

Replacing the Movement Assembly



WARNING: Before removing the covers, you **MUST** switch **OFF** the unit **AND** disconnect the unit from the main power supply by switching **OFF** the circuit breaker in the electrical cabinet.

ONLY an approved Carestream technician is qualified to inspect or maintain the unit while it is switched on and while the covers are removed. In this case, **NO** unqualified person must approach the unit.

1. Description

The movement assembly enables the rotation and Y movement of the rotative arm.

Tool Requirements

You must supply the following tools:

- Metric allen keys.
- Metric spanners.
- Flathead screwdriver.
- Cable tie cutter.
- Calibration tools.

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Note: The tool references mentioned in this guide are ISO tool references.

Before Removing or Replacing the Movement Assembly

Before removing or replacing the movement assembly, make sure that:

- The unit is switched off.
- The unit is disconnected from the main power supply by switching off the circuit breaker in the electrical cabinet.
- The head cover is removed.
- The rotative arm covers are removed.
- You have the required tools.
- You have a set of small step ladders so that you can comfortably work at the correct height.
- You have several cable ties.
- Three new lock nuts to refix the X-ray generator.
- You have the appropriate new movement assembly.

Replacing the Movement Assembly for Units with Serial Numbers xxIMxxx or xxINxxx or xxxILxxx

2. Removing the Movement Assembly

To remove the movement assembly, follow these steps:

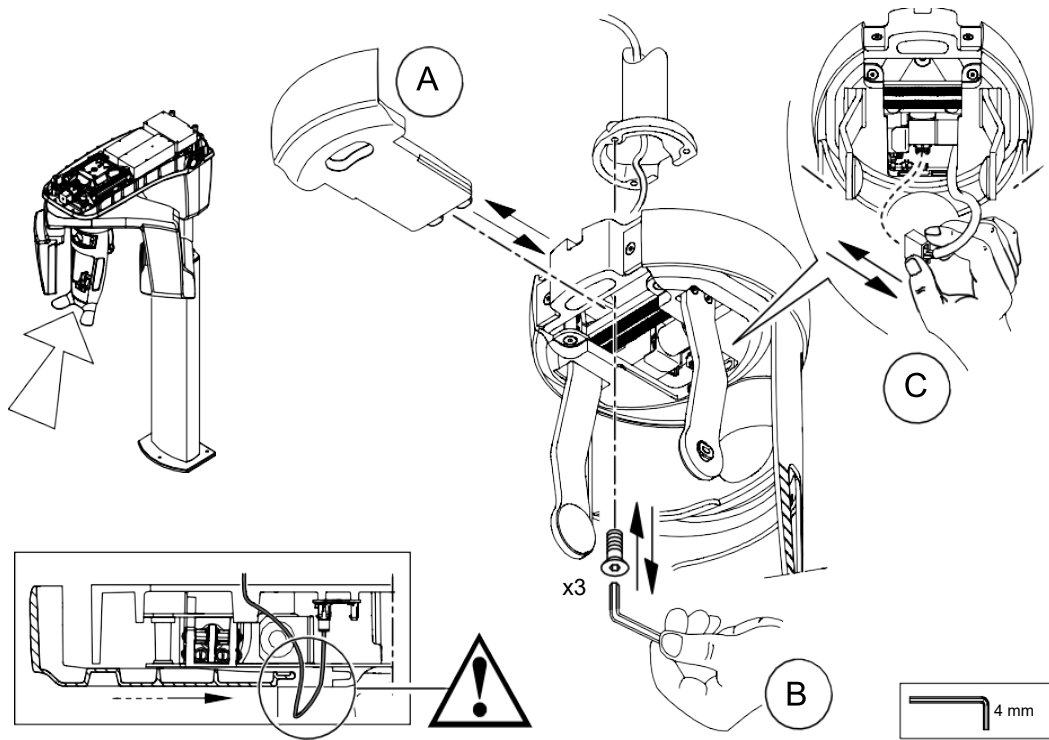
1. Remove the head and chin rest:

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- Slide off the plastic cover. ^(A)
- Loosen the three screws ^(B) but do not undo them completely.
- Disconnect the control panel cable. ^(C)
- Remove the three screws. ^(B)
- Carefully pull the head and chin rest cable up through the centre of the movement assembly.
- Cut the cable tie on top of the motor assembly and move the cable to one side.

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2. Turn the rotative arm so that the X-ray generator is next to the column.
3. Remove the X-ray generator if there is only ONE technician doing this procedure.

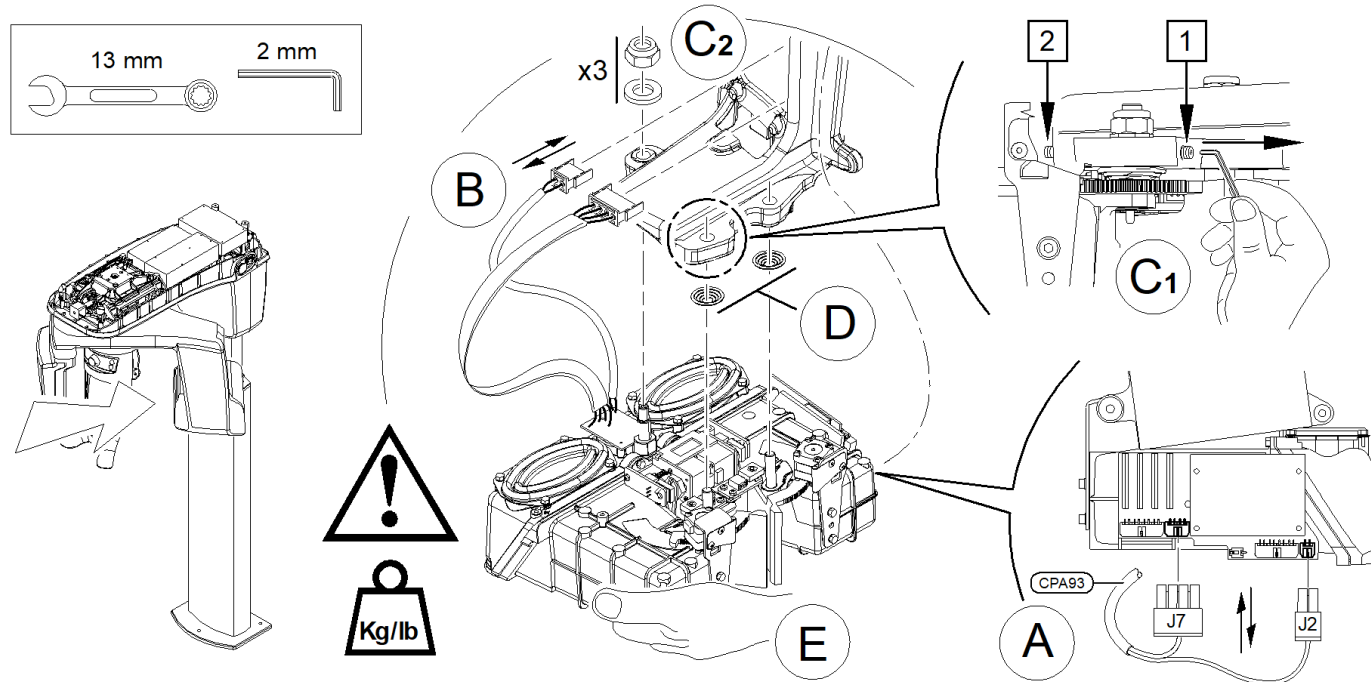
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- Disconnect the two cables from the CJ889 collimator driver board on the side of the X-ray generator. (A)
- Disconnect the two X-ray generator cables from the CJ855 generator power board. (B)
- Loosen the two adjustment screws. (C₁)
- Undo the three lock nuts. (C₂)
- Support the X-ray generator with one hand. (E)
- Remove the three lock nuts and washers with your other hand. (C₂)

**WARNING: The X-ray generator is HEAVY.**

- Carefully lower the X-ray generator and be careful not to lose the two springs. (D)

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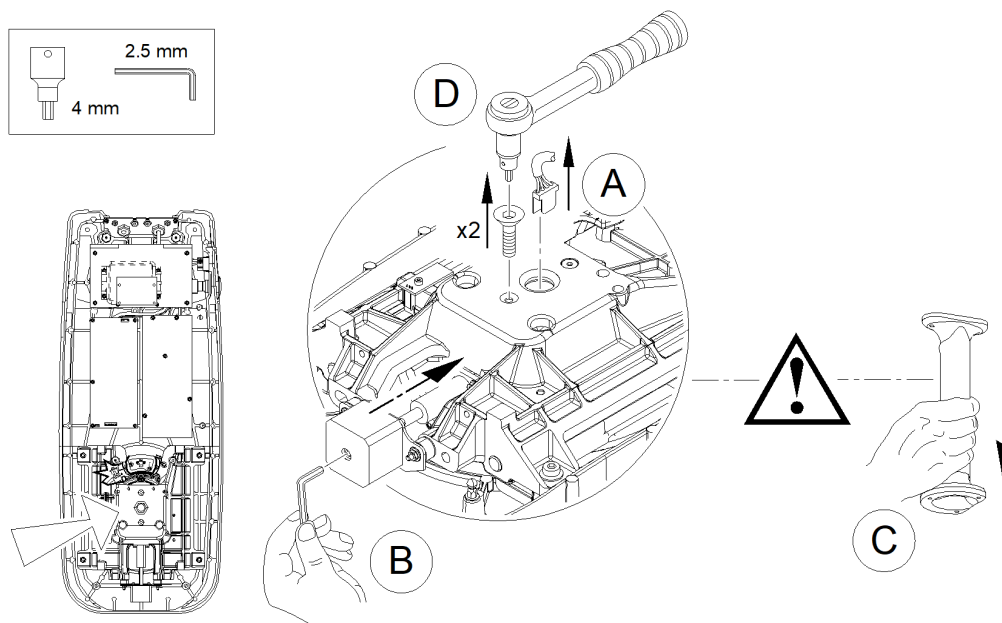
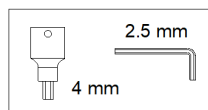
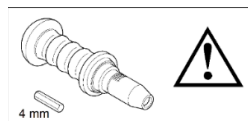
4. Remove the head and chin rest bracket:

- Carefully remove the head and chin rest cable from the centre of the movement assembly. (A)
- Turn the Y motor with an allen key (B) so that the rotative arm moves towards the column to make space.
- Hold the bracket for the head and chin rest with one hand underneath the movement assembly (C) and remove the two screws on the top of the movement assembly. (D)

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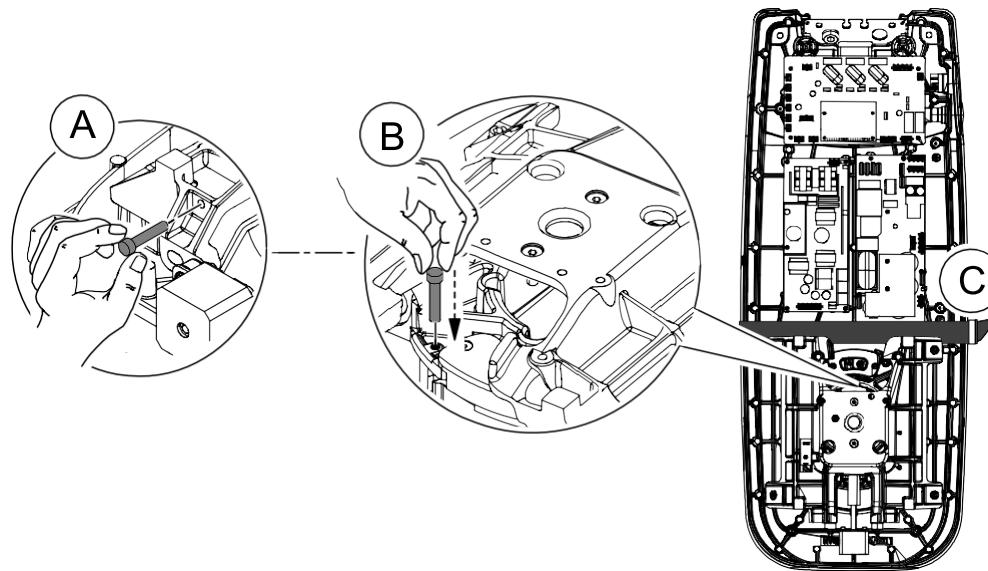


WARNING: The screws can be **VERY** tight. If you cannot undo them easily, use an impact screwdriver to loosen them. Then unscrew them with an allen key.



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5. Block the rotative movement by placing the pin **A** in the slot **B** on the left of the metal access plate that covers the CJ857 movement detector board.



6. Immobilise the rotative arm by tightening a ratchet strap **C** around the middle of the rotative arm and head between the movement assembly and the JZ036 PFC board.

Make sure that the rotative arm cannot move.

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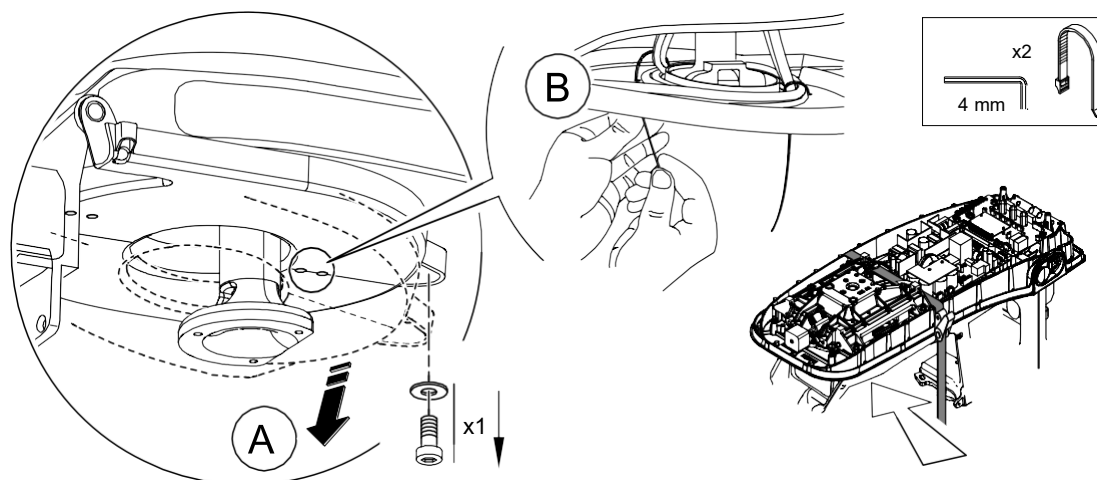


Important: Make sure that the ratchet is on the SIDE of the head and that the strap does NOT apply pressure to any of the components in the head.

7. Remove the screw holding the plastic cable tray in place and lower the tray. A
8. Add two temporary cable ties diagonally opposite each other to hold the cables in place in the plastic cable tray. B

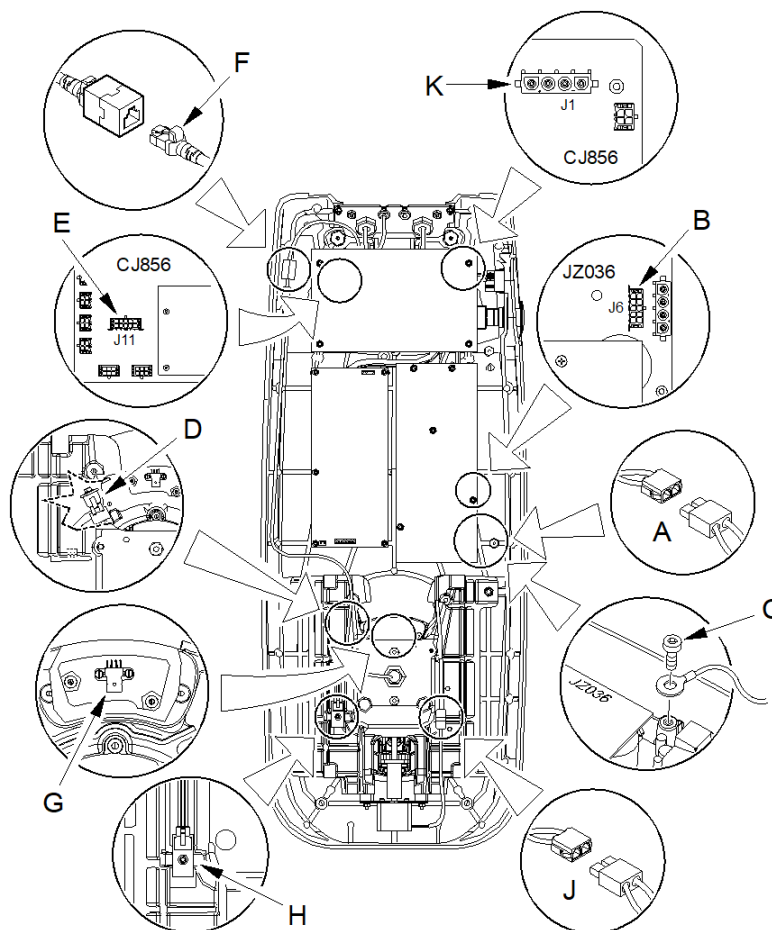
There are small holes in the plastic cable tray to pass the cable ties through. These cables ties make sure the cables go back in the correct place and do not get trapped. You remove these two cables ties later when you replace the movement assembly.

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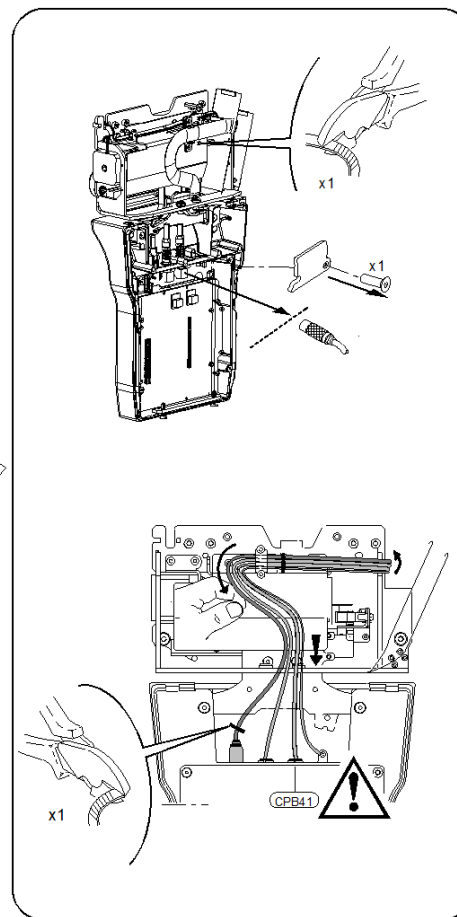
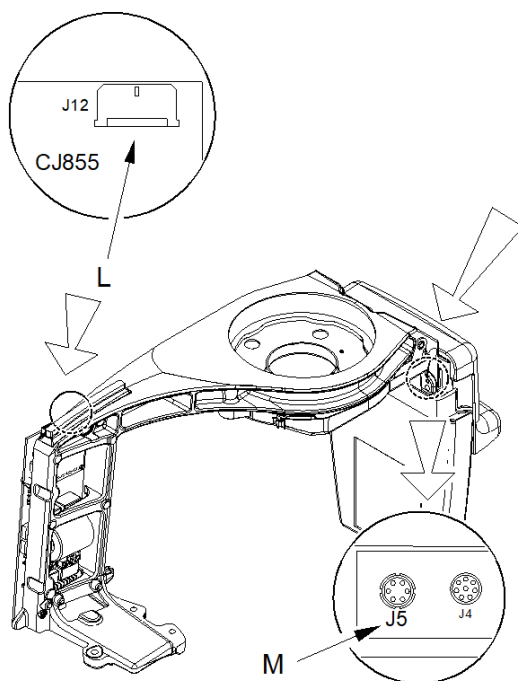


9. Disconnect the following cables and cut the cable ties on the movement assembly and in the head.

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	This cable...	Connects to...	On the...
(A)	CPB43 Cable	Connector	CPA56 Cable
(B)	Passes though the movement assembly on the right	Ground post	
(C)	CPA46 Cable Passes though the movement assembly on the right	J6	JZ036 PFC board
(D)	CPA35 Cable Passes though the movement assembly on the left	J2	CJ858 rotation detector board Turn the Y motor with an allen key to access the connector on the CJ858 rotation detector board
(E)	CPA91 Cable Passes though the movement assembly on the left	J11	CJ856 motor board
(F)	CPB42 Cable Passes though the movement assembly on the left	Ethernet cable connector	Left side of the head near the column
(G)	CPA45 Cable	J1	CJ857 movement detector board
(H)	CPA39 Cable	J2	CJ858 Y movement detector board
(J)	Y motor cable	Y motor cable connector	Right side of the head
(K)	Rotative motor cable	J1	CJ856 motor board
(L)	CPB41 Cable	J12	CJ855 generator power board
(M)		J5	Sensor

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10. Carefully push the cables one at a time down through the motor assembly.



Important: Do NOT pull the cables from below. PUSH the cables from the top.

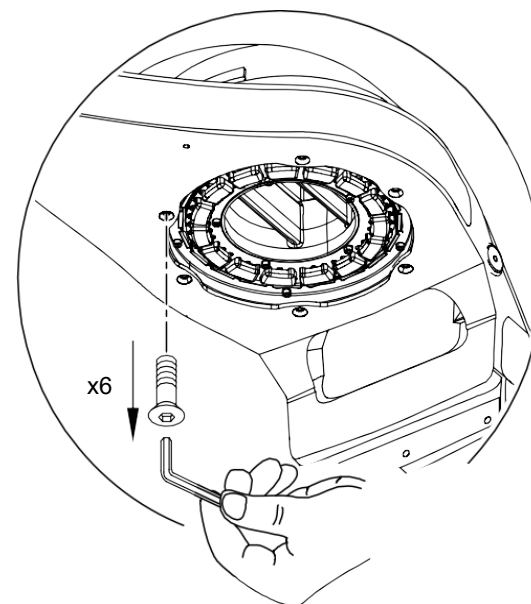
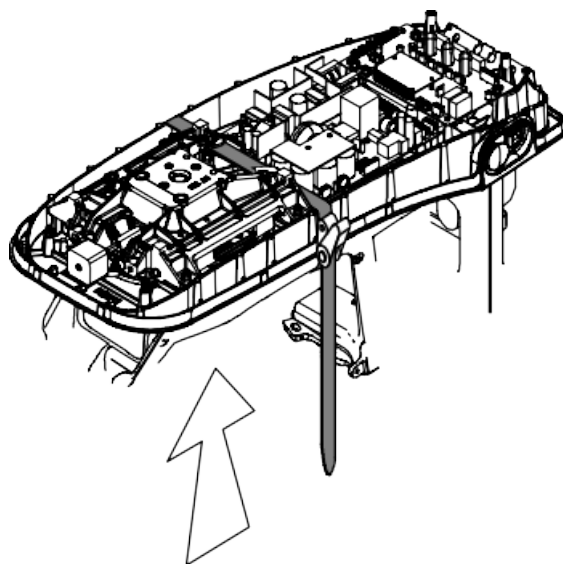
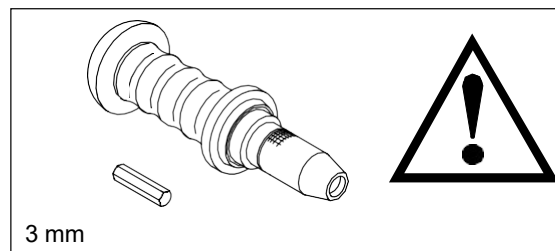
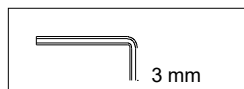
11. Disconnect the cable tray from the two lugs on the rotative arm and move it to one side out of the way.

12. Remove the six screws under the head that hold the rotative arm in place.



WARNING: The screws can be VERY tight. If you cannot easily undo them, use an impact screwdriver to loosen them. Then unscrew them with an allen key.

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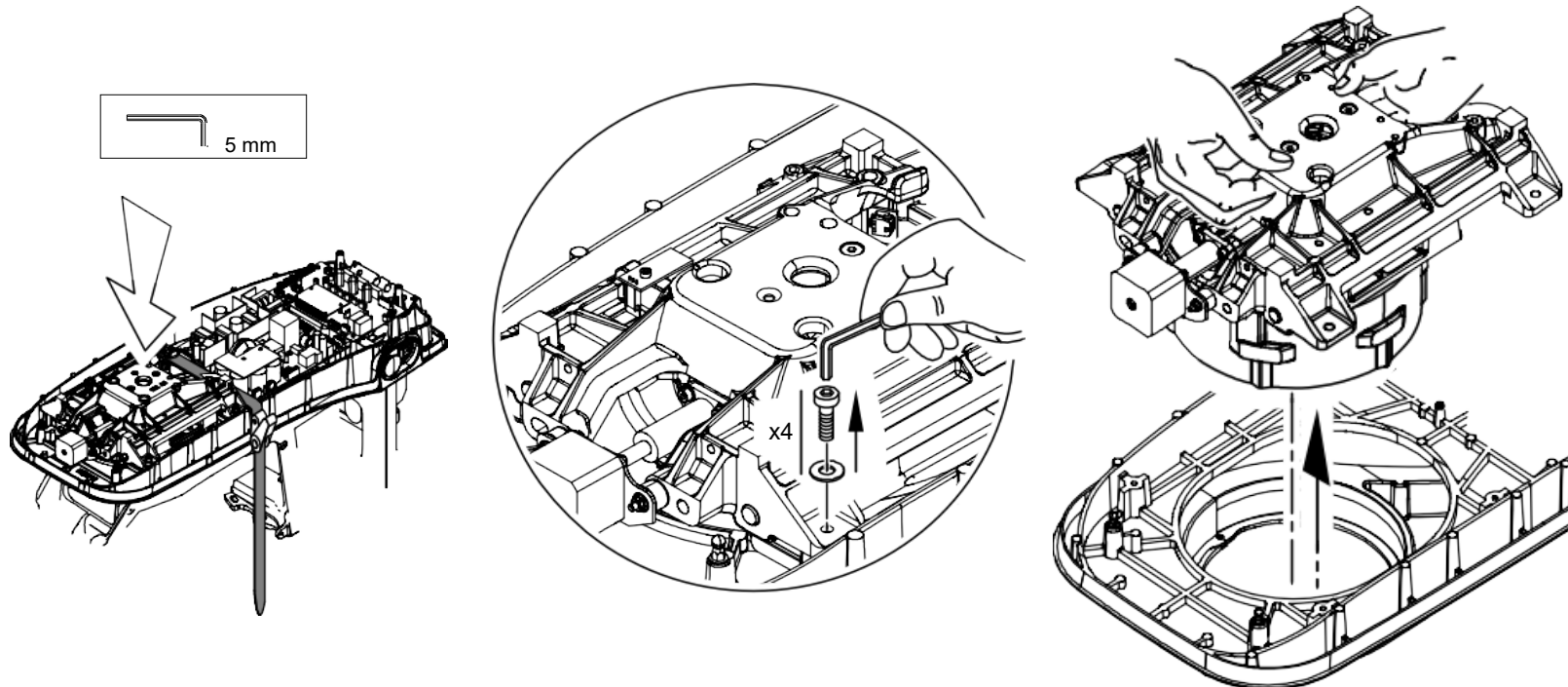
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13. Remove the four screws and washers on top of the movement assembly and lift the assembly off the head.

Keep the pin in place that blocks the rotative movement.



CAUTION: When removing screws, make sure the tool is fully inserted in the screw heads as the screws are very tight.

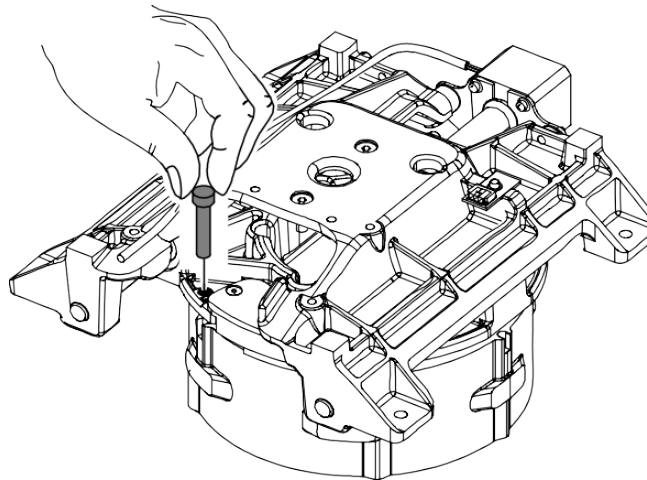


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3. Replacing the Movement Assembly

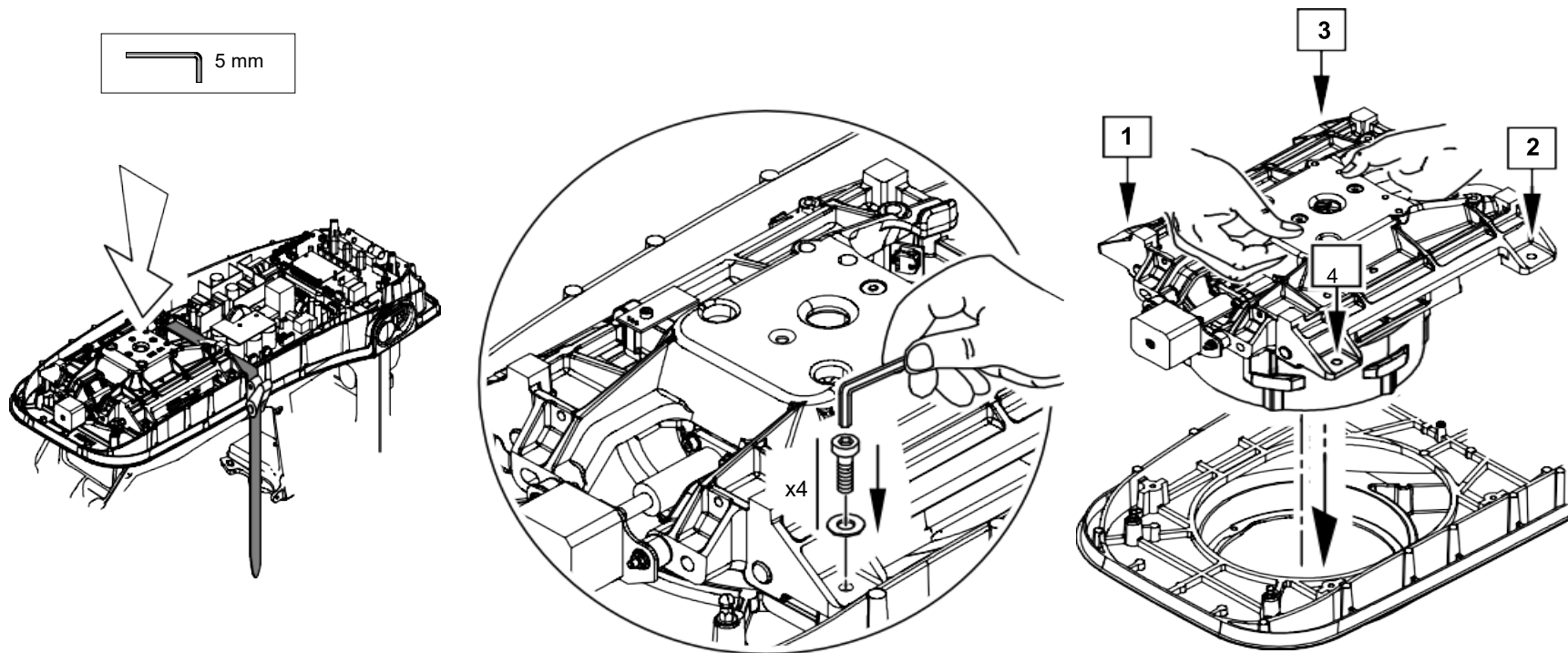
To replace the movement assembly, follow these steps:

1. On a flat surface, place the new and old movement assemblies next to each other.
2. Rotate the motor on the new movement assembly so that it is in the same position as the old one.
3. Remove the pin blocking the rotative movement on the old movement assembly and insert it in the slot on the new movement assembly.



4. Insert the four screws into the top of the movement assembly and then tighten the screws in the order shown below.

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5. Slightly loosen the ratchet strap.

This allows you to correctly position the rotative arm.

6. Underneath the head, mark the position of the locating stud on the side of the movement assembly with a marker pen.

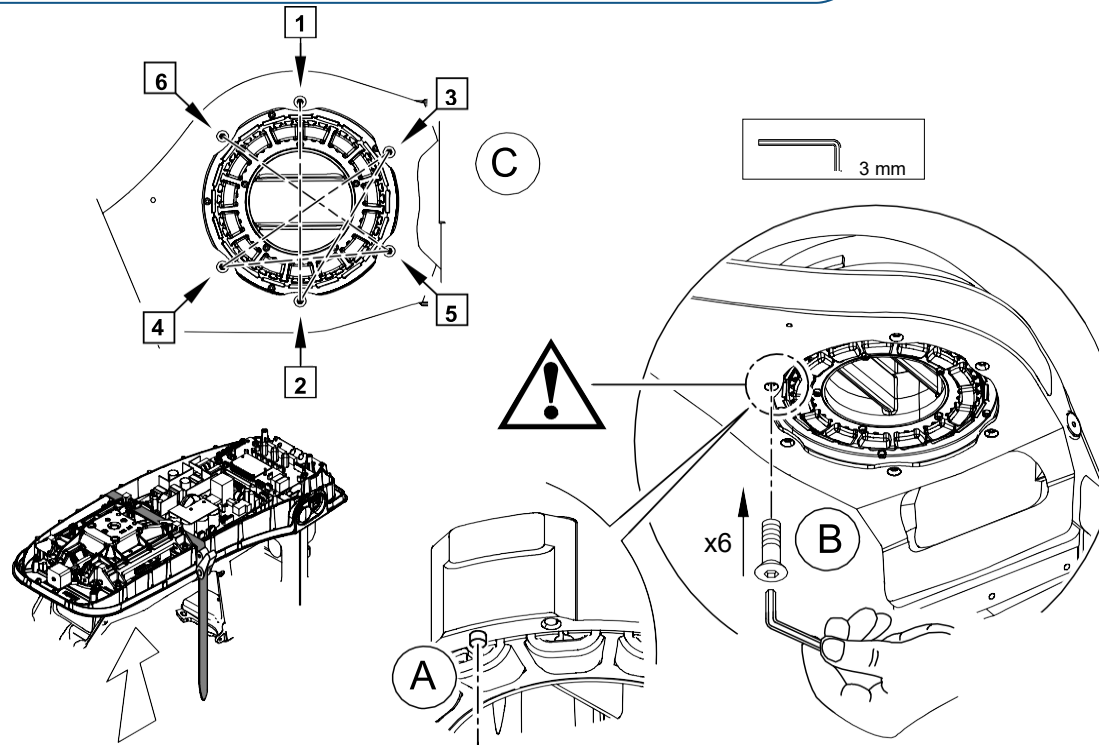
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7. Position the rotative arm by aligning the locating stud (A) that is on the underside of the movement assembly with the hole in the frame of the rotative arm.



Important: Make sure that the locating stud is aligned with the correct hole as there is a hole for a screw nearby.



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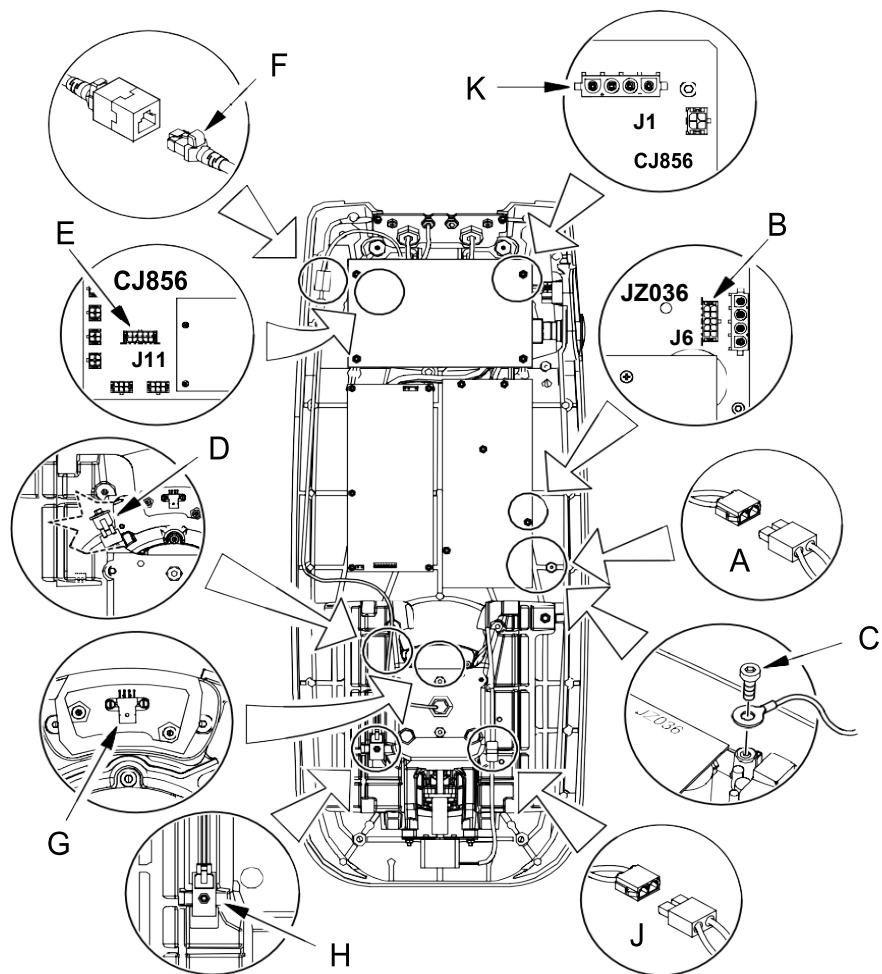
8. Insert the six screws that hold the rotative arm in place  and then tighten the screws in the order shown above. .
9. Remove the ratchet strap from around the middle of the rotative arm and head.
10. Position the plastic cable tray under the head.
11. Pass the following cables one at a time from the plastic cable tray up through the movement assembly.
 - [CPB43 Cable](#) and [CPA46 Cable](#) through the gap in the movement assembly on the right.
 - [CPA91 Cable](#), [CPA35 Cable](#), and through the gap in the movement assembly on the left.



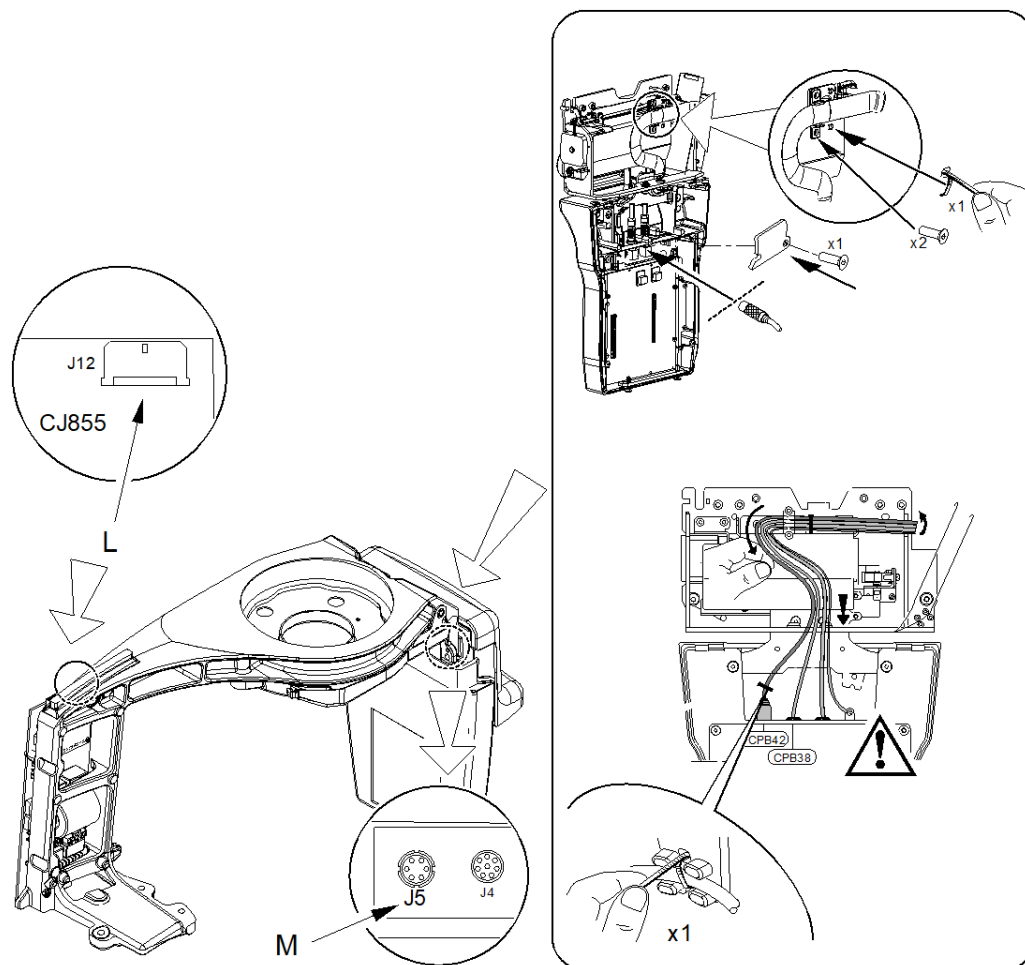
Tip: Pass the larger cables through the gaps first. For example, the [CPA91 Cable](#) with the ferrite ring.

12. Connect the following cables:

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Revision: 01

Title: SPCGD32B Movement Assembly

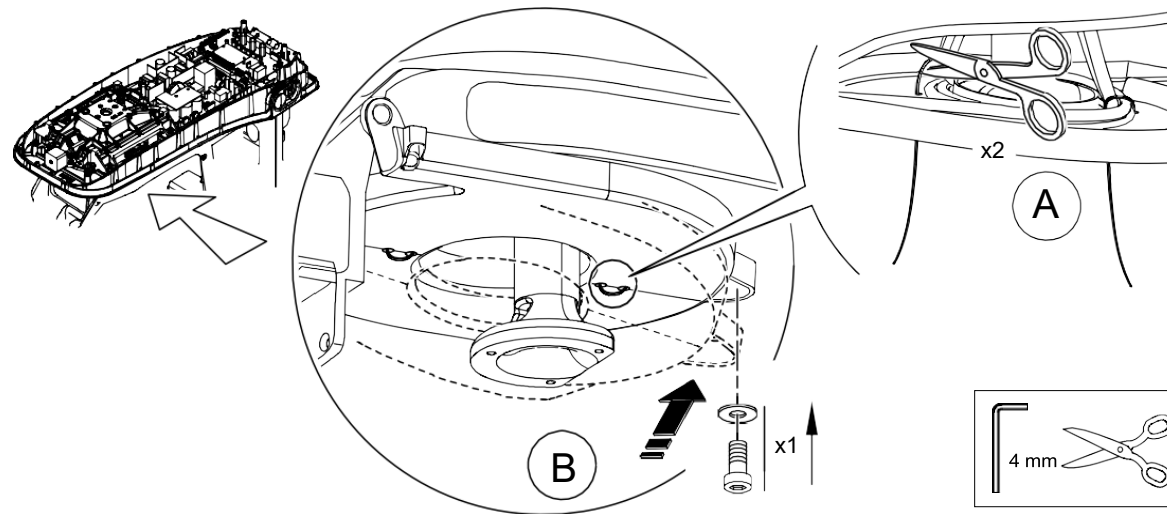
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	This cable...	Connects to...	On the...
(A)	CPB43 Cable Passes though the movement assembly on the right	J3	JZ036 PFC board
(B)		Ground post	
(C)	CPA46 Cable Passes though the movement assembly on the right	J6	JZ036 PFC board
(D)	CPA35 Cable Passes though the movement assembly on the left	J2	CJ858 rotation detector board Turn the Y motor with an allen key to access the connector on the CJ858 rotation detector board
(E)	CPA91 Cable Passes though the movement assembly on the left	J11	CJ856 motor board
(F)	"CPB36 Cable" Passes though the movement assembly on the left	Ethernet cable connector	Left side of the head near the column
(G)	CPA45 Cable	J1	CJ857 movement detector board
(H)	CPA39 Cable	J2	CJ858 Y movement detector board
(J)	Y motor cable	Y motor cable connector	Right side of the head
(K)	Rotative motor cable	J1	CJ856 motor board
(L)	CPB41 Cable	J12	CJ855 generator power board
(M)		J5	Sensor

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13. Cut the two temporary cable ties (A) and refix the plastic cable tray with the screw (B).

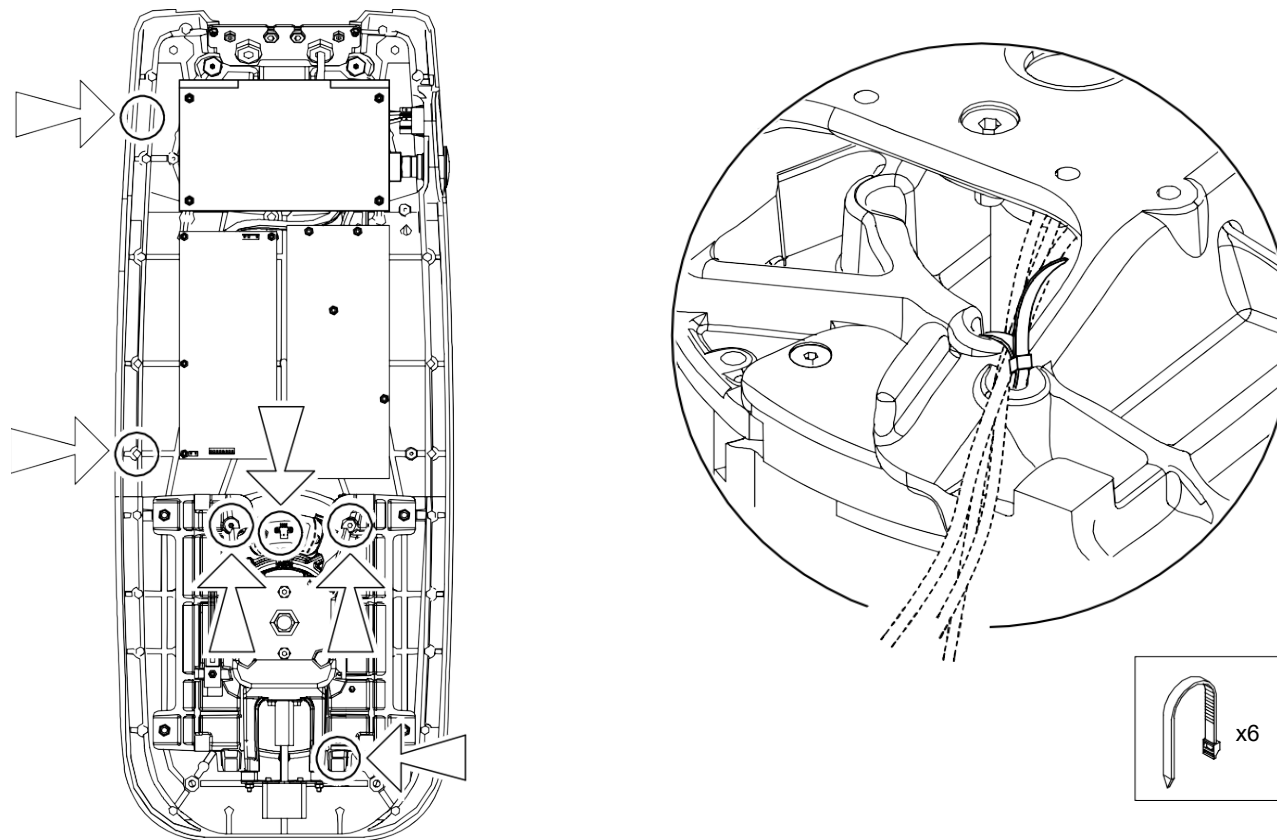


14. Replace the cable ties on the movement assembly and in the head as shown below:



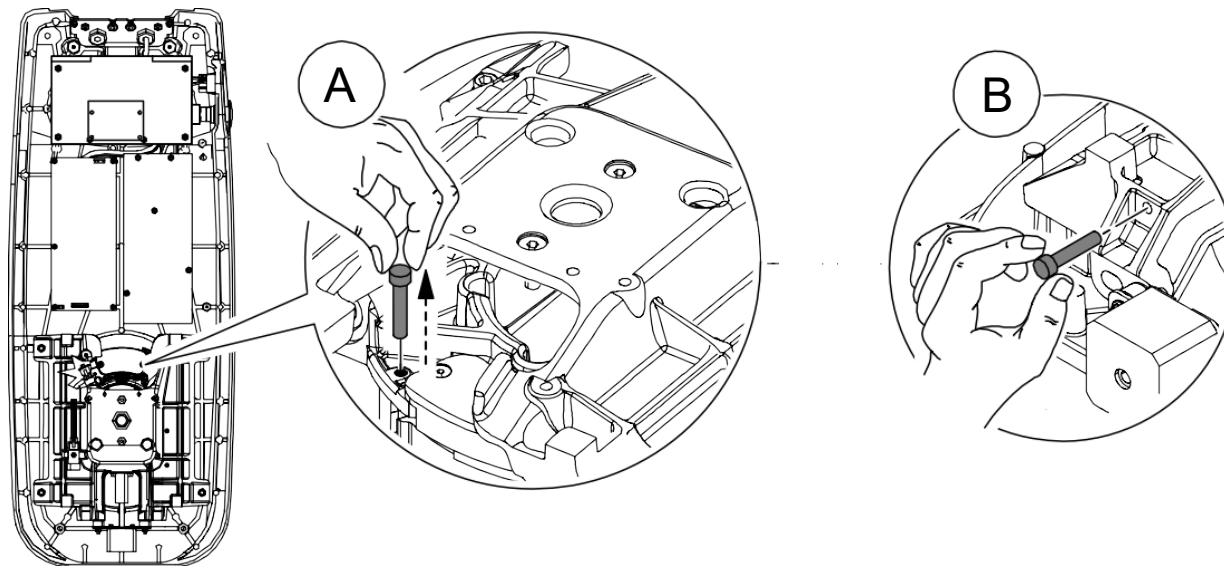
Important: Do NOT overtighten the cable ties. Cut off the cable tie ends.

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15. Remove the pin blocking the rotative movement  and put it in its storage position. 



16. Turn the Y motor with an allen key so that the rotative arm moves away from the column.
17. Turn the rotative arm by hand to make sure it moves freely and that no cables rub or are trapped.

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18. Replace the X-ray generator.



Important: Skip this step if there are TWO technicians doing this procedure and you did NOT remove the X-ray generator earlier.

- Place the two springs in position on the X-ray generator. (D)
- Support the X-ray generator with one hand (E) and position it in the three holes on the rotative arm.



WARNING: The X-ray generator is HEAVY.

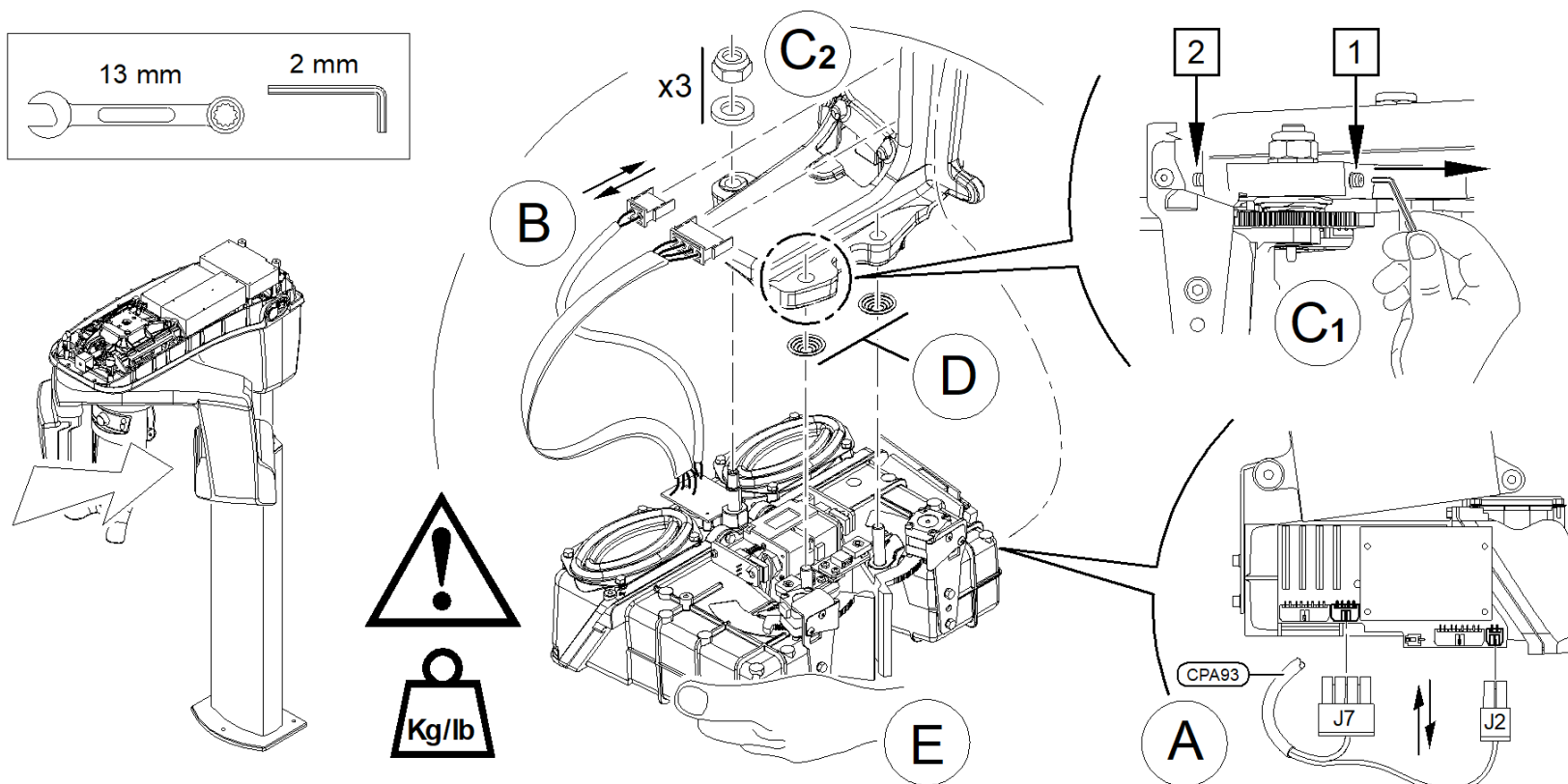
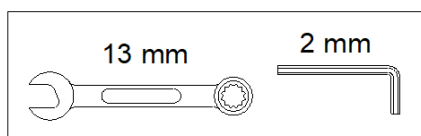
- Place the three washers and new lock nuts in position and tighten them. (C2)



Important: You must use three NEW lock nuts when replacing the X-ray generator.

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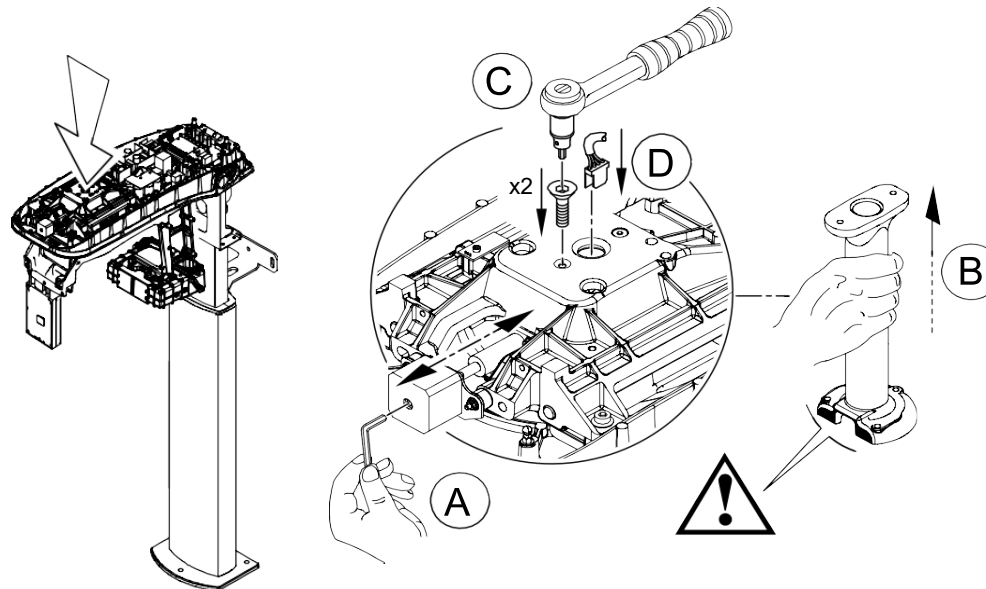
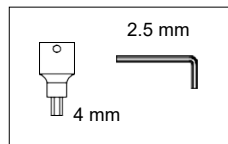
- Tighten the two adjustment screws. (C1)
- Connect the two X-ray generator cables to the CJ855 generator power board. (B)
- Connect the two cables to the CJ889 collimator driver board on the side of the X-ray generator. (A)



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19. Replace the head and chin rest bracket:

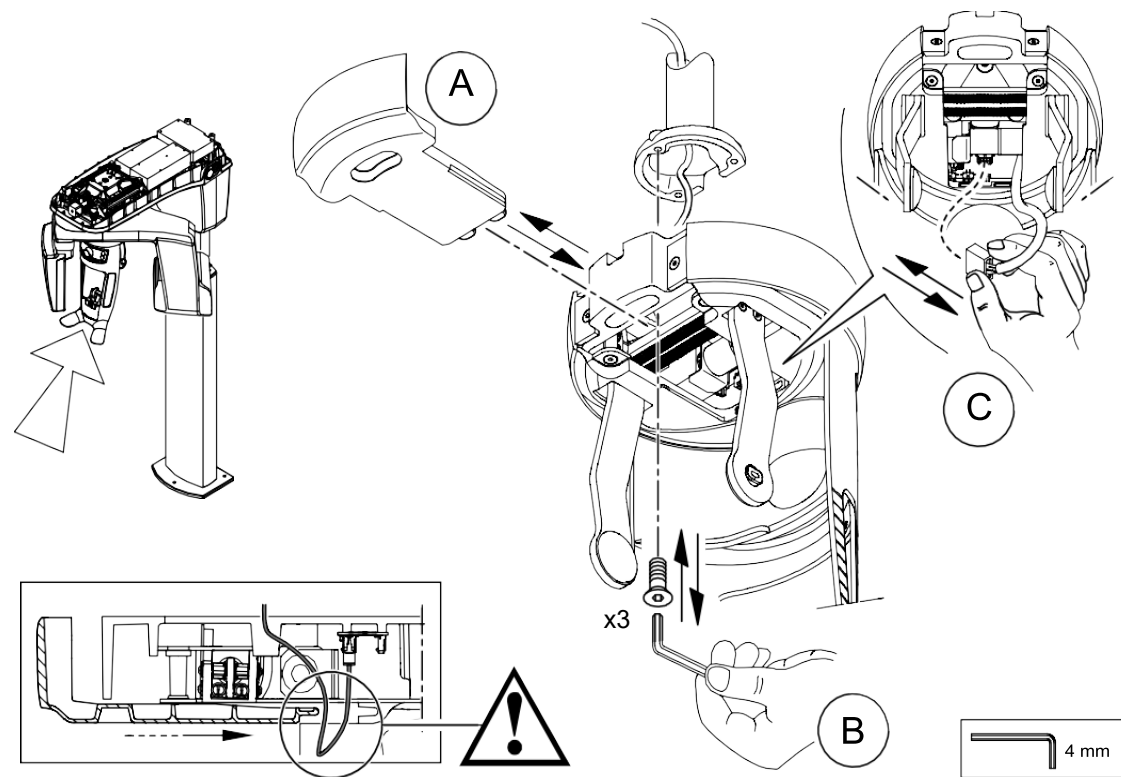
- Turn the Y motor with an allen key (A) to create enough space to insert the head and chin rest bracket.
- Position the bracket with the flat side of the lower plate facing away from the column. (B)
- Insert and tighten the two screws. (C)
- Carefully pass the head and chin rest cable through the hole in the centre of the movement assembly. (D)
- Replace the cable tie on top of the motor assembly. Cut off the cable tie end.



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
20. Replace the head and chin rest:

- Connect the control panel cable. C



- Position the head and chin rest on the support bracket.

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- Insert the three screws but do not tighten them. 
- Push the control panel cable well into the top of the head and chin rest to prevent it from getting trapped when you replace the plastic cover.
- Tighten the three screws. 
- Replace the plastic cover. 

4. Recalibrate the Head Rotation and Run the Rotative Arm Diagnostics

To recalibrate the head rotation and run the rotative arm diagnostics, follow these steps:

1. Switch on the circuit breaker in the electrical cabinet.
2. Switch on the unit.
3. Using the Service Tools:
 - Calibrate the motors:
 - Rotative arm calibration.
 - Head translation calibration.
 - Head rotation calibration.
 - Calibrate the collimator (only if you removed and refitted the X-ray generator).
 - Save the system and calibration parameters.
 - Run the rotative arm diagnostics.

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5. Testing the CDG32 Movement Assembly

To test the CDG32 movement assembly, follow these steps using the Service Tools:

1. Run the post installation procedure.
2. Register the intervention.

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