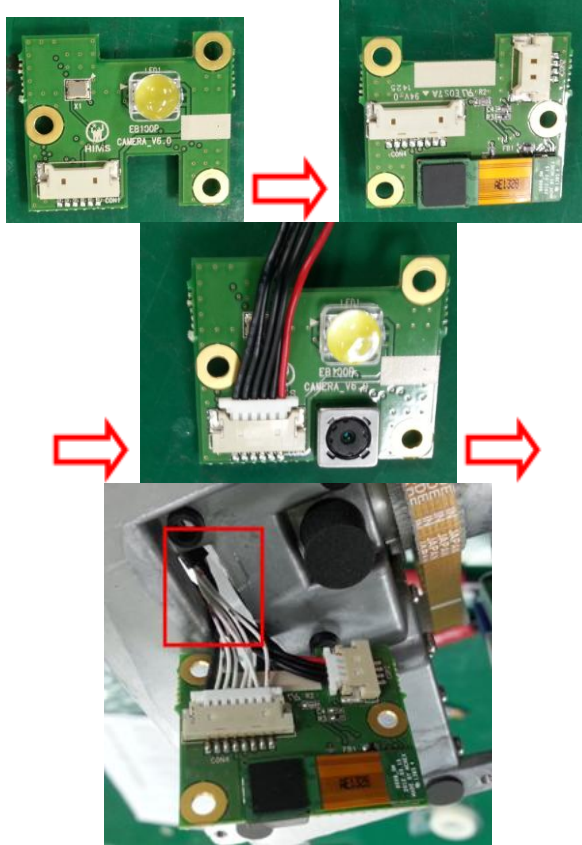


- ⑩ Attach 1 cushion camera and 8 "cushion case" to the "TILT BASE".



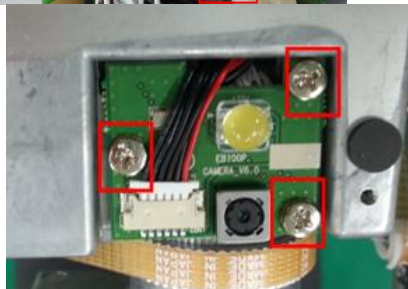
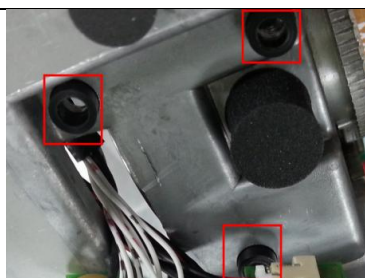


Picture 93



Picture 94

- ⑪ Attach a condensing lens to LED1 of "5MP CAMERA" and combine CON3 with "5MP CAMERA"
Connect cable through the space in the "TILT BASE" like left picture.
- CON1: 6P_5MP HARNESS_100mm
 - CON2: 4P_5MP HARNESS_100mm
 - CON4: 8P_SHIELD HARNESS_900mm

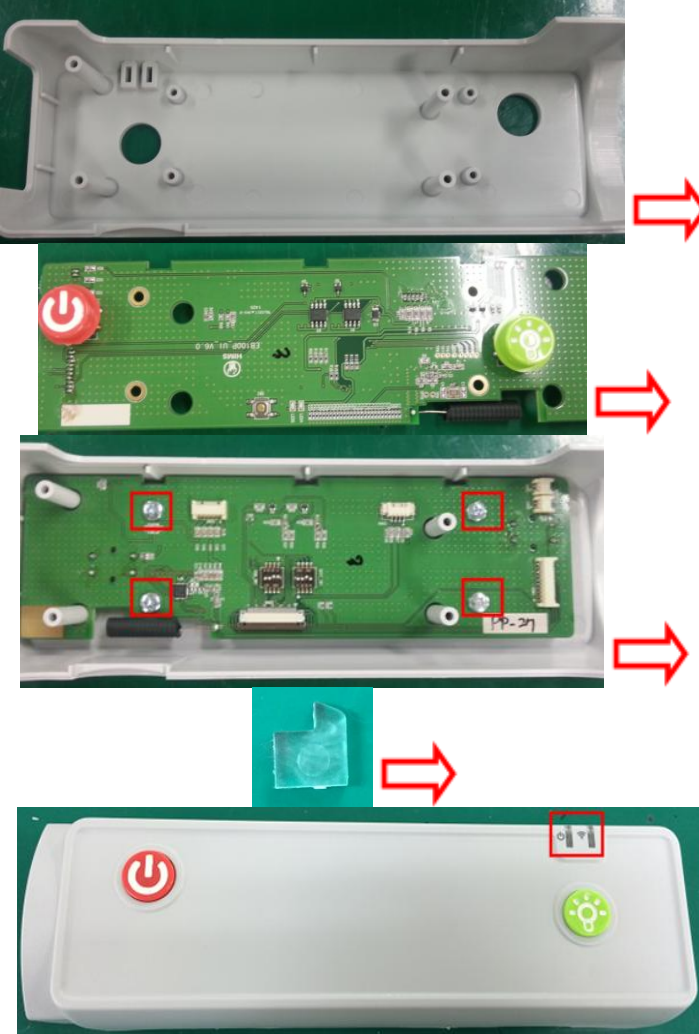

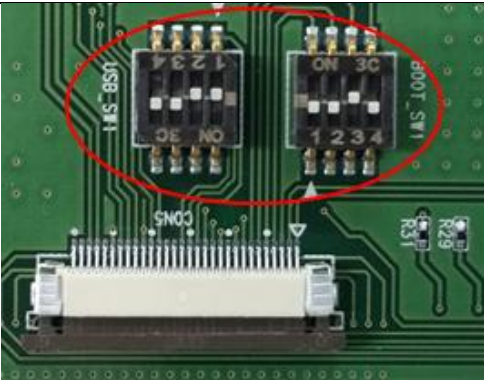


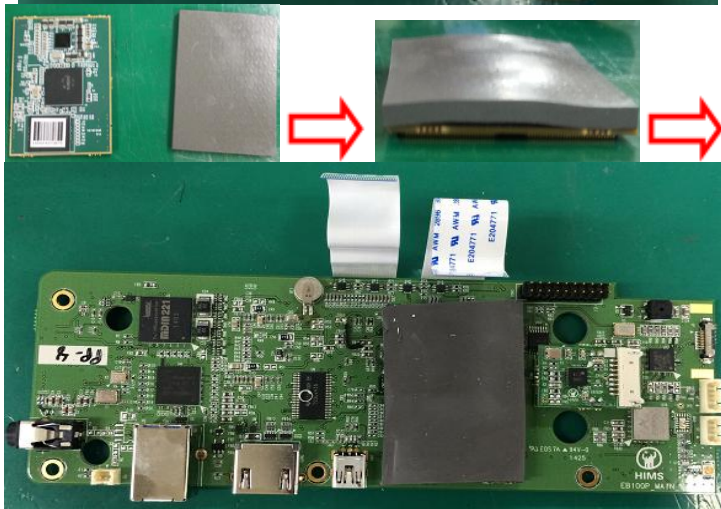
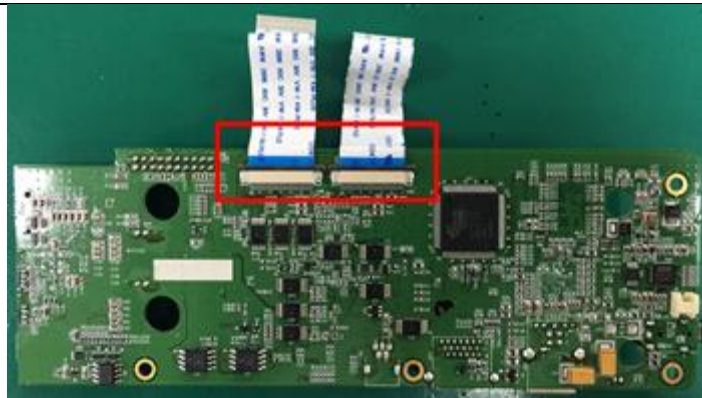
Picture 95

- ⑫ Put "Spacer Cam" on the 3 spots of the "TILT BASE" and attach the "5MP PCB" to it by 3 screws like left picture.



6) Assembling the Boards and the Cables

 <p>Picture 96</p>	<ol style="list-style-type: none"> ① Put "KNOB-POWER" and "KNOB-LIGHT" on the "UI PCB" ② Combine "BODY-CASE-UPPER" with the "UI PCB". ③ Fix them with 4 screws and attach "LED-CAP" to the "BODY-CASE-UPPER". 
 <p>Picture 97</p>	<ol style="list-style-type: none"> ④ Set the settings of "USB_SW1", "BOOT_SW1" on the "UI BOARD" as same as left picture.



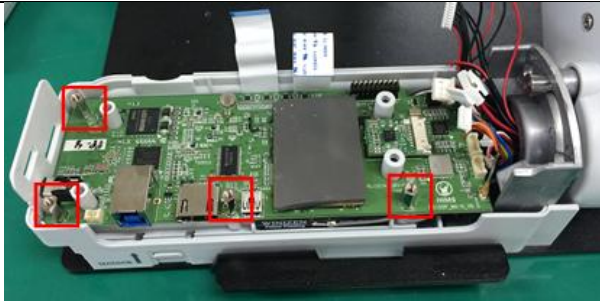
Picture 98

- ⑤ Connect 2 FF cables to the back side of the "MAIN BOARD".
- Attach "ABSORBER" to "CPU MODULE" and combine it with "MAIN BOARD" like left picture.

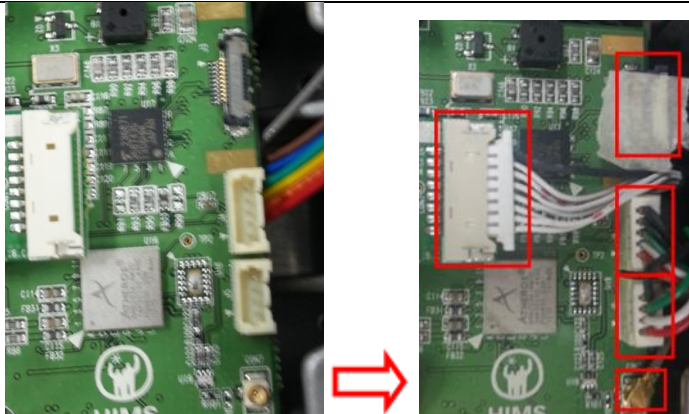


- ⑥ Connect Speaker cable to J1 Connector.
- Combine "PLATE-SIDE-PORT" with "BODY-CASE-LOW"
- ⑦ Fix "Main PCB" with 4 screws.





Picture 99



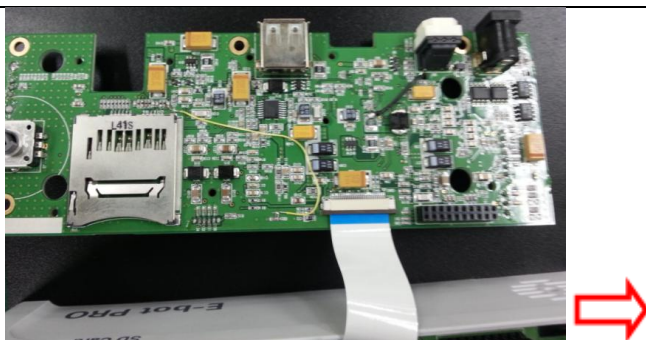
Picture 100

⑧ Connect below cables to the "MAIN BOARD".

- CON7: Wi-Fi Antenna
- J3: HARNESS_HDMI_10P_930MM
- J4: 5P_SHIELD HARNESS_850mm
- J5: 4P_SHIELD HARNESS_850mm
- CON1 of Sub_Camera PCB: 8P_SHIELD HARNESS_900mm

※ When connecting J3 Connector, attach a paper tape on the cable.

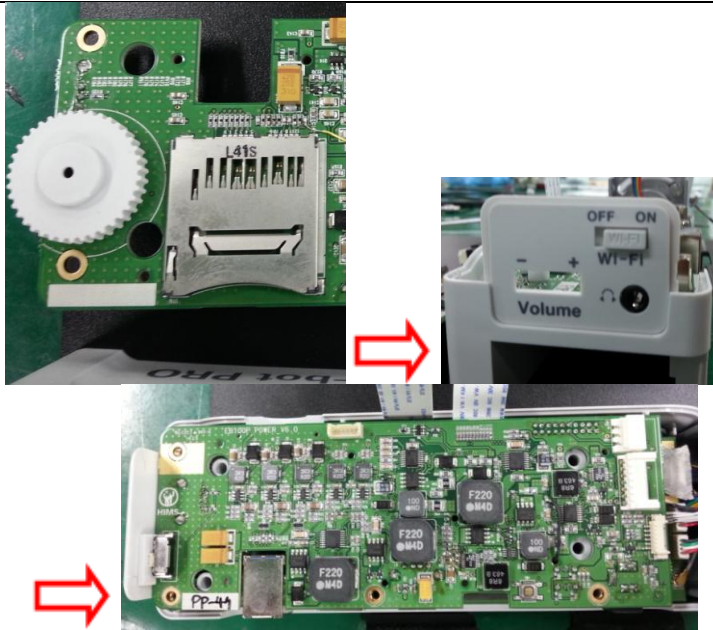
※ Have enough space to keep the connection of cables in case the ARM is moving.



⑨ Connect FF cable (which is connected to "MAIN BOARD" CON8) to the bottom of the "POWER BOARD"

⑩ Combine "KNOB-WHEEL" with J3 and put "SWITCH-CAP" on the "PLATE-SIDE-PORT"

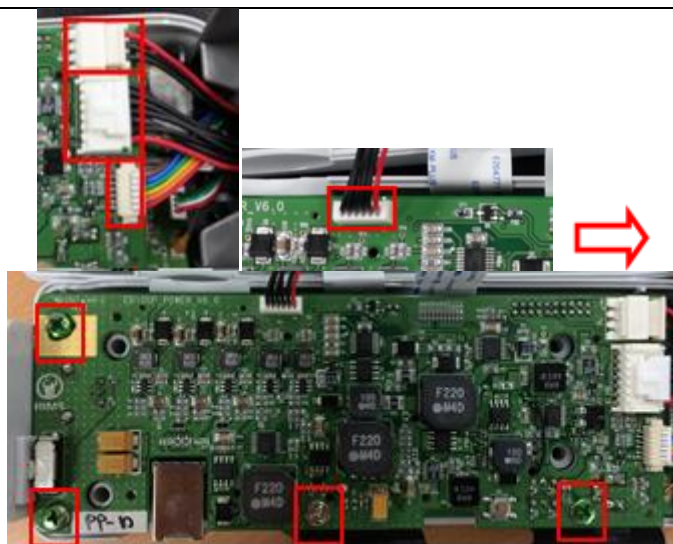
⑪ Combine CON7 of "POWER BOARD" with CON3 of



Picture 101

"MAIN BOARD".

※ Watch the direction of
"SWITCH-CAP".



Picture 102

⑫ Connect "POWER BOARD"
Connectors introduced below
and fix 4 screw holes with 4
screws

- CON1: 3P_MOTOR HARNESS
_680mm
- CON2: 7P_CONNECTION
HARNESS_850mm
- J2: BATTERY BOARD Cable
- U2: 6P HARNESS_100mm

※ Have enough space to keep
the connection of cables in case
the ARM is moving.





Picture 103

⑬ Connect cables introduced below to Connectors of "UI BOARD" and fix 4 screw holes with 4 screws

○ CON5: FF cable connected to CON9 of "MAIN PCB"

○ CON3: 2P_DETECT HARNESS _550mm

○ CON2: 2P_DETECT HARNESS _200mm

○ CON6: 6P HARNESS_100mm

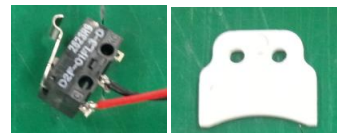
※ Have enough space to keep the connection of cables in case the ARM is moving.



Picture 104

⑭ At the part of "STAND ARM" like left picture, fix the part (Detect Switch + 2P_DETECT HARNESS_200mm) with "SWITCH-COVER" by 2 screws

※ Words on the "Detect Switch" must be toward to outside when it is being combined.

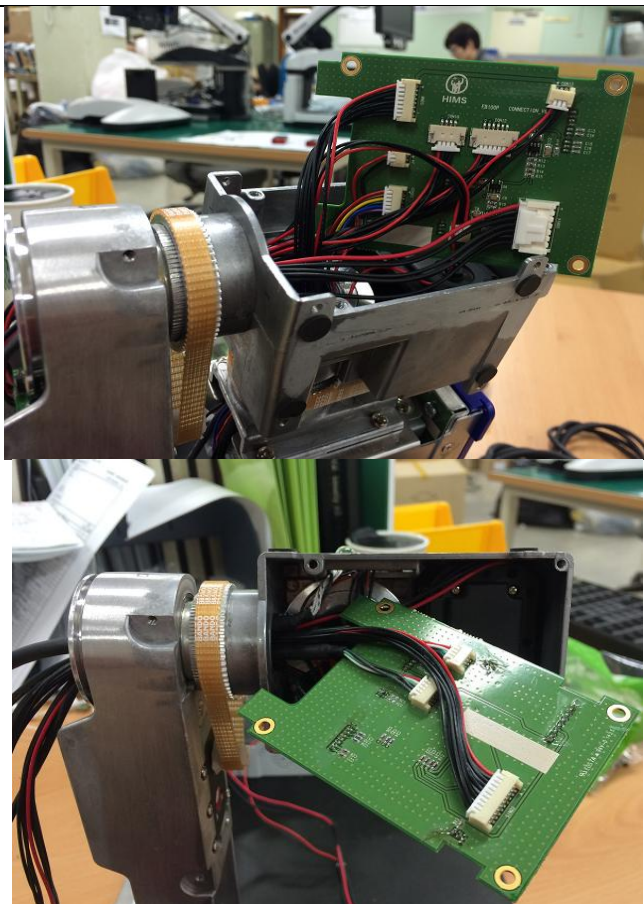
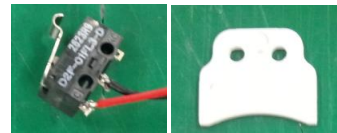




Picture 105

- ⑮ At the part of "STAND ARM" like left picture, fix the part (Detect Switch +2P_DETECT HARNESS_550mm) with "SWITCH-COVER" by 2 screws

※ Words on the "Detect Switch" must be toward to outside when it is being combined.

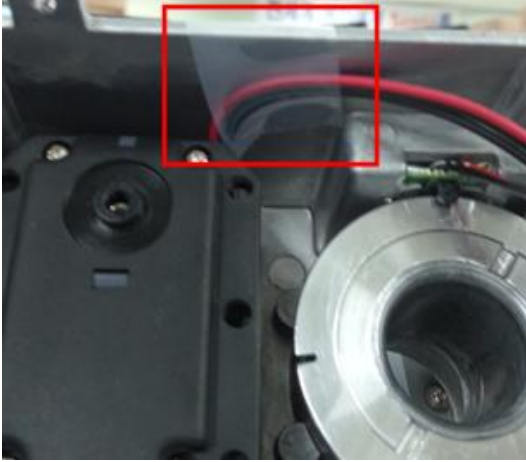



Picture 106

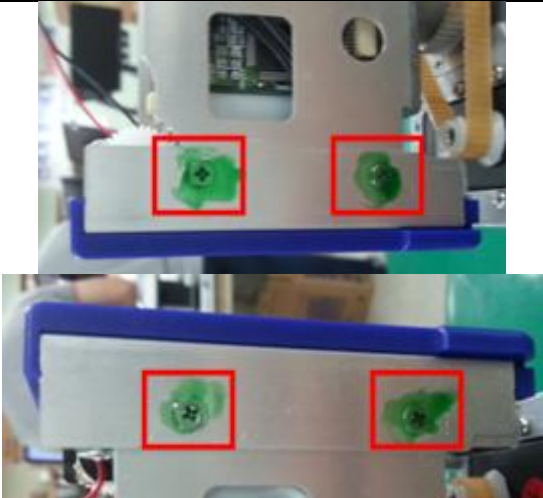
- 16 Connect below introduced cables to "CONNECTION BOARD".

- J5: 4P_SHIELD HARNESS _850mm
- CON16: 5P_SHIELD HARNESS _850mm
- CON15: 10P_CONNECTION HARNESS_850mm
- CON10: 4P_5MP HARNESS _100mm
- CON12: 6P_5MP HARNESS _100mm
- CON11: Y-axis sensor Cable
- CON13: X-axis sensor Cable
- CON14: 7P_CONNECTION HARNESS_850mm
- J4: DC motor Cable
- CON8: 8P_LIGHT HARNESS _280mm
- CON20: CAMERA CABLE

※ Have enough space to keep

	the connection of cables in case the ARM is moving.
 <p data-bbox="502 875 654 907">Picture 107</p>	17 Fix the "3P_MOTOR HARNESS_250mm" Cable with a tape so that "DISK-BRAKE" in "TILT BASE" not be jammed.
 <p data-bbox="502 1301 654 1332">Picture 108</p>	18 Use cable ties to make cables to "TILT BASE" tidy.

7) Assembling the Case

	<p>① Apply threadlock to 4 screws of "GUIDE LENS L", "GUIDE LENS R".</p>
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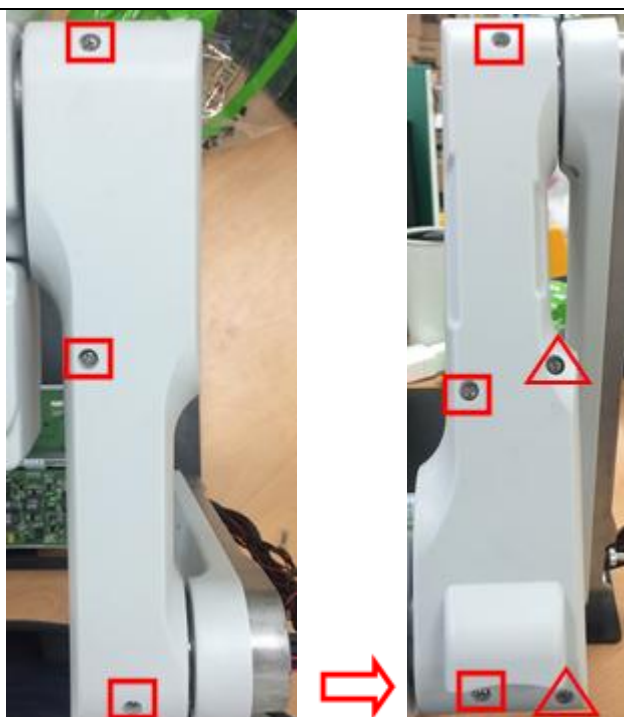
<p style="text-align: center;">Picture 109</p> 	<p>② Apply threadlock to screws on "X-axis, Y-axis Motors(MX-28T)".</p>
<p style="text-align: center;">Picture 110</p> 	<p>③ Apply threadlock to "DISK BRAKE" of "TILT BASE" and "DISK BRAKE" of "SWING ARM".</p>
<p style="text-align: center;">Picture 111</p> 	<p>④ Fix "CONNECTION BOARD" with 4 screws and apply threadlock to 4 the screws.</p> 
<p style="text-align: center;">Picture 112</p> 	<p>⑤ Combine "STAND ARM" with "STAND ARM CASE R" with 6 screws. ※ Watch CABLE is not hung by the screws.</p>

Picture 113



Picture 114

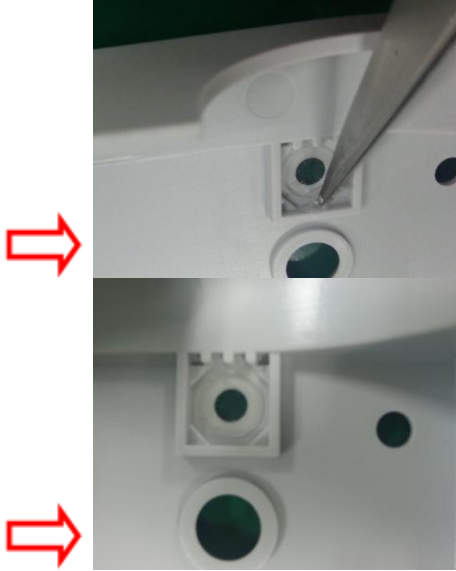
- ⑥ Fix "SWING ARM CASE R" and "SWING ARM-CASE-R-SUB" with bond.



Picture 115

- ⑦ Combine "SWING ARM" with "SWING ARM CASE R" by screws first and combine "SWING ARM CASE L" by screws.





Picture 116

- ⑧ Attach "Lens-Filter" to "TILT CASE L" and remove the plastic film from it.



Picture 117

- ⑨ Assemble the screws shown in Picture 117.

※ Refer to below picture.



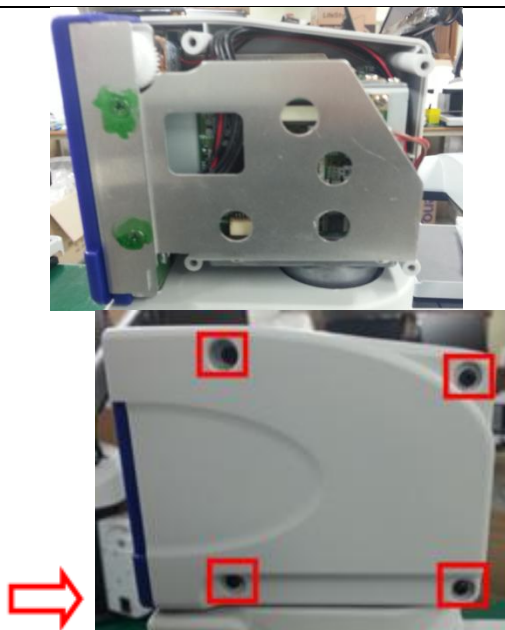
- ⑨ Assemble the screws shown in Picture 117.



Picture 118

⑩ Assemble the screws shown in Picture 118.

※ Refer to below picture.

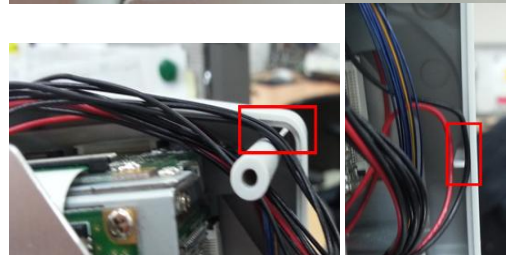
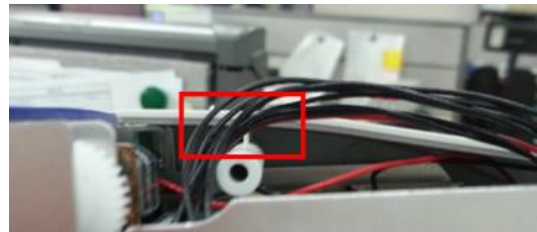


Picture 119

⑪ Put "CAMERA CASE R" and "CAMERA CASE L" together on the CAMERA and fix them with 4 screws.



※ When combining Cases, make sure cables are not jammed.



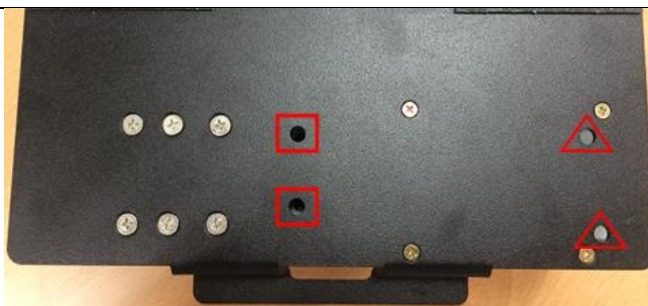
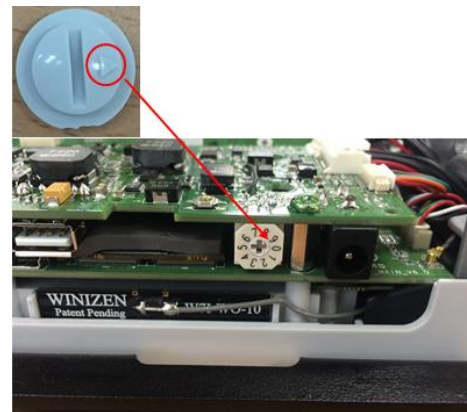


Picture 120

- ⑫ Combine "BODY CASE LOWER" with "PLATE REAR PORT" and "KNOB ID SELECT".

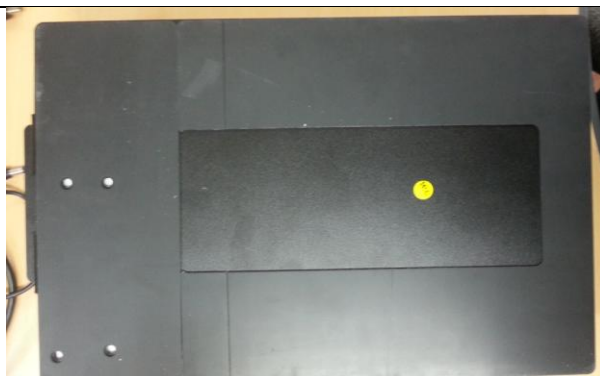
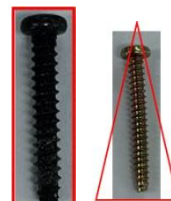
When combining KNOB ID, ID number of "SW2 on the POWER BOARD" must be same as the number of "KNOB ID". After that, cover them with "BODY CASE UPPER".

※ Watch ID of "SW2 on the POWER BOARD" and the direction of "KNOB ID SELECT".



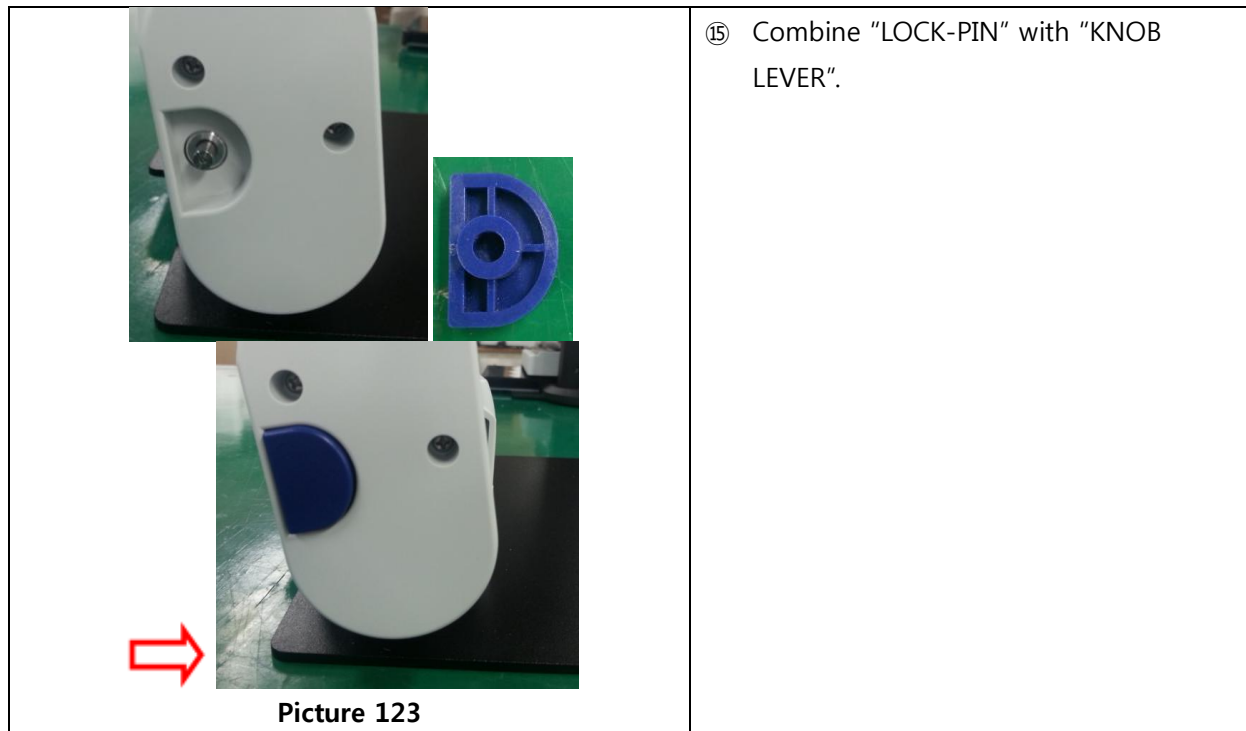
Picture 121

- ⑬ Turn the inside out and fix the "BASE-PLATE" with 4 screws.



Picture 122

- ⑭ Attach the "Pad-Plate E-bot PRO" to "BASE-PLATE".

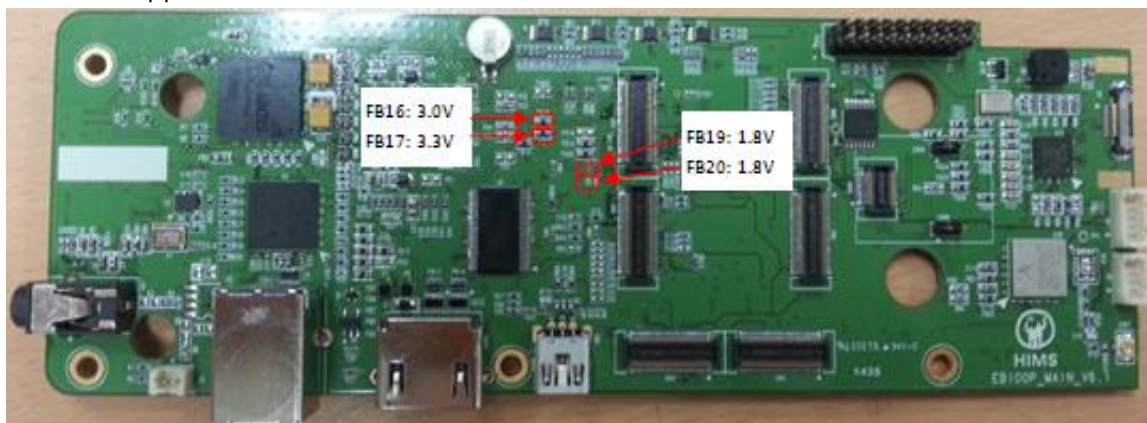


3. Checking Powers on the Boards

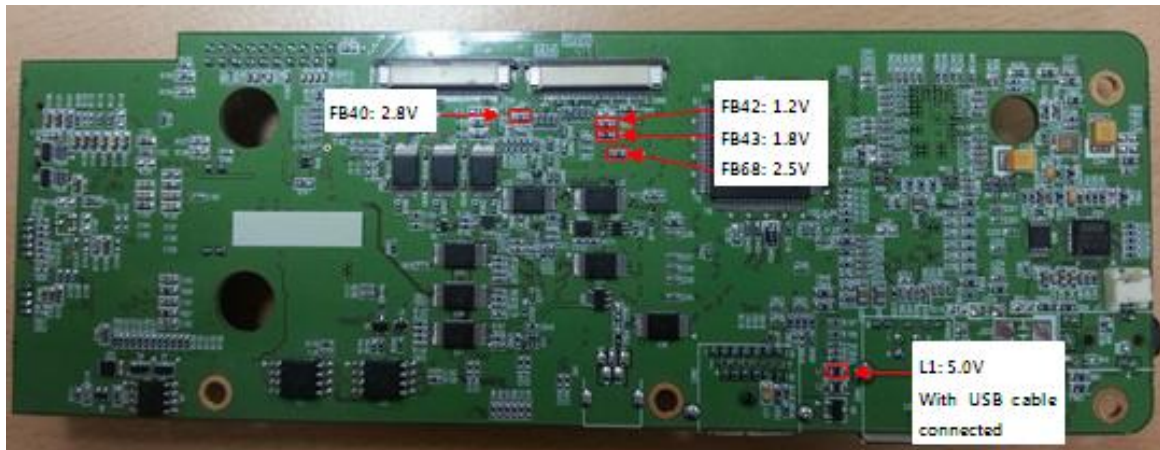
A. Voltage check point

- To solve electrical troubles, you have to check the voltage of main points on the Boards. Connect the AC-Adapter only while checking the voltage of red **box and circle** points as shown on the below. (Except L1 of Main PCB, R54 of Power PCB).

Main PCB Upper side



Main PCB Bottom side



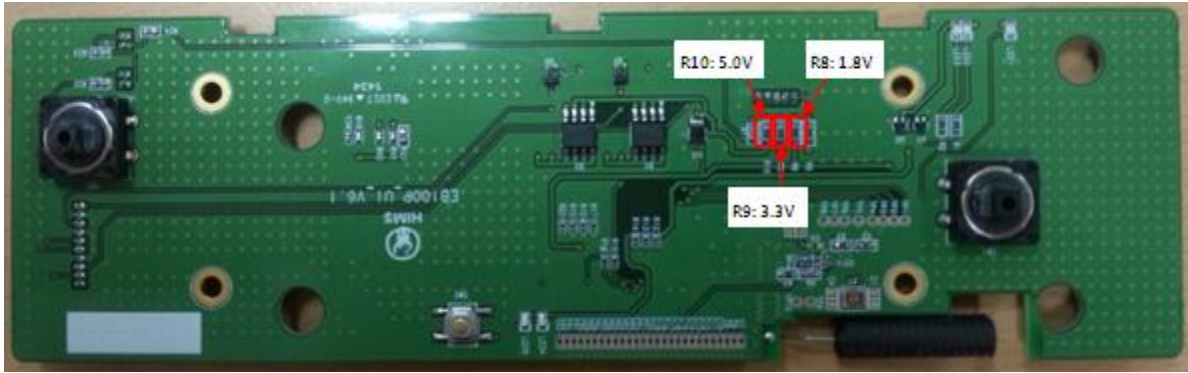
Power PCB Upper side



Power PCB Bottom side



UI PCB Upper side



B. How to repair the voltage failure

- The below table shows the normal voltage of each point. If it has any problem after checking each voltage, please follow the measure on the below table.

Item	Specification	Checking point	Cause	Measure
MAIN PCB				
3.0V point on PCB	2.9 ~ 3.0 V	FB16	CPU or MAIN Board damaged	Replace CPU or MAIN Board with new one
3.3V point on PCB	3.2 ~ 3.3 V	FB17	CPU or MAIN Board damaged	Replace CPU or MAIN Board with new one
1.8V point on PCB	1.7 ~ 1.8 V	FB19	CPU or MAIN Board damaged	Replace CPU or MAIN Board with new one
1.8V point on PCB	1.7 ~ 1.8 V	FB20	CPU or MAIN Board damaged	Replace CPU or MAIN Board with new one
2.8V point on PCB	2.7 ~ 2.8 V	FB40	CPU or MAIN Board damaged	Replace CPU or MAIN Board with new one
1.2V point on PCB	1.15 ~ 1.25 V	FB42	CPU or MAIN Board damaged	Replace CPU or MAIN Board with new one
1.8V point on PCB	1.7 ~ 1.8 V	FB43	CPU or MAIN Board damaged	Replace CPU or MAIN Board with new one
2.5V point on PCB	2.4 ~ 2.6 V	FB68	CPU or MAIN Board damaged	Replace CPU or MAIN Board with new one
USB voltage	5.0 ~ 5.3 V	L1	MAIN or POWER Board damaged	Replace MAIN or POWER Board with new one
POWER PCB				

11.5V point on PCB	11.2 ~ 11.7 V	R118	POWER Board damaged	Replace POWER Board with new one
3.3V point on PCB	3.2 ~ 3.3 V	TP1	POWER Board damaged	Replace POWER Board with new one
2.5V point on PCB	2.4 ~ 2.5 V	TP2	POWER Board damaged	Replace POWER Board with new one
1.8V point on PCB	1.7 ~ 1.9 V	TP3	POWER Board damaged	Replace POWER Board with new one
1.2V point on PCB	1.15 ~ 1.25 V	TP4	POWER Board damaged	Replace POWER Board with new one
5.0V point on PCB	4.9 ~ 5.1 V	TP6	POWER Board or CPU damaged	Replace POWER Board or CPU with new one
5.0V point on PCB	4.9 ~ 5.1 V	TP7	POWER Board damaged	Replace POWER Board with new one
12.5V point on PCB	12.4 ~ 12.6 V	TP8	POWER Board damaged	Replace POWER Board with new one
12.0V point on PCB	11.9 ~ 12.1 V	TP9	POWER Board damaged	Replace POWER Board with new one
5.0V point on PCB	4.9 ~ 5.1 V	TP10	POWER Board damaged	Replace POWER Board with new one
Battery voltage	6.4 ~ 8.3 V (Only if AC Adapter is not connected) 8.3 ~ 8.4 V (AC Adapter is connected)	1pin of J1	BATTERY or POWER Board damaged	Replace POWER Board or BATTERY with new one
12V point on PCB (with USB cable connected)	11.9 ~ 12.1 V	R54	POWER Board damaged	Replace POWER Board with new one
UI PCB				
1.8V point on PCB	1.7 ~ 1.8 V	R8	POWER Board, UI Board, or Cable damaged	Replace POWER Board, UI Board, or Cable Board with new one
3.3V point on PCB	3.2 ~ 3.3 V	R9	POWER Board, UI Board, or Cable damaged	Replace POWER Board, UI Board, or Cable Board with new one
5.0V point on PCB	4.9 ~ 5.1 V	R10	POWER Board, UI Board, or Cable damaged	Replace POWER Board, UI Board, or Cable Board with new one

4. Diagnoses of Troubles

- If you are unable to repair the unit due to any reason, please do not disassemble the unit and contact to HIMS.
- **[CAUTION]** When you solder any part of the unit, please disconnect the battery and the AC-adaptor from the unit.

Item	Sub Item	Error State	Cause	Measure
button	Light Button	No action when pressing	Tact switch is damaged	Disassemble the unit and replace the damaged Tact switch with new one by soldering it. It requires high soldering skill. If you cannot exchange the Tact switch by soldering, exchange the UI Board.
			Disconnection between the UI Board and the Main Board	Connect the UI Board and the Main Board.
			Disconnection between the UI Board and the Power Board	Connect the UI Board and the Power Board.
		Key knob is loose	Inside of the knob is broken	Disassemble the unit and exchange the corresponding key knob button with new one.
	Wi-Fi Slide Switch	No action when sliding	Slide switch is damaged	Replace the Slide switch with new one. If you cannot exchange the slide switch by soldering, exchange the Power Board.
			Main Board is damaged	Replace the Main Board with new one.
			Inside of the knob is broken	Disassemble the unit and exchange the corresponding key knob button with new one.
	volume switch	No action when turning	encoder switch is damaged	Replace the encoder switch with new one. If you cannot exchange the tact switch by soldering, exchange the Power Board.
			Inside of the knob is broken	Disassemble the unit and exchange the corresponding key knob button with new one.


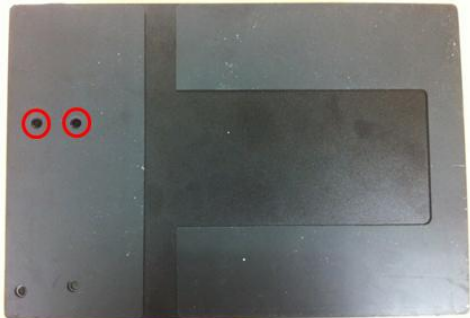






	Power button	No action No sleep No wake up	Tact switch is damaged	Disassemble the unit and replace the damaged Tact switch with new one by soldering it. It requires high soldering skill. If you cannot exchange the Tact switch by soldering, exchange the UI board.
			Disconnection between the Main Board and the UI Board	Connect the Main Board and the UI Board.
			Disconnection between the Main Board and the Power Board	Connect the Main Board and the Power Board.
			FF Cable is damaged	Replace the FF Cable with new one.
			Blown fuse	Replace the fuse with new one. (Refer to section "5". How to replace the FUSE")
			Detect switch is damaged	Replace the detect switch with new one.
			Main board is damaged	Replace the Main board with new one.
			Power board is damaged	Replace the Power board with new one
			UI board is damaged	Replace the UI board with new one
		No beep	Buzzer is damaged	Disassemble the unit and replace the damaged Buzzer with new one by soldering it. It requires high soldering skill. If you cannot exchange the Tact switch by soldering, exchange the Main Board.
			Main board is damaged	Replace the Main board with new one.
			FF Cable is damaged	Replace the FF Cable with new one.
			CPU module is damaged	Replace the CPU module with new one.
display	HDMI Monitor	If you see only a text message	Camera is damaged	Replace the Camera with new one.
			HDMI Harness is damaged	Replace the HDMI Harness with new one.

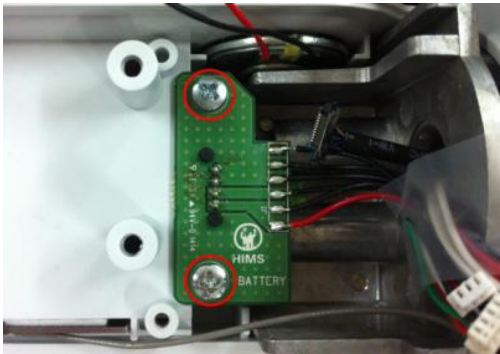



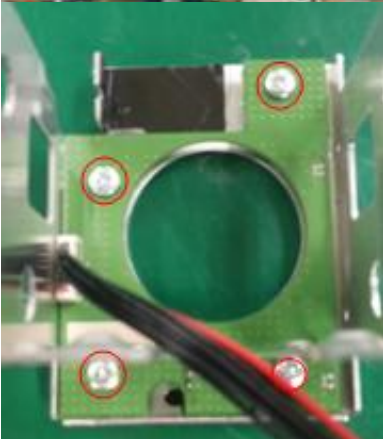


			HDMI Harness is not connected to the Main board or the Camera	Connect the HDMI Harness
		No any image	Main Board is damaged	Replace the Main board with new one.
	On-Lap Monitor	No image expect the normal Monitor	Power Board is damaged	Replace the Power board with new one.
	Light	1. If there is no display change according to the environmental brightness change 2. No Camera light	Light board or Ambient sensor board is damaged	Replace the Light board or Ambient sensor board with new one.
			Main to Connection Harness or Connection to Light Harness are damaged	Replace the Main to Connection Harness or Connection to Light Harness with new one.
	USB 3.0	If the Driver does not recognized	USB Driver is not installed properly	Install USB driver
			Main Board is damaged	Replace the Main board with new one.
			FF Cable is damaged	Replace the FF Cable with new one.
			USB_SW1 is damaged	Disassemble the unit and replace the damaged USB_SW1 with new one by soldering it. It requires high soldering skill. If you cannot exchange the USB_SW1 by soldering, exchange the UI Board.
		PC Viewer image is not clear	Main Board is damaged	Replace the Main board with new one.
	Wi-Fi	No Wi-Fi viewer Image	Disconnection between the Wi-Fi Antenna and the Main Board	Connect the Wi-Fi Antenna and the Main Board.
			Main Board is damaged	Replace the Main board with new one.
Audio	Speaker	No Speaker output	Speaker is damaged	Replace the Speaker with new one.
			Main Board is damaged	Replace the Main board with new one.

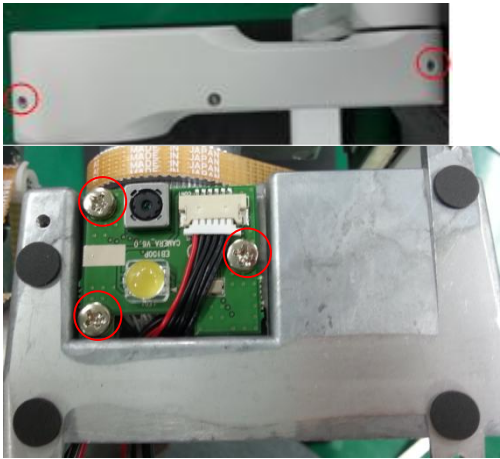

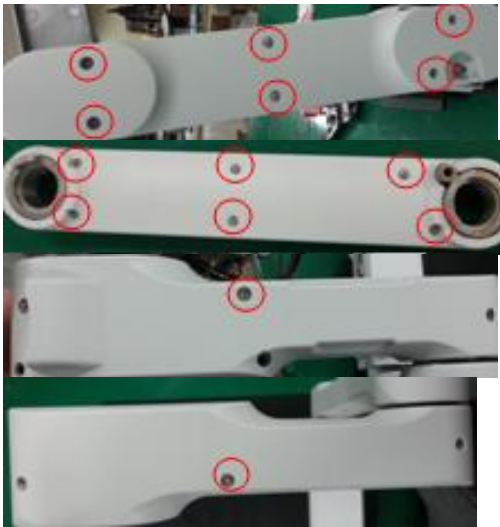


	Earphone	No Earphone output	Earphone port is damaged	Disassemble the unit and replace the damaged Earphone port with new one by soldering it. It requires high soldering skill. If you cannot exchange the Earphone port by soldering, exchange the Main Board.
			Main Board is damaged	Replace the Main board with new one.
Power	Battery	No Action (AC Adapter is not connected)	Battery is damaged	Replace the Battery with new one
			Power Board is damaged	Replace the Power board with new one.
	Battery Charging	No Charging	AC-Adapter is damaged	Replace the AC Adaptor with new one.
			Power Board is damaged	Replace the Power board with new one.
			Battery is damaged	Replace the Battery with new one.
		No Red LED Light (State of Charge)	Indicator LED is damaged	Disassemble the unit and replace the damaged Indicator LED with new one by soldering it. It requires high soldering skill. If you cannot exchange the Indicator LED by soldering, exchange the UI Board.
			UI Board is damaged	Replace the UI board with new one.
			Power Board is damaged	Replace the Power board with new one.
Wireless	Wireless communication	No Action	Controller battery is discharged	Replace the Controller battery with new one.
			ID Switch is mismatching	Make a Controller ID to the E-bot PRO ID
			UI Board is damaged	Replace the UI board with new one.
			FF Cable is damaged	Replace the FF Cable with new one.
			Main board is damaged	Replace the Main board with new one.
5Mp Camera	Display	No image	5Mp Camera is damaged	Replace the 5Mp Camera
			8P_Shield Harness Cable is damaged	Replace the 8P_Shield Harness Cable

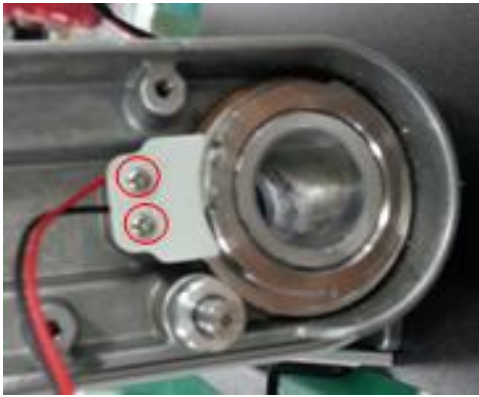

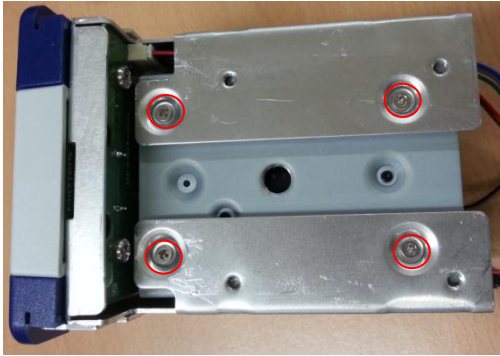





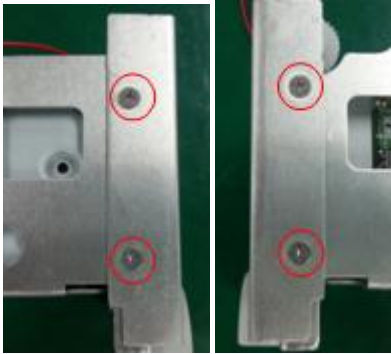
			Sub_Camera board is damaged	Replace the Sub_Camera board
			Main board is damaged	Replace the Main board
			5Mp board is damaged	Replace the 5Mp board
		Blurred image	5Mp Window was dirty	Clean up the 5Mp Window
	Light	No Light	5Mp board is damaged	Replace the 5Mp board
			6P_5MP Harness is damaged	Replace the 6P_5MP Harness
SD Card	Save File	No Save image and OCR	Power Board is damaged	Replace the UI board with new one.
			Main Board is damaged	Replace the Main board with new one.
			FF Cable to connect the Main board and the Power board is damaged	Replace the FF Cable with new one.
X&Y-axis Motor	Action	No Action	3P_MOTOR Harness is damaged	Replace the 3P_MOTOR Cable with new one.
			Power board is damaged	Replace the Power board with new one.
			Main board is damaged	Replace the Main board with new one.
			Motor is damaged	Replace the Motor with new one.
	Initial Position	Failure to maintain the initial position	X, Y-axis Photo Sensor is damaged	Replace the Photo Sensor with new one.
Lens Keeper	Action	No Action	DC Motor is damaged	Replace the DC Motor with new one.
			UI board is damaged	Replace the DC Motor with new one.

5. Screw

No.	Part name	specification	QTY	Screw picture	Position
1	ROUND HEAD TAPPING SCREW	M2.6 x 15mm	8		  
2	ROUND HEAD TAPPING SCREW	M3 x 25mm	2		
3	ROUND HEAD TAPPING SCREW	M3 x 5mm	6		

					
4	ROUND HEAD SCREW	M3 x 5mm	23		    

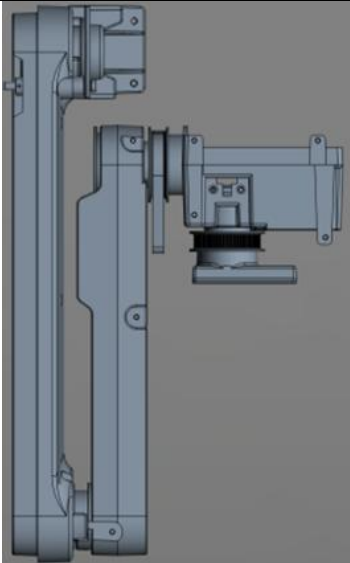
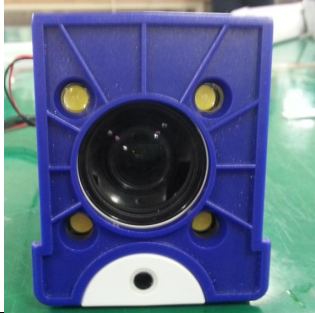
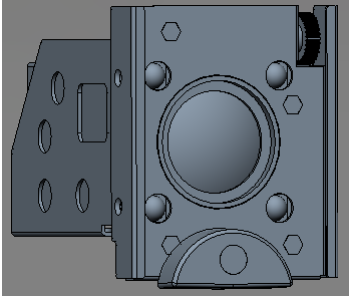
					
5	ROUND HEAD SCREW	M3 x 8mm	14		
6	ROUND HEAD SCREW	M2 x 10mm	4		



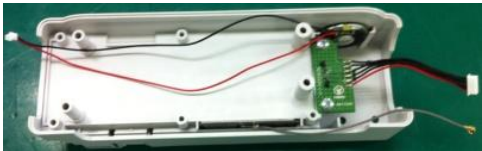
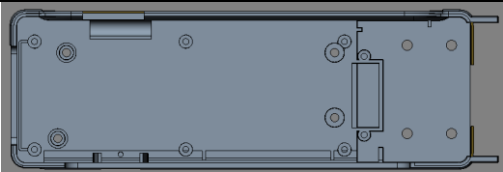

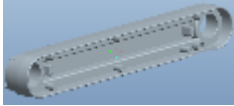
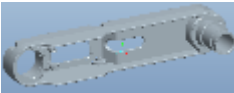
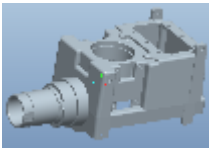
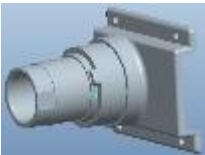
					
7	ROUND HEAD SCREW	M2 x 6mm	4		
8	FLAT HEAD SCREW	M4 x 5mm	4		
9	FLAT HEAD SCREW	M3 x 4mm	4		
10	FLAT HEAD SCREW	M2.5 x 6mm	4		

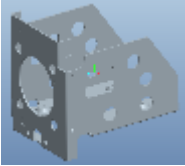


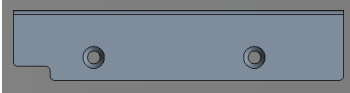



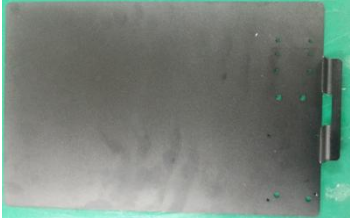
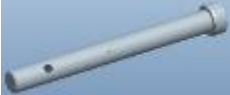

11	PAN HEAD SCREW	M.1.5 x 2.5mm	2		
12	ROUND HEAD SCREW	M2.5 x 10mm	14		
13	PAN HEAD SCREW	M3 x 4mm	6		
14	FLAT HEAD SCREW	M3 x 6mm	12		



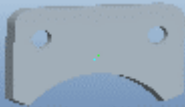


					
15	HEXAGONAL POST SCREW	M3 x 11mm	4		
16	FLAT HEAD SCREW	M2 X 5mm	1		

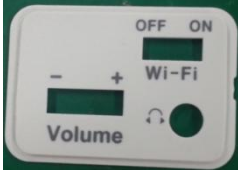

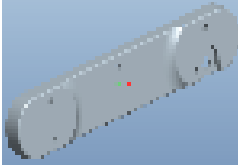
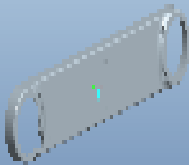
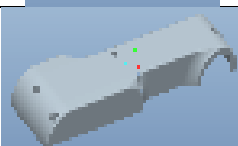
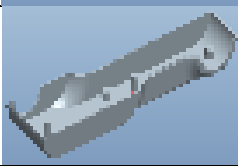
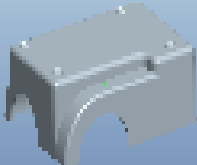
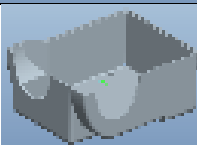
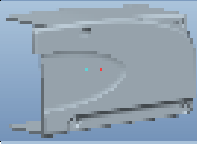
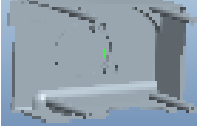
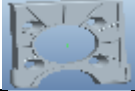
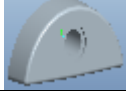

6. Part List

E-bot PRO			
No.	PART NAME	QTY	REMARK
1	ARM Module (HINGE-BASE-D, STAND-ARM-D, SWING-ARM-D, TILT-BASE-D, TILT-SHAFT, STAND ARM CASE L, TUN85MXL025_INFO11560, PLATE WASHER INNER(2ea), PLATE WASHER(2ea), DISK-SPRING(8ea), WASHER-HINGE-H1, WASHER-HINGE-H2, NUT(2ea), LOCK-PIN, Spring-2, WASHER-LOCK, PIN-2P, DISK-SHAFT(2ea), DISK-BRAKE(2ea), DISK-NUT(2ea))	1	
2	Camera Module + Lens Module	1	
3	Camera Module (PLATE-LENS-MOVING, Light Board, Condenser(4ea), Ambient Sensor Board, SENSOR-CAP, Cap-Plate, TUBE, 8P_LIGHT HARNESS_280mm, HD Camera, GUIDE-LENS-R, GUIDE-LENS-L)	1	



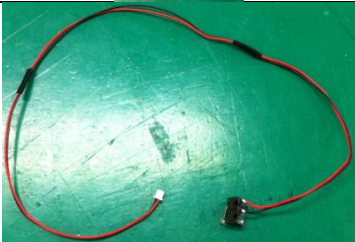






4	Lens Module (LENS KEPPER, Lens-Cap, Close up Lens, RACK-GEAR-SHAFT, RACK GEAR, O-ring(2x1)(4ea), magnet(2ea))	1	
5	BODY CASE UPPER Module (BODY CASE UPPER, KNOB-POWER, KNOB-LIGHT, LED CAP(2ea), UI Board)	1	
6	BODY CASE LOWER Module-1 (BODY CASE LOWER, Battery-Lock-Knob, Spring-1, Speaker, 2P_SPEAKER HARNESS_180mm, Battery connection board, 6P_Battery Harness_60mm, Wi-Fi Antenna)	1	
7	BODY CASE LOWER Module-2 (BODY CASE LOWER, Battery-Lock-Knob, Spring-1)	1	
8	HINGE-BASE-D	1	
9	STAND-ARM-D	1	
10	SWING-ARM-D	1	
11	TILT-BASE-D	1	
12	TILT-SHAFT	1	










13	PLATE-LENS-MOVING	1	
14	SENSOR-BRACKET	1	
15	GUIDE-LENS-R	1	
16	GUIDE-LENS-L	1	
17	DISK-SPRING	8	
18	WASHER-HINGE-H1	1	
19	WASHER-HINGE-H2	1	
20	BASE-PLATE	1	
21	LOCK-PIN	1	
22	PIN-2P	1	





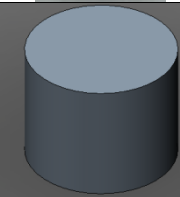


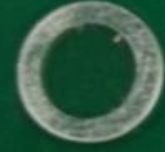
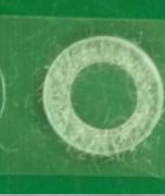
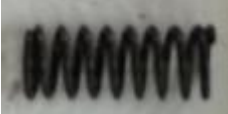

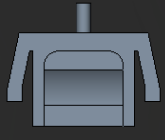
23	NUT	2	
24	DISK-BRAKE	2	
25	DISK-NUT	2	
26	RACK-GEAR-SHAFT	1	
27	WASHER-LOCK	1	
28	DISK-SHAFT	2	
29	STOPER PLATE 1	1	
30	STOPER PLATE 2	1	
31	BODY CASE UPPER	1	
32	KNOB-POWER	1	
33	KNOB-LIGHT	1	
34	BODY CASE LOWER	1	
35	KNOB LEVER	1	

36	PLATE SIDE PORT	1	
37	SWITCH COVER	2	
38	STAND ARM CASE R	1	
39	STAND ARM CASE L	1	
40	SWING ARM CASE R	1	
41	SWING ARM CASE L	1	
42	TILT CASE R	1	
43	TILT CASE L	1	
44	CAMERA CASE R	1	
45	CAMERA CASE L	1	
46	LENS KEEPER	1	
47	SENSOR-CAP	1	
48	SWING ARM-CASE-R-SUB	1	






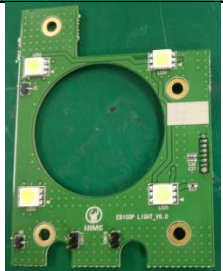




49	RACK GEAR	1	
50	LED CAP	2	
51	PLATE WASHER INNER	2	
52	PLATE WASHER	2	
53	PULLY-S	2	
54	PINION RACK	1	
55	TUN85MXL025_INFO11560	2	
56	6705ZZ	4	
57	Cushion-Motor	2	
58	HD Camera (STC-AFCM133DV)	1	
59	5Mp Camera	1	



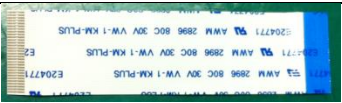





60	Close up Lens	1	
61	Condenser	5	
62	Detect Switch + 2P_DETECT HARNESS_550mm	1	
63	Detect Switch + 2P_DETECT HARNESS_200mm	1	
64	X-axis Photo Sensor + 3P_PHOTO HARNESS_120mm	1	
65	Y-axis Photo Sensor + 3P_PHOTO HARNESS_200mm	1	
66	4P_SHIELD HARNESS_850mm	1	
67	5P_SHIELD HARNESS_850mm	1	
68	6P HARNESS_100mm	1	









69	8P_LIGHT HARNESS_280mm	1		
70	10P_CONNECTION HARNESS_850mm	1		
71	3P_MOTOR HARNESS_680mm	1		
72	3P_MOTOR HARNESS_250mm	1		
73	7P_CONNECTION HARNESS_850mm	1		
74	4P_5MP HARNESS_100mm	1		
75	6P_5MP HARNESS_100mm	1		
76	8P_SHIELD HARNESS_900mm	1		
77	TUBE	1		

78	O-ring(2x1)	4	
79	O-ring(3x1)	8	
80	Spacer case	8	
81	Spacer Cam	3	
82	Cushion-Camera	1	
83	Cushion-Case	8	
84	Cushion-DC motor	1	
85	Cap-Plate	1	
86	Lens-Filter	1	
87	Spring-1	1	
88	Spring-2	1	
89	Battery-Lock-Knob	1	



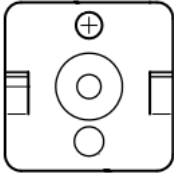


90	Lens-Cap	1	
91	Plate-Rear-Port	1	
92	Switch-Cap	1	
93	Knob-ID-Select	1	
94	Knob-Wheel	1	
95	Speaker + 2P_SPEAKER HARNESS_180mm	1	
96	Battery connection board + 6P_BATTERY HARNESS_60mm	1	
97	Wi-Fi Antenna (W71-WO-10)	1	
98	DC Motor + 2P_MOTOR HARNESS_270mm	1	
99	Motor(MX-28T)	2	
100	CPU Module (MV4412)	1	

101	EMI Absorber (TM-S1530)	1	
102	Main Board	1	
103	Power Board	1	
104	UI Board	1	
105	Connection Board	1	
106	Light Board	1	
107	5Mp Camera Board	1	
108	Sub_Camera Board	1	
109	Ambient Sensor Board	1	
110	BATTERY	1	

111	HDMI Harness (KHSL26-1945-C0)	1	
112	Camera cable (51021-06 TO 15001HS-04 TO ZHR-02)	1	
113	FFC Cable (UL2896_0.5_30)	2	
114	magnet	2	
115	Pad-Plate E-bot PRO	1	
116	USB 3.0 Cable	1	
117	HDMI Cable	1	
118	HDMI to DVI Gender	1	

119	SD Card(16G)	1	
120	Earphone	1	
121	12V@3A Adapter	1	
122	Power cable-EU	1	
123	Power cable-UK	1	
124	ON-LAP Monitor	1	
125	E-bot Bag	1	
E-bot PRO Controller			
1	CONTROLLER CASE UPPER	1	

2	BOTTOM CASE	1	
3	BATTERY CASE	1	
4	KNOB JOG	1	
5	Indicator_con	1	
6	Knob power cont	1	
7	Key-Rubber	1	
8	JOYSTICK + 6P_BATTERY HARNESS_60mm	1	
9	Controller Board	1	

10	Battery contact R (Battery contact(5225) + Battery contact(5203) + HARNESS_2)	1	
11	Battery contact L (Battery contact(5225) + Battery contact(5203) + Cable)	1	
12	Battery contact(5225)	2	
13	Battery contact(5203)	2	
14	HARNESS_2 (12513HS_02P60mm)	1	

7. Contact Information

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