

Industrial Barcode Printer

ML241P Series

Thermal Transfer • Direct Transfer

Series Models

ML241P / ML341P



Service Manual

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1 Introduction

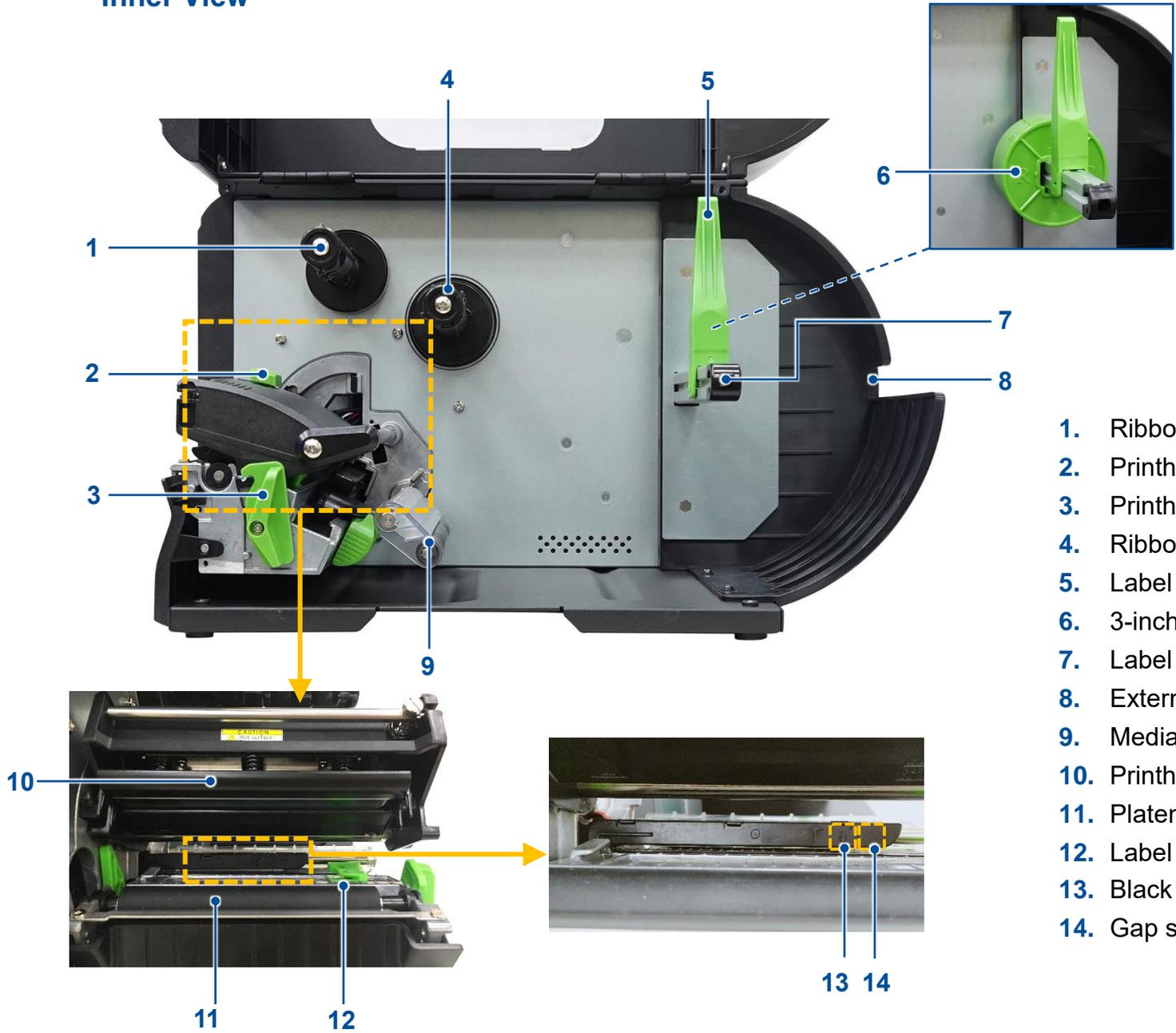
1.1 Main Components

Front View



1. LED indicator
2. LCD display
3. Front panel buttons
4. Media view window
5. Paper exit chute
6. Media cover handle

Inner View



- 1. Ribbon rewind spindle
- 2. Printhead pressure adjustment knob
- 3. Printhead release lever
- 4. Ribbon supply spindle
- 5. Label roll guard
- 6. 3-inch core adapter
- 7. Label supply spindle
- 8. External label entrance chute
- 9. Media damper
- 10. Printhead
- 11. Platen roller
- 12. Label guide
- 13. Black mark sensor (denoted by the ↓ mark)
- 14. Gap sensor (denoted by the ∇ mark)

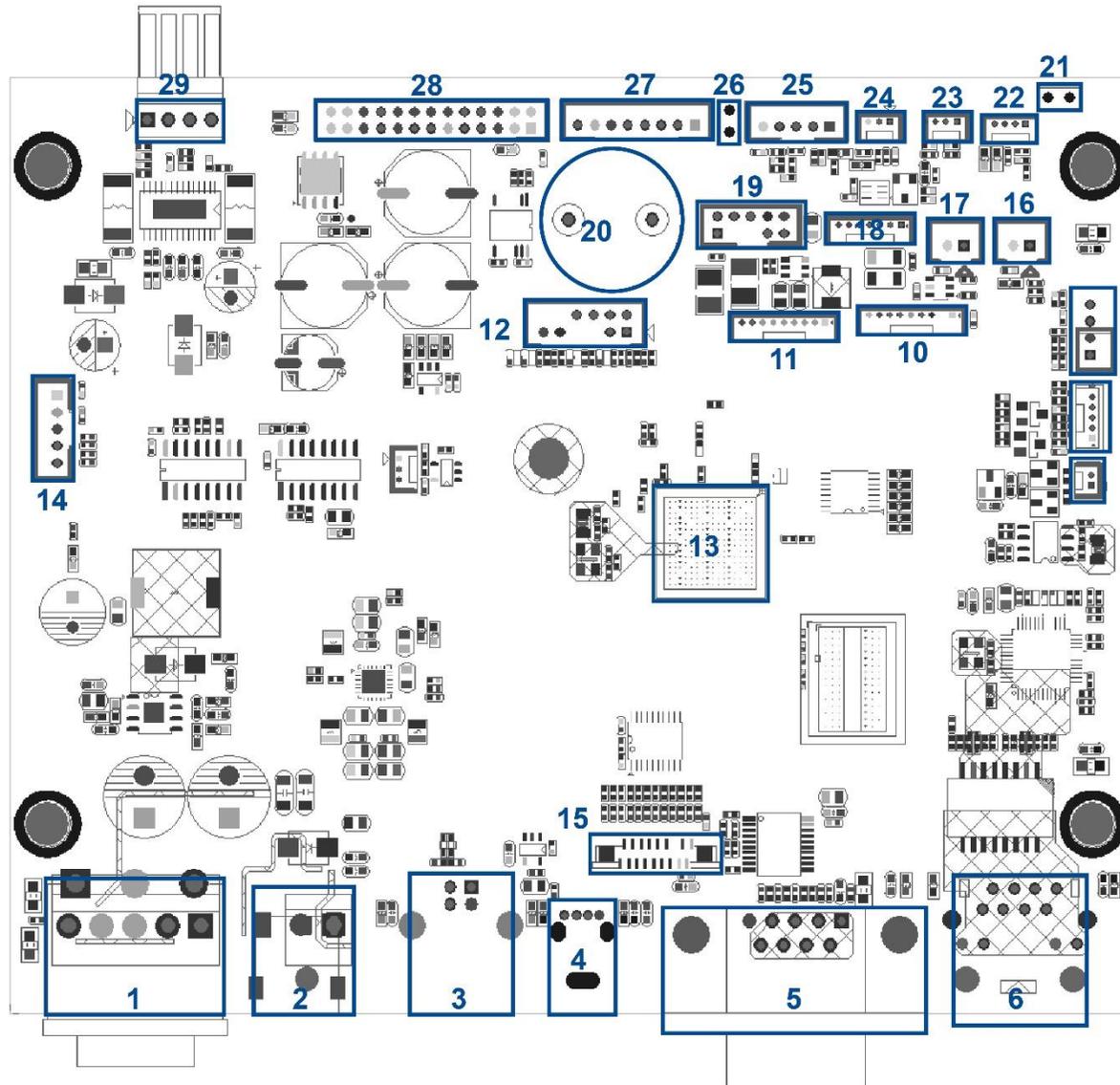
Rear View



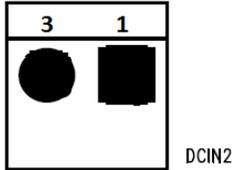
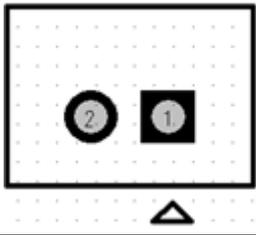
1. External label entrance chute
2. Power switch
3. USB interface (High speed mode)
4. USB host
5. RS-232 interface
6. Slot-in Wi-Fi interface (optional)
7. Ethernet interface
8. Power cord socket

2 Electronics

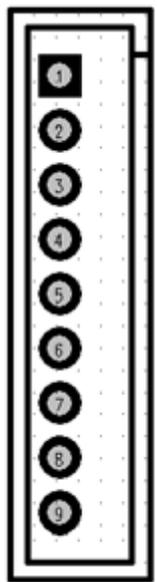
2.1 Main Board Connectors

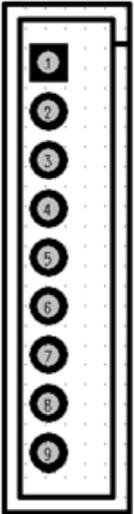
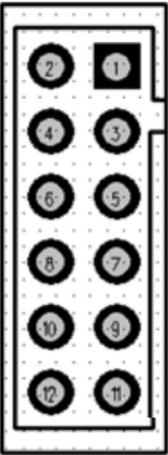


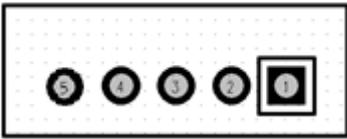
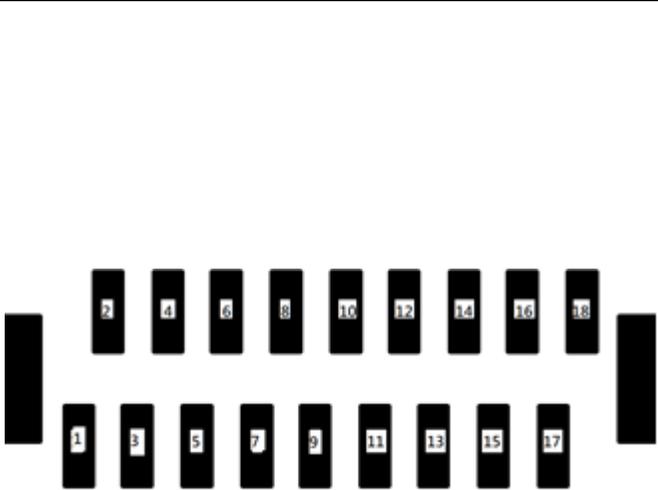
1. Power switch connector
2. Power supply (24V DC) connector
3. USB client connector
4. USB host connector
5. RS-232C connector
6. Ethernet connector
7. RTC battery connector
8. LED & key connector
9. Head open sensor connector
10. LCD panel (Interface 1, SPI LCD) connector
11. SD card reader connector
12. Wi-Fi connector
13. Micro processor
14. Liner rewinder connector
15. LCD panel (Interface 2, parallel LCD) connector
16. Gap sensor connector (receiver)
17. Gap sensor connector (emitter)
18. RFID connector
19. Wi-Fi & Bluetooth connector
20. Buzzer
21. ESD cable connector
22. Ribbon end sensor connector
23. Ribbon encoder sensor connector
24. Black mark sensor connector
25. Peel-off sensor / GPIO connector
26. ESD cable connector
27. Cutter / GPIO connector
28. Printhead connector
29. Stepping motor connector

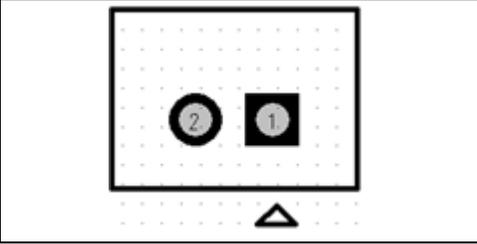
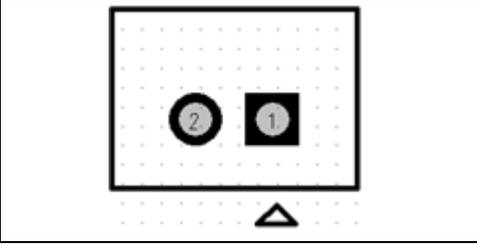
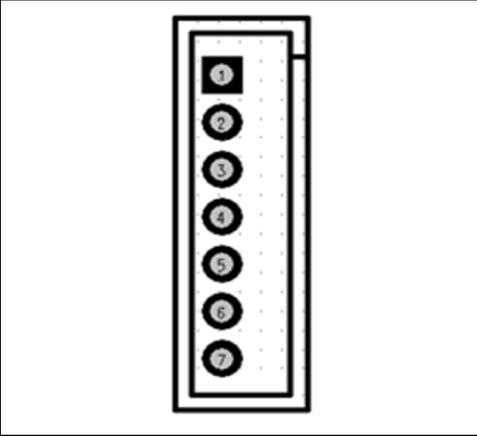
Connector	Description	Remark						
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Pin	Description							
1	+24V							
3	GND							
3	USB client connector	USB1						
4	USB host connector	USB2						
5	RS-232C connector	RS1						
6	Ethernet connector	LAN1						
7	RTC battery connector  <table border="1" data-bbox="857 853 1496 1098"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> </tr> <tr> <td>2</td> <td>Vbattery</td> </tr> </tbody> </table>	Pin	Description	1	GND	2	Vbattery	BT1
Pin	Description							
1	GND							
2	Vbattery							

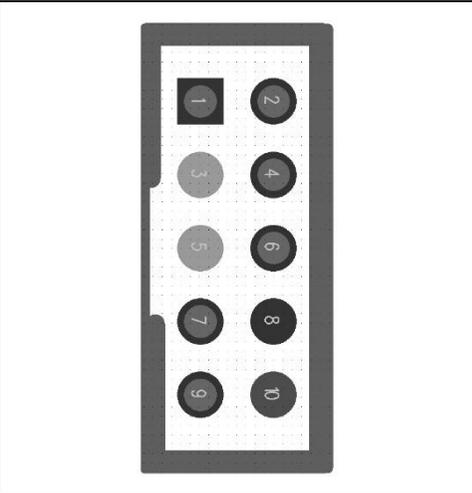
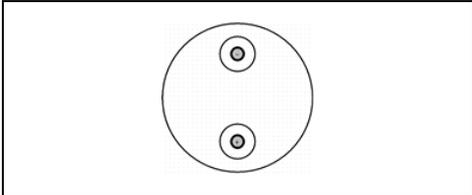
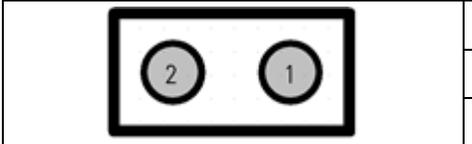
Connector	Description	Remark														
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Pin	Description															
1	3.3V															
2	KEY_SDA															
3	KEY_SCL															
4	KEY_INT															
5	GND															
6	TOUCH_INT															
9	<p data-bbox="425 582 817 614">Head open sensor connector</p> <div data-bbox="436 630 1556 869">  <table border="1" data-bbox="896 630 1556 869"> <thead> <tr> <th data-bbox="896 630 1108 678">Pin</th> <th data-bbox="1108 630 1556 678">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="896 678 1108 726">1</td> <td data-bbox="1108 678 1556 726">HEAD open</td> </tr> <tr> <td data-bbox="896 726 1108 774">2</td> <td data-bbox="1108 726 1556 774">GND</td> </tr> <tr> <td data-bbox="896 774 1108 821">3</td> <td data-bbox="1108 774 1556 821">3.3V</td> </tr> <tr> <td data-bbox="896 821 1108 869">4</td> <td data-bbox="1108 821 1556 869">3.3V</td> </tr> </tbody> </table> </div>	Pin	Description	1	HEAD open	2	GND	3	3.3V	4	3.3V	CON1				
Pin	Description															
1	HEAD open															
2	GND															
3	3.3V															
4	3.3V															

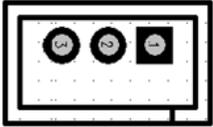
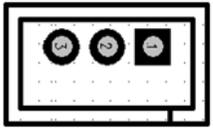
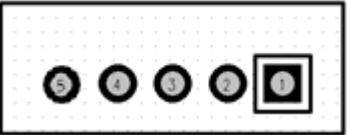
Connector	Description	Remark																				
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Pin	Description																					
1	3.3V																					
2	LCD_SI																					
3	LCD_SCL																					
4	LCD_CS1																					
5	SLCD_D/CX																					
6	LCD_BL																					
7	SLCD_RESET																					
8	GND																					
9	5V																					

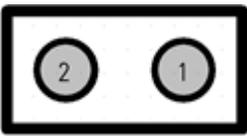
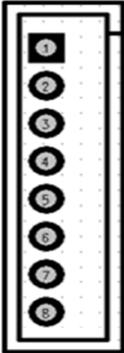
Connector	Description		Remark																										
11	SD card reader connector 	<table border="1"> <thead> <tr> <th data-bbox="817 225 1055 280">Pin</th> <th data-bbox="1055 225 1576 280">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="817 280 1055 336">1</td> <td data-bbox="1055 280 1576 336">3.3V</td> </tr> <tr> <td data-bbox="817 336 1055 392">2</td> <td data-bbox="1055 336 1576 392">MIC0_DA0</td> </tr> <tr> <td data-bbox="817 392 1055 448">3</td> <td data-bbox="1055 392 1576 448">MIC0_DA1</td> </tr> <tr> <td data-bbox="817 448 1055 504">4</td> <td data-bbox="1055 448 1576 504">MIC0_DA2</td> </tr> <tr> <td data-bbox="817 504 1055 560">5</td> <td data-bbox="1055 504 1576 560">MIC0_DA3</td> </tr> <tr> <td data-bbox="817 560 1055 616">6</td> <td data-bbox="1055 560 1576 616">MIC0_CK</td> </tr> <tr> <td data-bbox="817 616 1055 671">7</td> <td data-bbox="1055 616 1576 671">MIC0_CMD</td> </tr> <tr> <td data-bbox="817 671 1055 727">8</td> <td data-bbox="1055 671 1576 727">Micro_SD_DATA2</td> </tr> <tr> <td data-bbox="817 727 1055 783">9</td> <td data-bbox="1055 727 1576 783">SD_Detect</td> </tr> </tbody> </table>	Pin	Description	1	3.3V	2	MIC0_DA0	3	MIC0_DA1	4	MIC0_DA2	5	MIC0_DA3	6	MIC0_CK	7	MIC0_CMD	8	Micro_SD_DATA2	9	SD_Detect	CON3						
Pin	Description																												
1	3.3V																												
2	MIC0_DA0																												
3	MIC0_DA1																												
4	MIC0_DA2																												
5	MIC0_DA3																												
6	MIC0_CK																												
7	MIC0_CMD																												
8	Micro_SD_DATA2																												
9	SD_Detect																												
12	Wi-Fi connector 	<table border="1"> <thead> <tr> <th data-bbox="817 876 1066 932">Pin</th> <th data-bbox="1066 876 1592 932">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="817 932 1066 987">1</td> <td data-bbox="1066 932 1592 987">3.3V</td> </tr> <tr> <td data-bbox="817 987 1066 1043">2</td> <td data-bbox="1066 987 1592 1043">MDC</td> </tr> <tr> <td data-bbox="817 1043 1066 1099">3</td> <td data-bbox="1066 1043 1592 1099">MDIO</td> </tr> <tr> <td data-bbox="817 1099 1066 1155">4</td> <td data-bbox="1066 1099 1592 1155">CRSDV</td> </tr> <tr> <td data-bbox="817 1155 1066 1211">5</td> <td data-bbox="1066 1155 1592 1211">GRX0</td> </tr> <tr> <td data-bbox="817 1211 1066 1267">6</td> <td data-bbox="1066 1211 1592 1267">RXER</td> </tr> <tr> <td data-bbox="817 1267 1066 1323">7</td> <td data-bbox="1066 1267 1592 1323">RX1</td> </tr> <tr> <td data-bbox="817 1323 1066 1378">8</td> <td data-bbox="1066 1323 1592 1378">TXEN</td> </tr> <tr> <td data-bbox="817 1378 1066 1434">9</td> <td data-bbox="1066 1378 1592 1434">REFCK</td> </tr> <tr> <td data-bbox="817 1434 1066 1490">10</td> <td data-bbox="1066 1434 1592 1490">TX1</td> </tr> <tr> <td data-bbox="817 1490 1066 1546">11</td> <td data-bbox="1066 1490 1592 1546">GND</td> </tr> <tr> <td data-bbox="817 1546 1066 1596">12</td> <td data-bbox="1066 1546 1592 1596">TX0</td> </tr> </tbody> </table>	Pin	Description	1	3.3V	2	MDC	3	MDIO	4	CRSDV	5	GRX0	6	RXER	7	RX1	8	TXEN	9	REFCK	10	TX1	11	GND	12	TX0	CON28
Pin	Description																												
1	3.3V																												
2	MDC																												
3	MDIO																												
4	CRSDV																												
5	GRX0																												
6	RXER																												
7	RX1																												
8	TXEN																												
9	REFCK																												
10	TX1																												
11	GND																												
12	TX0																												

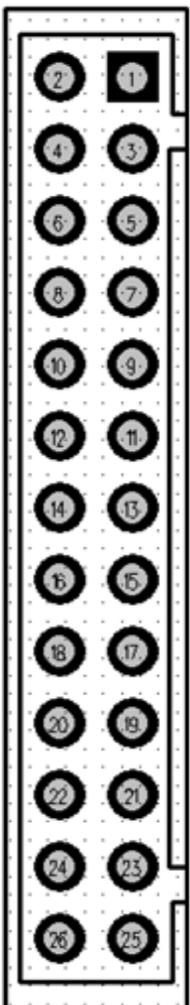
Connector	Description	Remark																																						
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14	<p>Liner rewinder connector</p>  <table border="1" data-bbox="927 288 1610 555"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.3V</td> </tr> <tr> <td>2</td> <td>24V</td> </tr> <tr> <td>3</td> <td>GND</td> </tr> <tr> <td>4</td> <td>PWM</td> </tr> <tr> <td>5</td> <td>PHASE</td> </tr> </tbody> </table>	Pin	Description	1	3.3V	2	24V	3	GND	4	PWM	5	PHASE	CON26																										
Pin	Description																																							
1	3.3V																																							
2	24V																																							
3	GND																																							
4	PWM																																							
5	PHASE																																							
15	<p>LCD panel (Interface 2, parallel LCD) connector</p>  <table border="1" data-bbox="1216 646 1572 1449"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>5V</td> </tr> <tr> <td>2</td> <td>5V</td> </tr> <tr> <td>3</td> <td>GND</td> </tr> <tr> <td>4</td> <td>3.3V</td> </tr> <tr> <td>5</td> <td>LCD_BL</td> </tr> <tr> <td>6</td> <td>LCD_D/CX</td> </tr> <tr> <td>7</td> <td>LCD_D0</td> </tr> <tr> <td>8</td> <td>LCD_D1</td> </tr> <tr> <td>9</td> <td>LCD_D2</td> </tr> <tr> <td>10</td> <td>LCD_D3</td> </tr> <tr> <td>11</td> <td>LCD_D4</td> </tr> <tr> <td>12</td> <td>LCD_D5</td> </tr> <tr> <td>13</td> <td>LCD_D6</td> </tr> <tr> <td>14</td> <td>LCD_D7</td> </tr> <tr> <td>15</td> <td>LCD_NCS</td> </tr> <tr> <td>16</td> <td>LCD_RESET</td> </tr> <tr> <td>17</td> <td>LCD_WE</td> </tr> <tr> <td>18</td> <td>GND</td> </tr> </tbody> </table>	Pin	Description	1	5V	2	5V	3	GND	4	3.3V	5	LCD_BL	6	LCD_D/CX	7	LCD_D0	8	LCD_D1	9	LCD_D2	10	LCD_D3	11	LCD_D4	12	LCD_D5	13	LCD_D6	14	LCD_D7	15	LCD_NCS	16	LCD_RESET	17	LCD_WE	18	GND	CON9
Pin	Description																																							
1	5V																																							
2	5V																																							
3	GND																																							
4	3.3V																																							
5	LCD_BL																																							
6	LCD_D/CX																																							
7	LCD_D0																																							
8	LCD_D1																																							
9	LCD_D2																																							
10	LCD_D3																																							
11	LCD_D4																																							
12	LCD_D5																																							
13	LCD_D6																																							
14	LCD_D7																																							
15	LCD_NCS																																							
16	LCD_RESET																																							
17	LCD_WE																																							
18	GND																																							

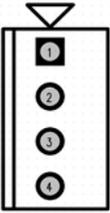
Connector	Description		Remark																
16	Gap receiver sensor connector  <table border="1" data-bbox="907 247 1608 491"> <thead> <tr> <th data-bbox="913 247 1068 327">Pin</th> <th data-bbox="1068 247 1601 327">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="913 327 1068 406">1</td> <td data-bbox="1068 327 1601 406">Gap sensor receiver</td> </tr> <tr> <td data-bbox="913 406 1068 486">2</td> <td data-bbox="1068 406 1601 486">3.3V</td> </tr> </tbody> </table>		Pin	Description	1	Gap sensor receiver	2	3.3V	CON5										
Pin	Description																		
1	Gap sensor receiver																		
2	3.3V																		
17	Gap emitter sensor connector  <table border="1" data-bbox="907 574 1608 818"> <thead> <tr> <th data-bbox="913 574 1068 654">Pin</th> <th data-bbox="1068 574 1601 654">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="913 654 1068 734">1</td> <td data-bbox="1068 654 1601 734">Gap sensor emitter</td> </tr> <tr> <td data-bbox="913 734 1068 813">2</td> <td data-bbox="1068 734 1601 813">3.3V</td> </tr> </tbody> </table>		Pin	Description	1	Gap sensor emitter	2	3.3V	CON20										
Pin	Description																		
1	Gap sensor emitter																		
2	3.3V																		
18	RFID connector  <table border="1" data-bbox="907 901 1339 1337"> <thead> <tr> <th data-bbox="913 901 1068 957">Pin</th> <th data-bbox="1068 901 1332 957">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="913 957 1068 1013">1</td> <td data-bbox="1068 957 1332 1013">5V</td> </tr> <tr> <td data-bbox="913 1013 1068 1069">2</td> <td data-bbox="1068 1013 1332 1069">RX</td> </tr> <tr> <td data-bbox="913 1069 1068 1125">3</td> <td data-bbox="1068 1069 1332 1125">TX</td> </tr> <tr> <td data-bbox="913 1125 1068 1181">4</td> <td data-bbox="1068 1125 1332 1181">RX</td> </tr> <tr> <td data-bbox="913 1181 1068 1236">5</td> <td data-bbox="1068 1181 1332 1236">TX</td> </tr> <tr> <td data-bbox="913 1236 1068 1292">6</td> <td data-bbox="1068 1236 1332 1292">GND</td> </tr> <tr> <td data-bbox="913 1292 1068 1337">7</td> <td data-bbox="1068 1292 1332 1337">GND</td> </tr> </tbody> </table>		Pin	Description	1	5V	2	RX	3	TX	4	RX	5	TX	6	GND	7	GND	CON8
Pin	Description																		
1	5V																		
2	RX																		
3	TX																		
4	RX																		
5	TX																		
6	GND																		
7	GND																		

Connector	Description		Remark																						
19	Wi-Fi / Bluetooth connector  <table border="1" data-bbox="904 245 1339 738"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>3.3V</td></tr> <tr><td>2</td><td>RESET</td></tr> <tr><td>3</td><td>SPI_MISO</td></tr> <tr><td>4</td><td>RTS</td></tr> <tr><td>5</td><td>SPI_MOSI</td></tr> <tr><td>6</td><td>CTS</td></tr> <tr><td>7</td><td>SPI_INTR</td></tr> <tr><td>8</td><td>SPI_CLK</td></tr> <tr><td>9</td><td>WB_GPIO</td></tr> <tr><td>10</td><td>GND</td></tr> </tbody> </table>		Pin	Description	1	3.3V	2	RESET	3	SPI_MISO	4	RTS	5	SPI_MOSI	6	CTS	7	SPI_INTR	8	SPI_CLK	9	WB_GPIO	10	GND	CON13
Pin	Description																								
1	3.3V																								
2	RESET																								
3	SPI_MISO																								
4	RTS																								
5	SPI_MOSI																								
6	CTS																								
7	SPI_INTR																								
8	SPI_CLK																								
9	WB_GPIO																								
10	GND																								
20	Buzzer  <table border="1" data-bbox="904 823 1339 1018"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>+</td><td>SYS 24V</td></tr> <tr><td>-</td><td>Buzzer control</td></tr> </tbody> </table>		Pin	Description	+	SYS 24V	-	Buzzer control	BZ1																
Pin	Description																								
+	SYS 24V																								
-	Buzzer control																								
21	ESD cable connector  <table border="1" data-bbox="904 1102 1339 1246"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>GND</td></tr> <tr><td>2</td><td>GND</td></tr> </tbody> </table>		Pin	Description	1	GND	2	GND	JP1																
Pin	Description																								
1	GND																								
2	GND																								

Connector	Description	Remark												
22	<p>Ribbon end sensor connector</p>  <table border="1" data-bbox="869 244 1451 440"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>RIB sensor receiver</td> </tr> <tr> <td>2</td> <td>3.3V</td> </tr> <tr> <td>3</td> <td>GND</td> </tr> <tr> <td>4</td> <td>RIB sensor emitter</td> </tr> </tbody> </table>	Pin	Description	1	RIB sensor receiver	2	3.3V	3	GND	4	RIB sensor emitter	CON11		
Pin	Description													
1	RIB sensor receiver													
2	3.3V													
3	GND													
4	RIB sensor emitter													
23	<p>Ribbon encoder sensor connector</p>  <table border="1" data-bbox="869 523 1554 703"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.3V</td> </tr> <tr> <td>2</td> <td>RIB encoder sensor receiver</td> </tr> <tr> <td>3</td> <td>GND</td> </tr> </tbody> </table>	Pin	Description	1	3.3V	2	RIB encoder sensor receiver	3	GND	CON12				
Pin	Description													
1	3.3V													
2	RIB encoder sensor receiver													
3	GND													
24	<p>Black mark sensor connector</p>  <table border="1" data-bbox="869 786 1599 967"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BM sensor emitter</td> </tr> <tr> <td>2</td> <td>BM sensor receiver</td> </tr> <tr> <td>3</td> <td>3.3V</td> </tr> </tbody> </table>	Pin	Description	1	BM sensor emitter	2	BM sensor receiver	3	3.3V	CON21				
Pin	Description													
1	BM sensor emitter													
2	BM sensor receiver													
3	3.3V													
25	<p>Peel-off sensor connector</p>  <table border="1" data-bbox="891 1050 1576 1321"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> </tr> <tr> <td>2</td> <td>Vout</td> </tr> <tr> <td>3</td> <td>SDA</td> </tr> <tr> <td>4</td> <td>SCL</td> </tr> <tr> <td>5</td> <td>3.3V</td> </tr> </tbody> </table>	Pin	Description	1	GND	2	Vout	3	SDA	4	SCL	5	3.3V	CON10
Pin	Description													
1	GND													
2	Vout													
3	SDA													
4	SCL													
5	3.3V													

Connector	Description	Remark																		
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Pin	Description																			
1	GND																			
2	GND																			
27	Cutter connector  <table border="1" data-bbox="893 475 1357 879"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>24V</td> </tr> <tr> <td>2</td> <td>Cutter PL</td> </tr> <tr> <td>3</td> <td>Cutter PHASE</td> </tr> <tr> <td>4</td> <td>Cutter EN</td> </tr> <tr> <td>5</td> <td>Cutter STATE</td> </tr> <tr> <td>6</td> <td>GND</td> </tr> <tr> <td>7</td> <td>5V</td> </tr> <tr> <td>8</td> <td>GPIO_INT</td> </tr> </tbody> </table>	Pin	Description	1	24V	2	Cutter PL	3	Cutter PHASE	4	Cutter EN	5	Cutter STATE	6	GND	7	5V	8	GPIO_INT	CON6
Pin	Description																			
1	24V																			
2	Cutter PL																			
3	Cutter PHASE																			
4	Cutter EN																			
5	Cutter STATE																			
6	GND																			
7	5V																			
8	GPIO_INT																			

Connector	Description	Remark																																																						
28	<p data-bbox="425 191 705 223">Print head connector</p> <div style="display: flex; align-items: center;">  <table border="1" data-bbox="772 247 1321 1452" style="margin-left: 20px;"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>TPH 24V</td></tr> <tr><td>2</td><td>TPH 24V</td></tr> <tr><td>3</td><td>TPH 24V</td></tr> <tr><td>4</td><td>TPH 24V</td></tr> <tr><td>5</td><td>GND</td></tr> <tr><td>6</td><td>GND</td></tr> <tr><td>7</td><td>Strobe2</td></tr> <tr><td>8</td><td>Data2</td></tr> <tr><td>9</td><td>TPH ID</td></tr> <tr><td>10</td><td>Temperature sensor</td></tr> <tr><td>11</td><td>5V</td></tr> <tr><td>12</td><td>GND</td></tr> <tr><td>13</td><td>Strobe1</td></tr> <tr><td>14</td><td>GND</td></tr> <tr><td>15</td><td>Clock</td></tr> <tr><td>16</td><td>GND</td></tr> <tr><td>17</td><td>GND</td></tr> <tr><td>18</td><td>GND</td></tr> <tr><td>19</td><td>Data1</td></tr> <tr><td>20</td><td>Latch</td></tr> <tr><td>21</td><td>GND</td></tr> <tr><td>22</td><td>GND</td></tr> <tr><td>23</td><td>TPH 24V</td></tr> <tr><td>24</td><td>TPH 24V</td></tr> <tr><td>25</td><td>TPH 24V</td></tr> <tr><td>26</td><td>TPH 24V</td></tr> </tbody> </table> </div>	Pin	Description	1	TPH 24V	2	TPH 24V	3	TPH 24V	4	TPH 24V	5	GND	6	GND	7	Strobe2	8	Data2	9	TPH ID	10	Temperature sensor	11	5V	12	GND	13	Strobe1	14	GND	15	Clock	16	GND	17	GND	18	GND	19	Data1	20	Latch	21	GND	22	GND	23	TPH 24V	24	TPH 24V	25	TPH 24V	26	TPH 24V	CON24
Pin	Description																																																							
1	TPH 24V																																																							
2	TPH 24V																																																							
3	TPH 24V																																																							
4	TPH 24V																																																							
5	GND																																																							
6	GND																																																							
7	Strobe2																																																							
8	Data2																																																							
9	TPH ID																																																							
10	Temperature sensor																																																							
11	5V																																																							
12	GND																																																							
13	Strobe1																																																							
14	GND																																																							
15	Clock																																																							
16	GND																																																							
17	GND																																																							
18	GND																																																							
19	Data1																																																							
20	Latch																																																							
21	GND																																																							
22	GND																																																							
23	TPH 24V																																																							
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25	TPH 24V																																																							
26	TPH 24V																																																							

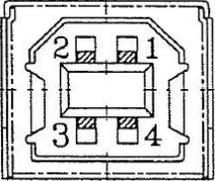
Connector	Description	Remark										
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Pin	Description											
1	BOUT2											
2	BOUT1											
3	AOUT1											
4	AOUT2											

2.2 Interface Pin Configuration

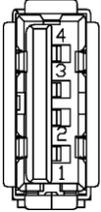
RS-232C

Pin	Configuration
1	+5 V
2	TXD
3	RXD
4	CTS
5	GND
6	RTS
7	N/C
8	RTS
9	N/C

USB Device

	Pin	Configuration
	1	N/C
	2	D-
	3	D+
4	GND	

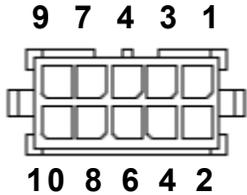
USB Host

	Pin	Configuration
	1	5V
	2	D-
	3	D+
4	GND	

Ethernet

Pin	Configuration
1	Tx+
2	Tx-
3	Rx+
4	N/C
5	N/C
6	Rx-
7	N/C
8	N/C

Cutter & peel-off Sensor Connector



Pin	Description	Voltage
1	Cutter enable	0V: Cutter work 5V: Cutter stop
2	Cutter direction	0V: Cutter positive cut 5V: Cutter negative cut
3	Cutter position sensor switch	0V: Cutter stop 3.3V: Cutter work
4	Peel sensor receiver	A/D: 0 - 3.3V
5	N/A	N/A
6	Logic power	5V
7	GND	0V
8	Cutter power	24V
9	I2C SCL signal	
10	I2C SDA signal	

3 Replacing the Parts

3.1 Before You Begin

WARNING: To avoid the risk of personal injury from electrical shock, before performing any replacement procedures, unplug the power cord from the printer or power outlet to ensure that power is removed.

To prepare the printer for the replacement or installation:

1. Protect yourself from ESD and wear protective gloves.
2. Place the printer on a flat surface.
3. Set the printer's power switch to the **○** (Off) position.
4. Remove the power cord from the AC power outlet.
5. Disconnect all interface cables from the rear panel of the printer.
6. Remove the media from the printer.
7. Read through the maintenance procedures.

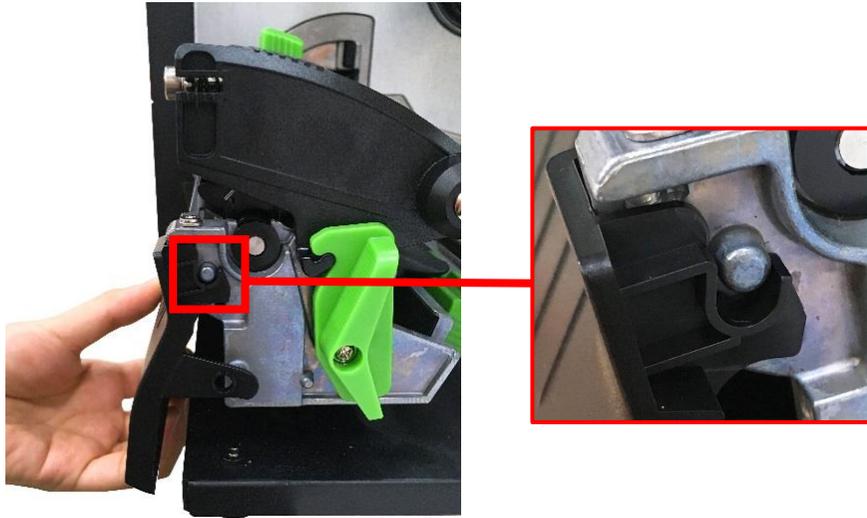
3.2 Removing the Lower Front Panel

1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Open the media cover.
3. Carefully pull the tab to release the lower front panel from the lower mechanism and then remove the lower front panel.



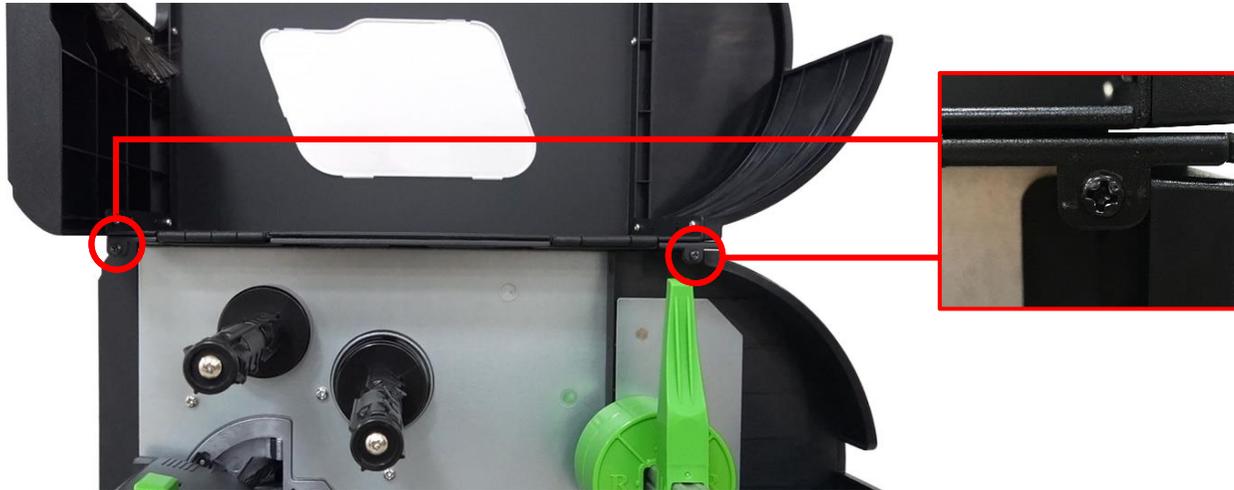
4. Reverse the steps to install the lower front panel.

NOTE: When installing the lower front panel, make sure that the hook for the lower front panel fits with the positioning stud on the lower mechanism.



3.3 Removing the Electronics Cover

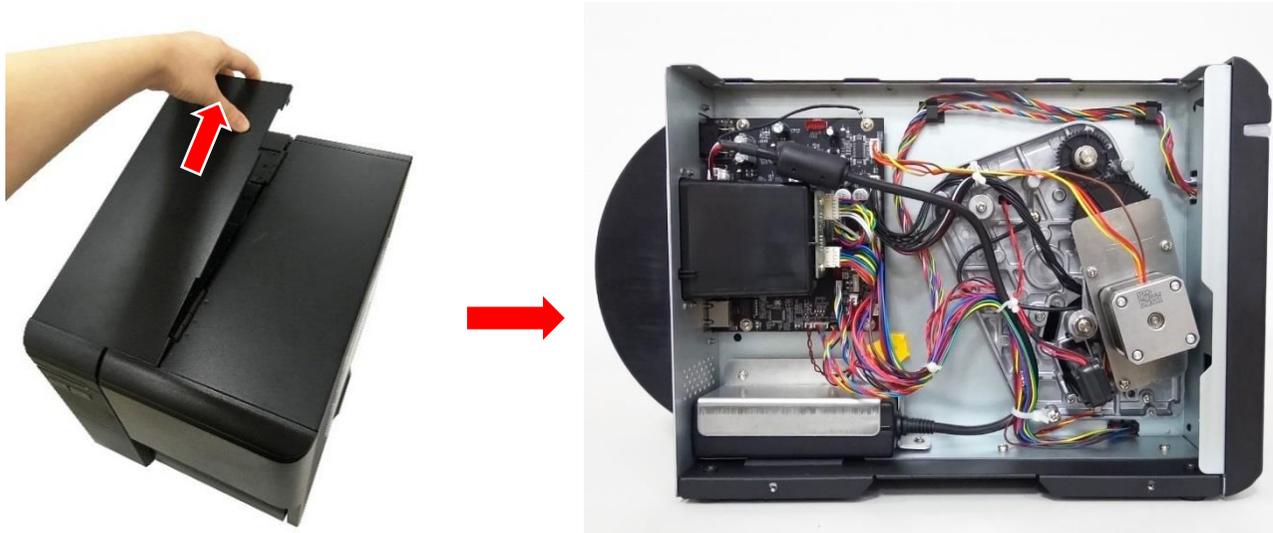
1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Open the media cover and then remove the two screws securing the media cover in place.



3. Close the media cover and then remove the two screws securing the electronics cover in place.



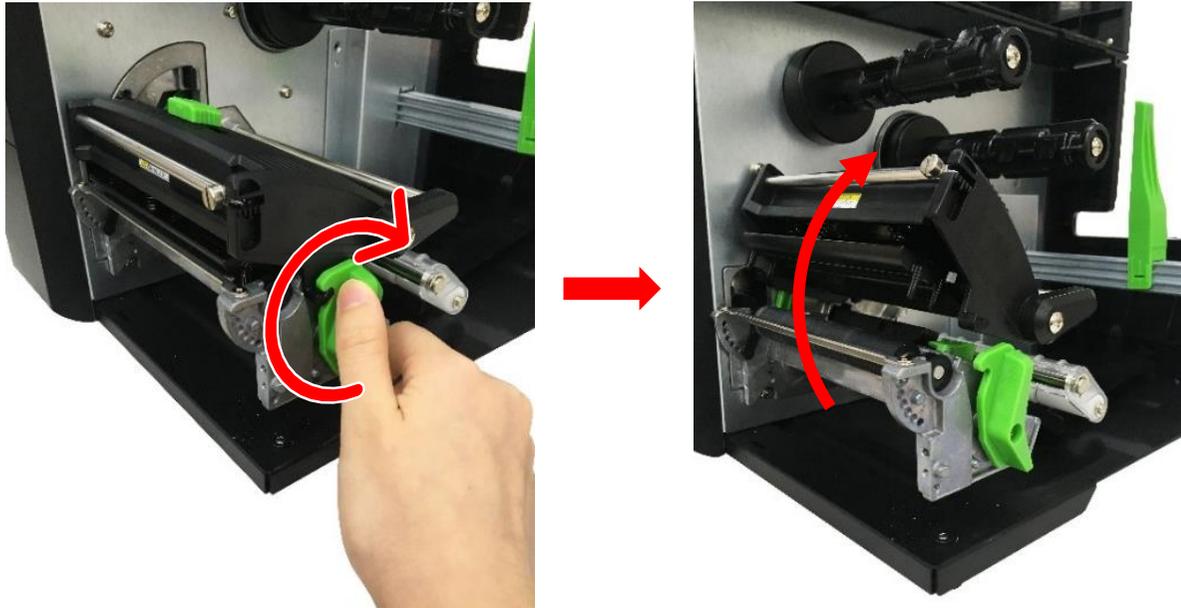
4. Lift up and pull as indicated to remove the electronics cover from the printer.



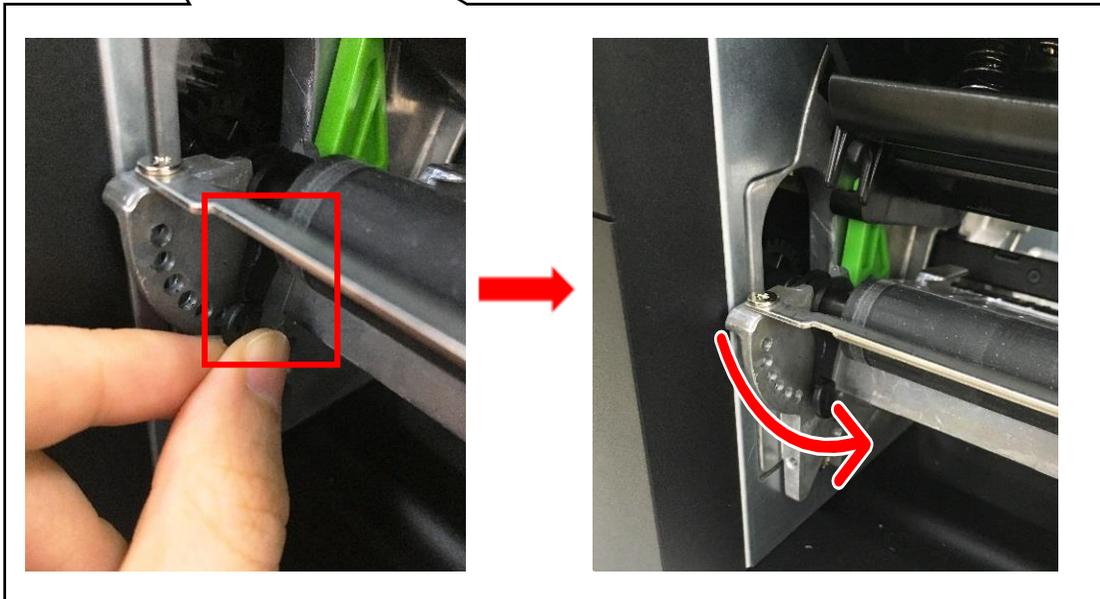
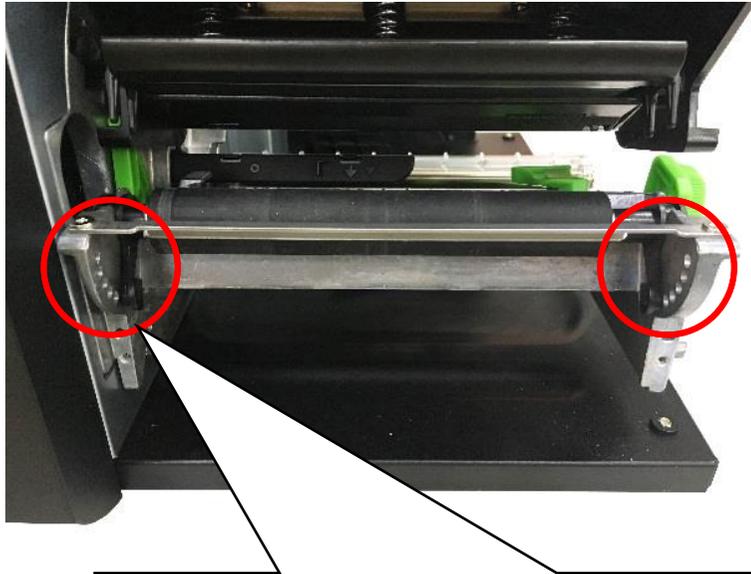
5. Reverse the steps to install the electronics cover.

3.4 Replacing the Platen Roller Assembly

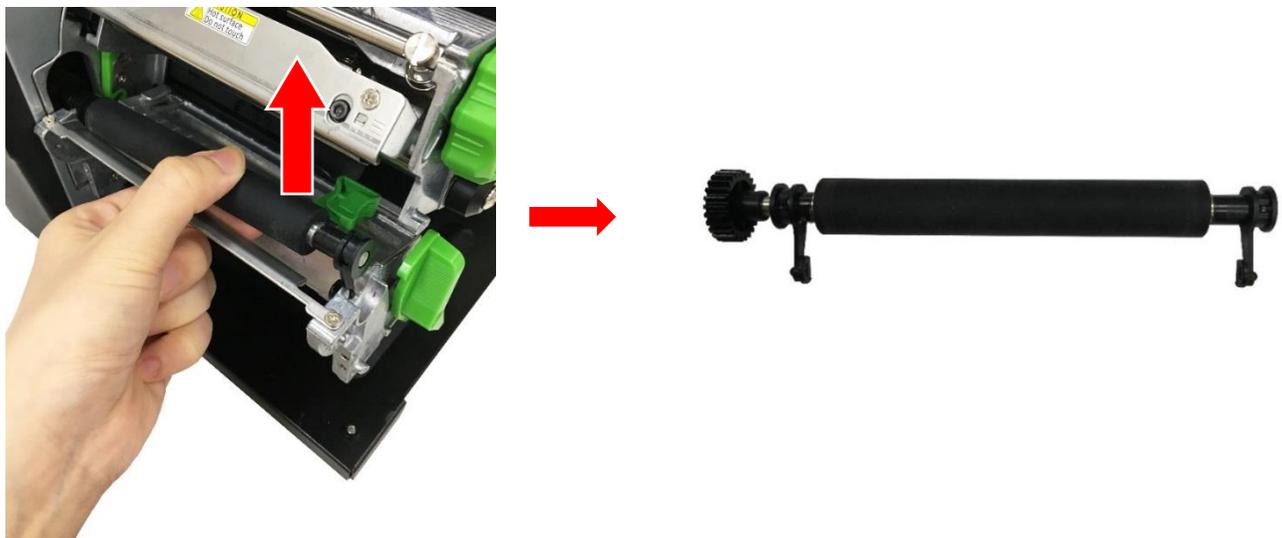
1. Follow the steps the steps in [Before You Begin](#) to prepare the printer.
2. Open the media cover.
3. Remove the lower front panel. For how to remove the lower front panel, refer to [Removing the Lower Front Panel](#).
4. Rotate clockwise the printhead release lever to open the printhead mechanism.



5. Rotate the two tabs of the platen roller assembly to the bottommost scale to unlock the platen roller assembly.



6. Lift up to remove the platen roller assembly.

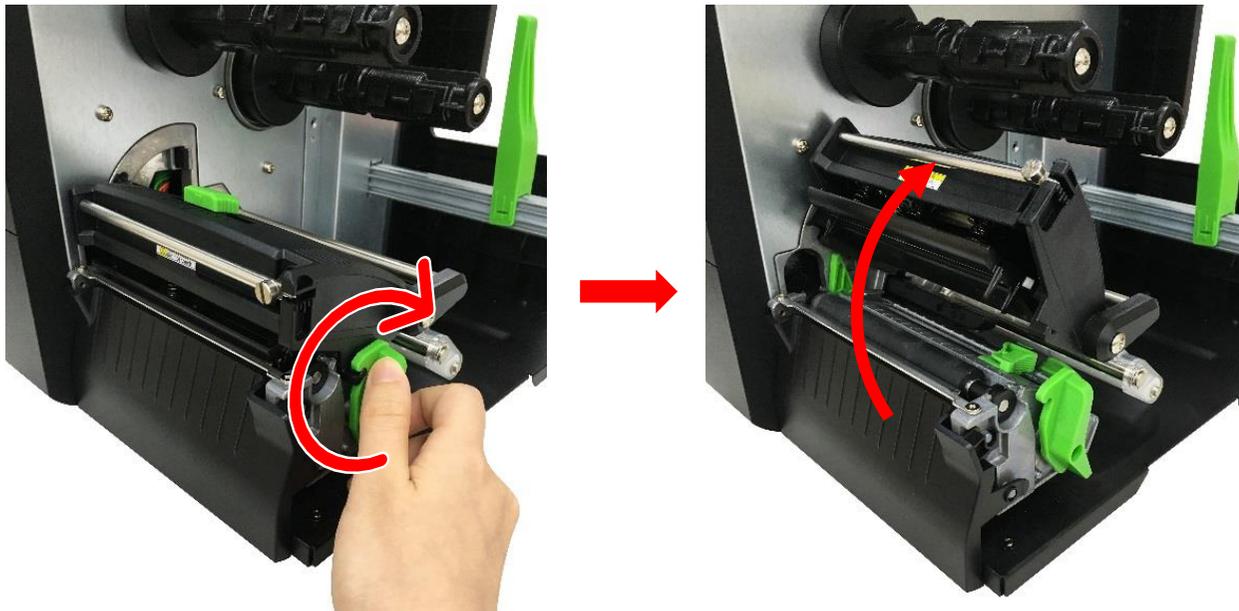


7. Reverse the steps to install the platen roller assembly.

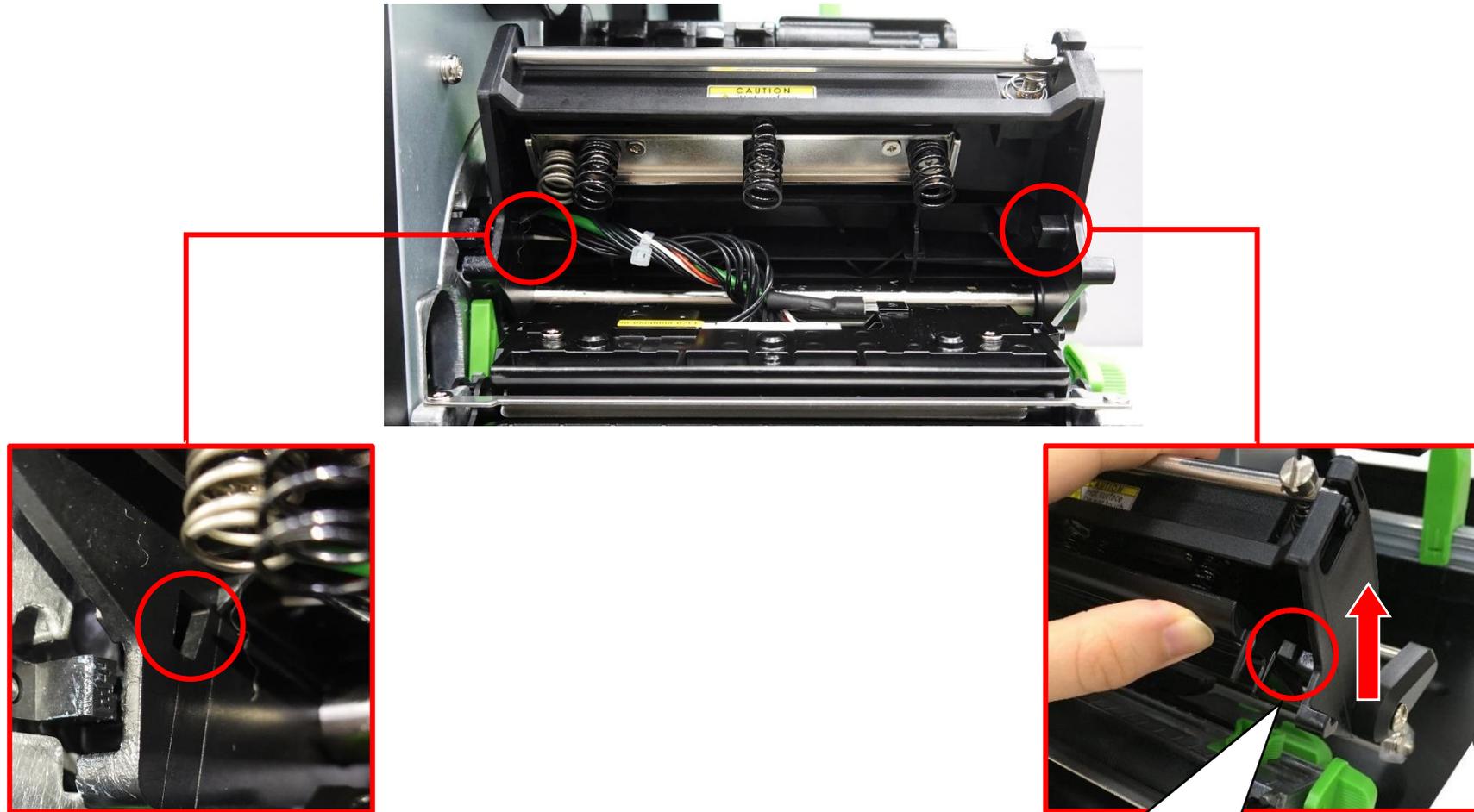
3.5 Replacing the Printhead Assembly

CAUTION: To prevent electrostatic damage to the electronic components, touch the unpainted part of the frame to ground yourself before the replacement procedures.

1. Follow the steps the steps in [Before You Begin](#) to prepare the printer.
2. Open the media cover.
3. Rotate clockwise the printhead release lever to open the printhead mechanism.

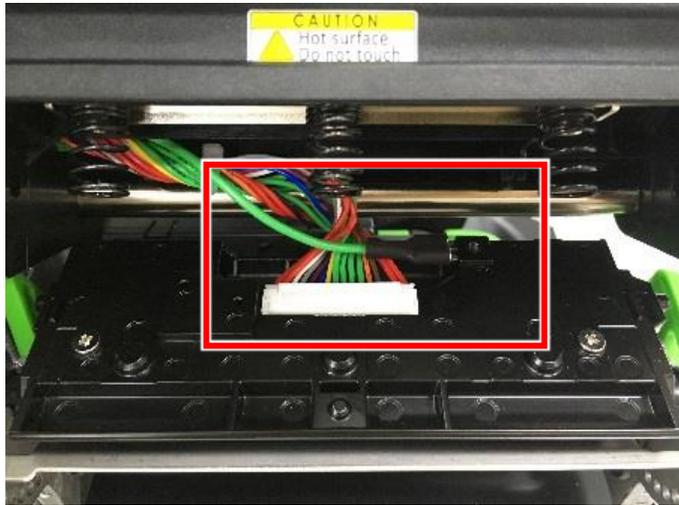


4. Slide to release the two sides of the printhead assembly from the print mechanism.



Starting from the right side, slide the rib for the printhead in the indicated direction to release the printhead from the print mechanism.

5. Disconnect all cables from the printhead assembly to remove the printhead assembly.



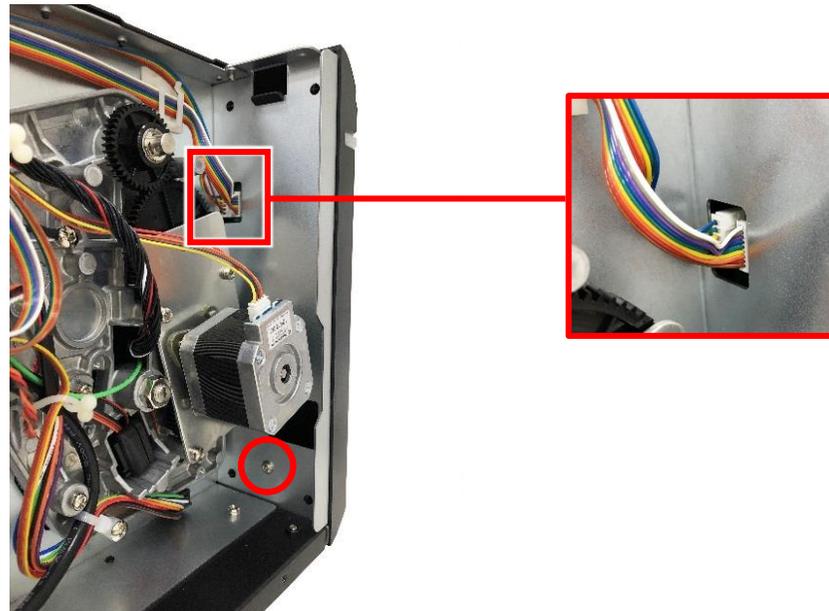
6. Reverse the steps to install the printhead assembly.

NOTE: When installing the printhead assembly, it is recommended to start from the left side of the printhead assembly.



3.6 Replacing the Control Panel Assembly

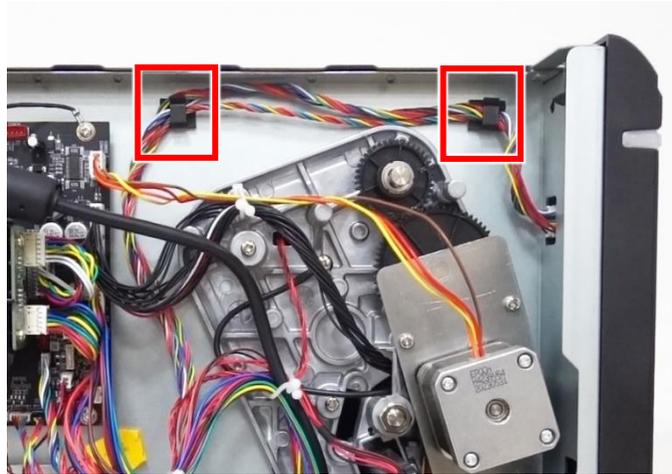
1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Remove the electronics cover. For how to remove the electronics cover, refer to [Removing the Electronics Cover](#).
3. Disconnect the two cables from the connectors on the control panel board and then remove the single screw securing the control panel assembly in place.



4. Remove the control panel assembly from the printer.

5. Reverse the steps to install the control panel assembly.

NOTE: When installing the control panel assembly, you must thread the cables along the routing channels as indicated.

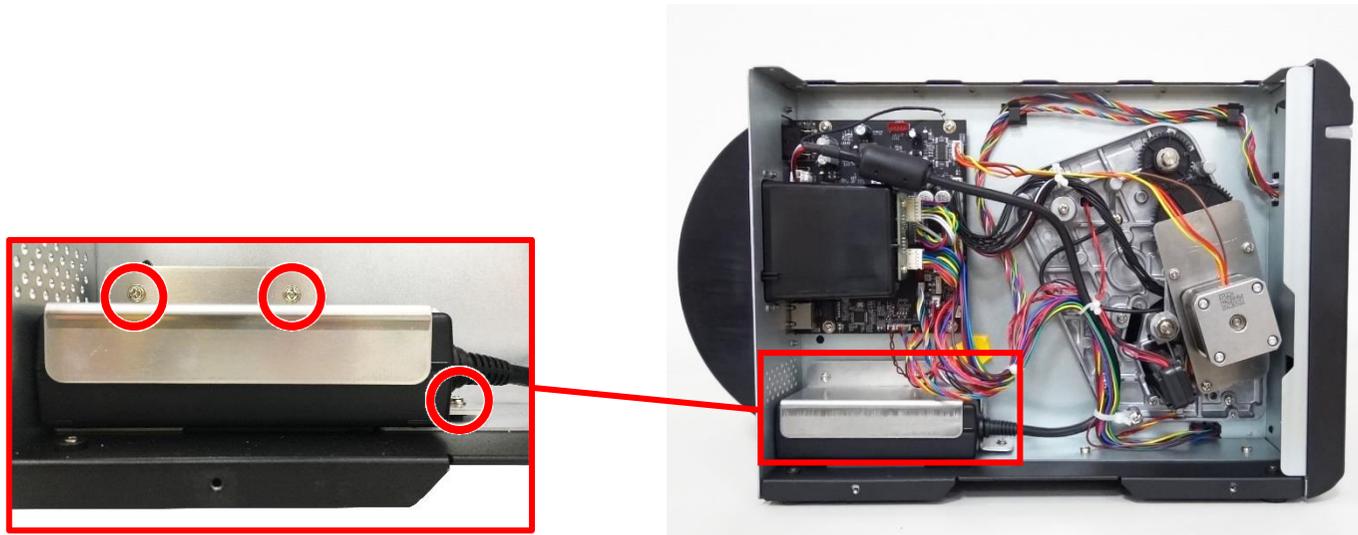


3.7 Replacing the Power Supply Unit

1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Remove the electronics cover. For how to remove the electronics cover, refer to [Removing the Electronics Cover](#).
3. Disconnect the power cable from the connector on the main board and remove the indicated screw securing the ground cable in place.



4. Remove the three screws securing the power supply unit in place.



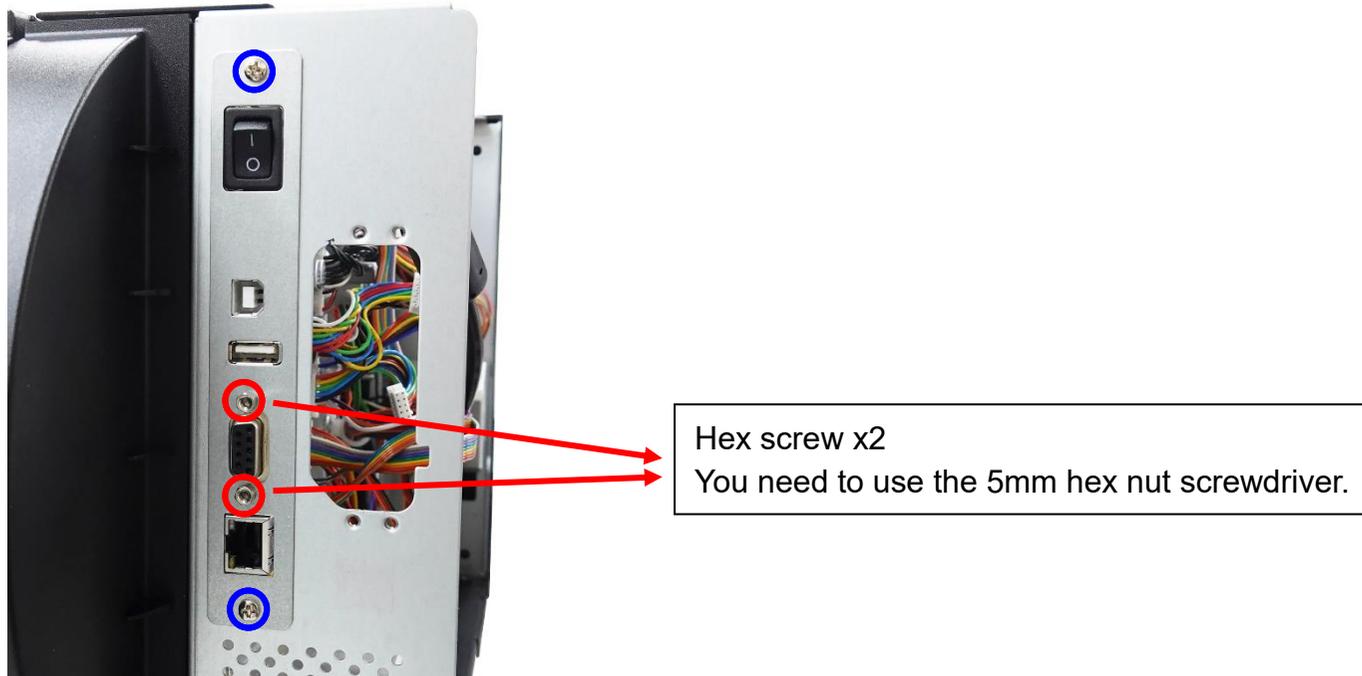
5. Release the cable for the power supply unit from the cable ties and then remove the power supply unit.

6. Reverse the steps to install the power supply unit.

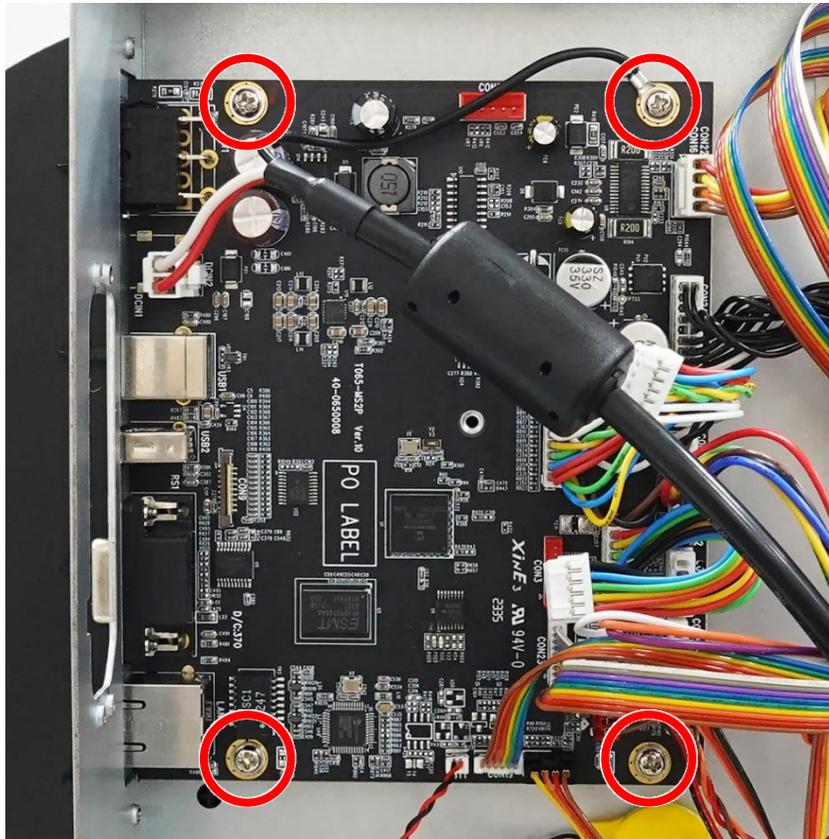
3.8 Replacing the Main Board

CAUTION: To prevent electrostatic damage to the electronic components, always wear an ESD wrist strap properly grounded when handling circuit boards.

1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Remove the electronics cover. For how to remove the electronics cover, refer to [Removing the Electronics Cover](#).
3. (*Optional*) Remove the slot-in Wi-Fi & Bluetooth housing. For how to remove it, refer to [Installing the Slot-in Wi-Fi & Bluetooth Housing \(Optional\)](#).
4. Remove the four screws from the rear side of the printer.



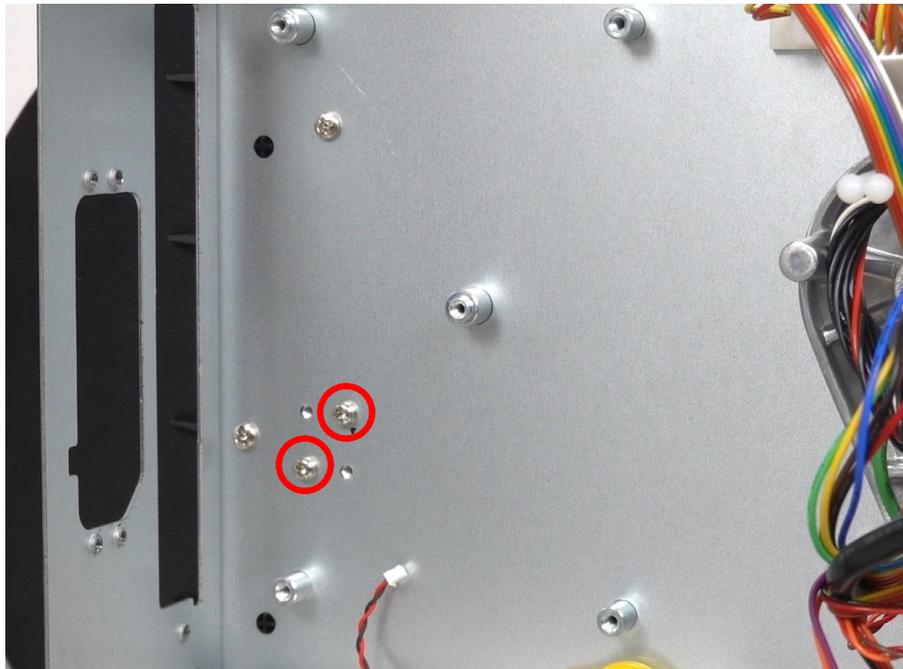
5. Disconnect all cables from the connectors on the main board and then remove the four screws securing the main board in place.



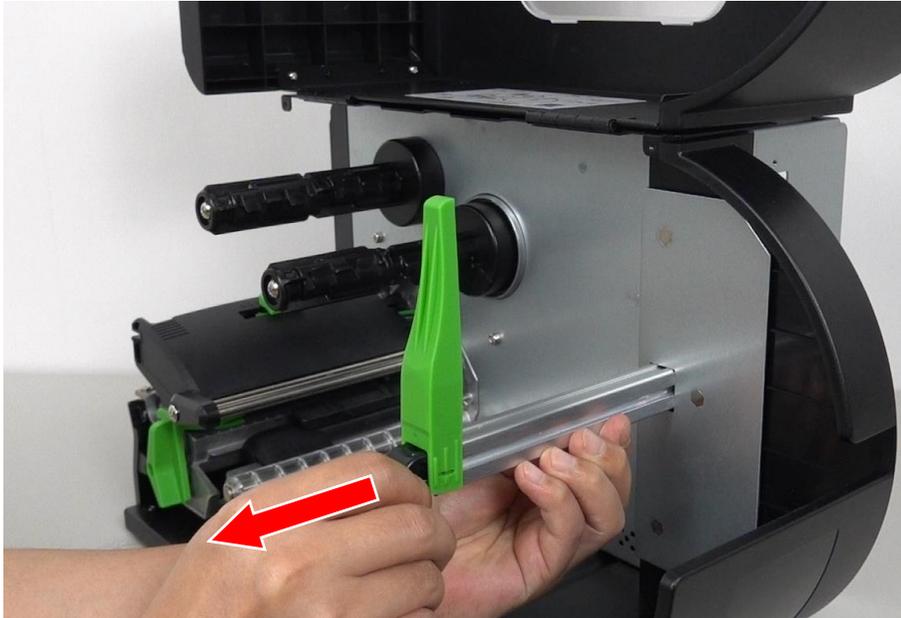
6. Remove the main board from the printer.
7. Reverse the steps to install the main board.

3.9 Replacing the Label Supply Spindle

1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Remove the electronics cover. For how to remove the electronics cover, refer to [Removing the Electronics Cover](#).
3. *(Optional)* Remove the slot-in Wi-Fi & Bluetooth housing. For how to remove the housing, refer to [Installing the Slot-in Wi-Fi & Bluetooth Housing \(Optional\)](#).
4. Remove the main board. For how to remove the main board, refer to [Replacing the Main Board](#).
5. Remove the two screws securing the label supply spindle in place.



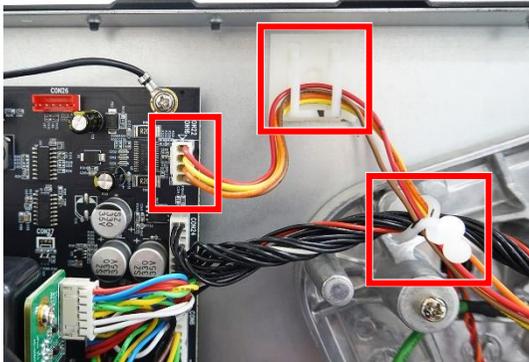
6. Pull in the indicated direction to remove the label supply spindle.



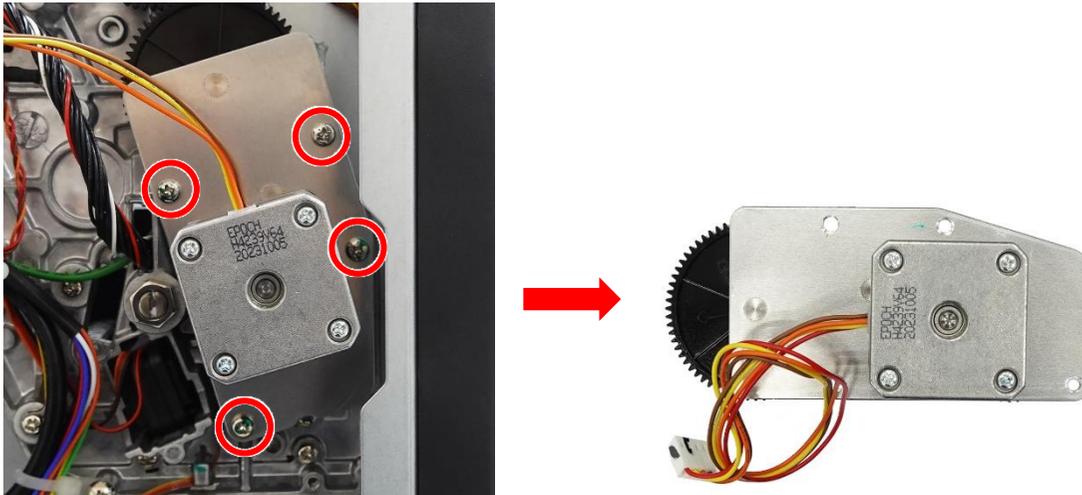
7. Reverse the steps to install the label supply spindle.

3.10 Replacing the Stepping Motor Assembly

1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Remove the electronics cover. For how to remove the electronics cover, refer to [Removing the Electronics Cover](#)
3. Disconnect the cable for the stepping motor assembly from the connector on the main board and unthread the cable from its routing channels.



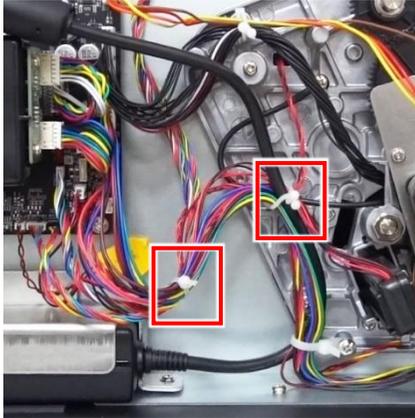
4. Remove the four screws securing the stepping motor assembly in place and then remove the stepping motor assembly.



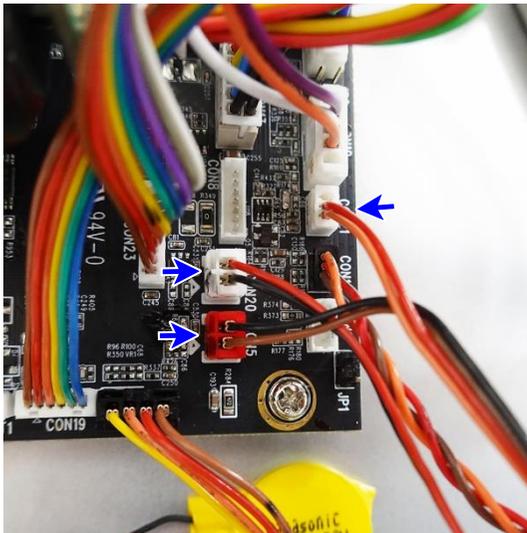
5. Reverse the steps to install the stepping motor assembly.

3.11 Replacing the Gap/Black Mark Sensor Assembly

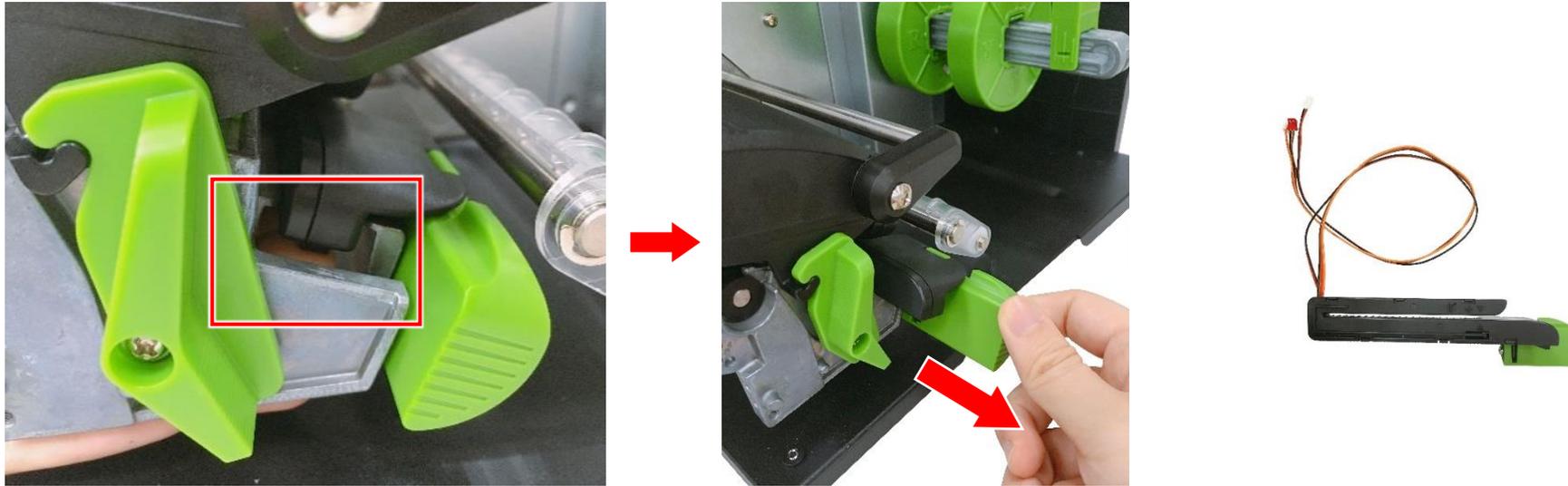
1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Remove the lower front panel. For how to remove the lower front panel, refer to [Removing the Lower Front Panel](#).
3. Remove the electronics cover. For how to remove the electronics cover, refer to [Removing the Electronics Cover](#).
4. Release the gap/black mark sensor cables from the cable tie.



5. Disconnect the gap/black mark sensor cables from the connectors on the main board.



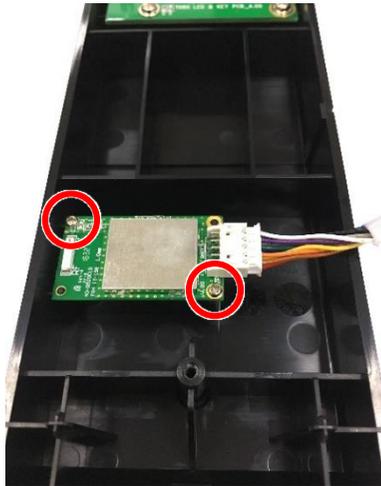
6. Push and hold the release button located underneath the gap/black mark sensor assembly and then carefully pull out the sensor assembly in the indicated direction.



7. Reverse the steps to install the gap/black mark sensor assembly.

3.12 Installing the Bluetooth Module (Optional)

1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Remove the electronics cover. For how to remove the electronics cover, refer to [Removing the Electronics Cover](#).
3. Remove the control panel assembly. For how to remove it, refer to [Replacing the Control Panel Assembly](#).
4. Install the Bluetooth module on the control panel assembly and then fasten two screws to secure the Bluetooth module in place.

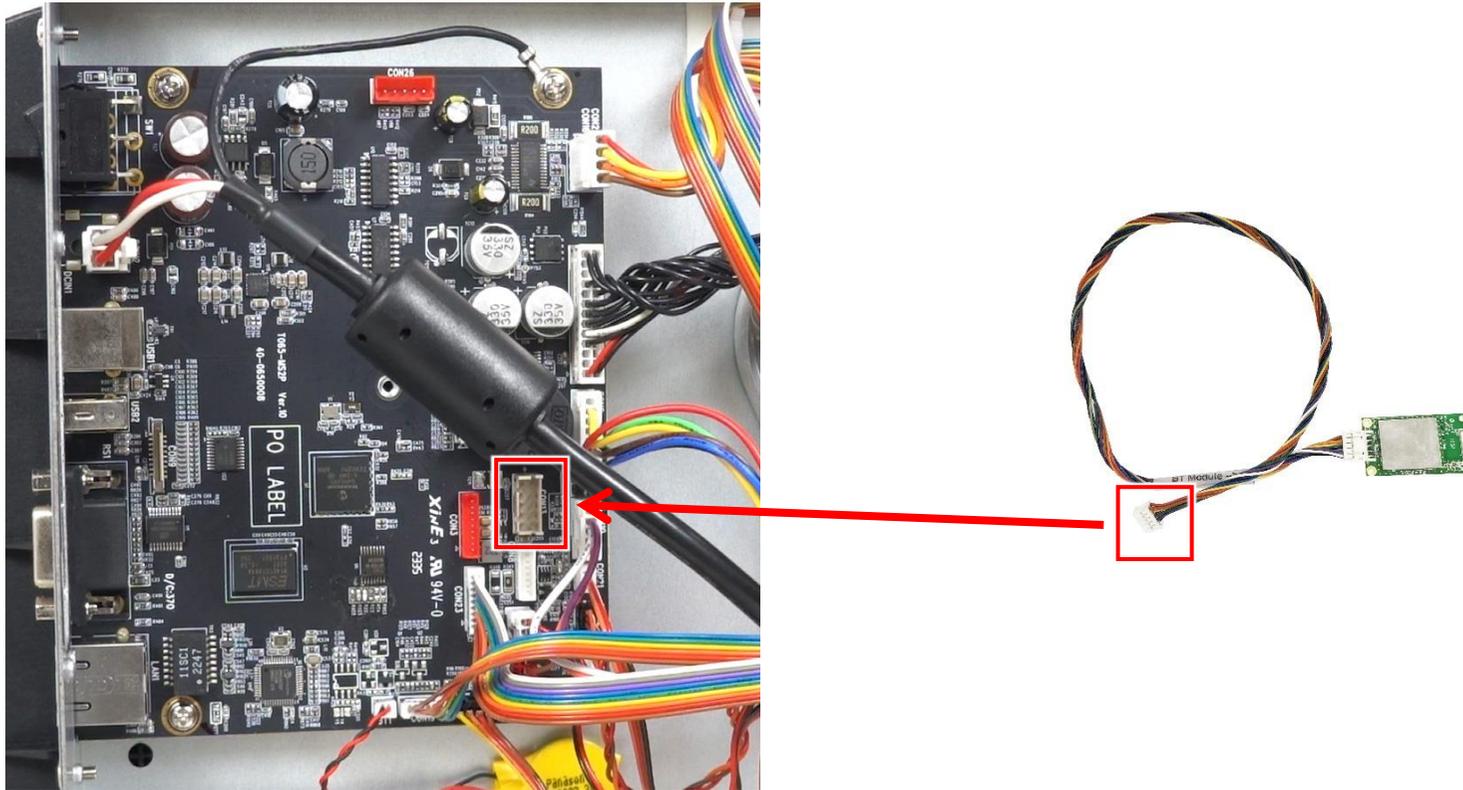


5. Thread the Bluetooth module cable through the opening and then re-install control panel assembly.



6. Connect the Bluetooth module cable to the connector on the main board.

NOTE: For models shipped with a slot-in Wi-Fi & Bluetooth housing, you need to remove the slot-in Wi-Fi & Bluetooth housing first in order to install the Bluetooth module.



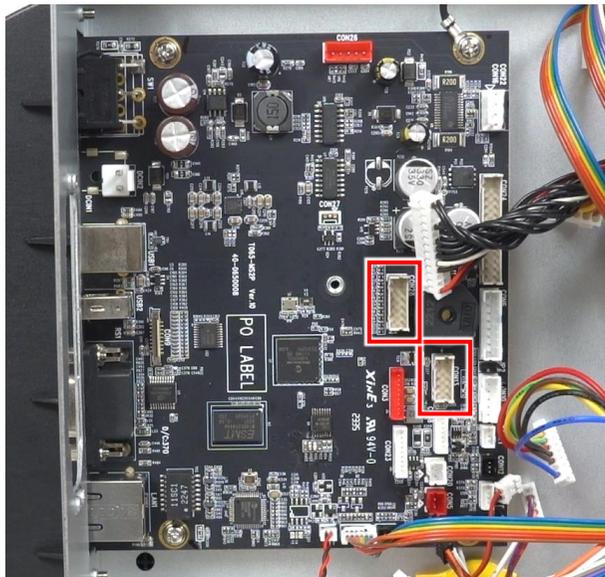
7. Reverse the steps to remove the Bluetooth module.

3.13 Installing the Slot-in Wi-Fi & Bluetooth Housing (Optional)

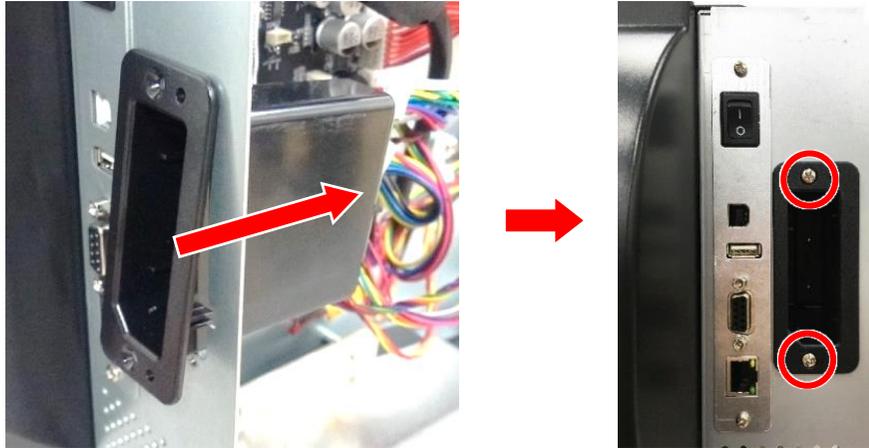
1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Remove the electronics cover. For how to remove the electronics cover, refer to [Removing the Electronics Cover](#).
3. Remove the two screws securing the slot cover from the rear side of the printer.



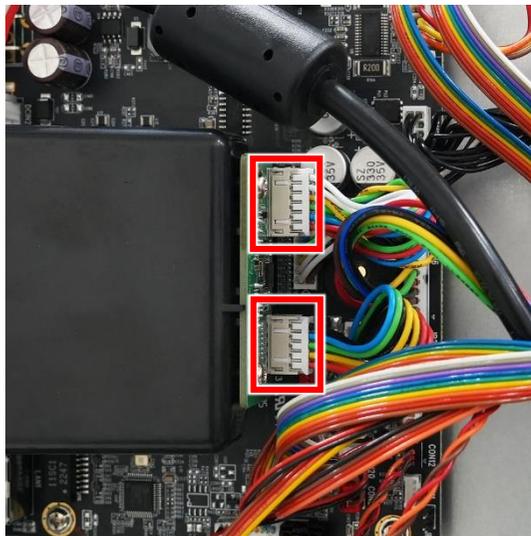
4. Connect the two slot-in Wi-Fi & Bluetooth module cables on the main board.



- Slide the slot-in Wi-Fi & Bluetooth housing through the opening on the rear side of the printer and then install the two screws to secure the housing in place.



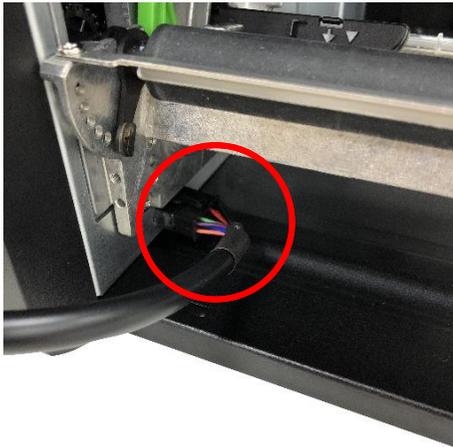
- Connect the other end of the two slot-in Wi-Fi & Bluetooth module cables on the slot-in Wi-Fi & Bluetooth module board.



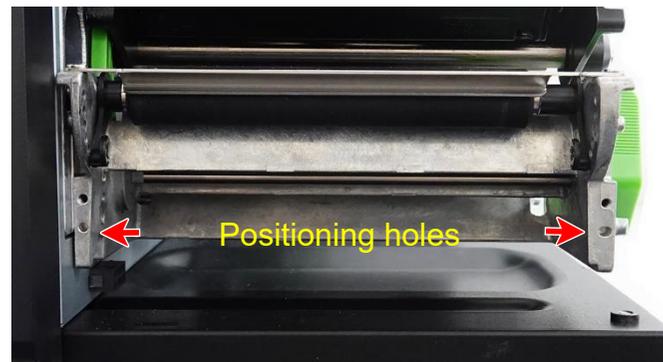
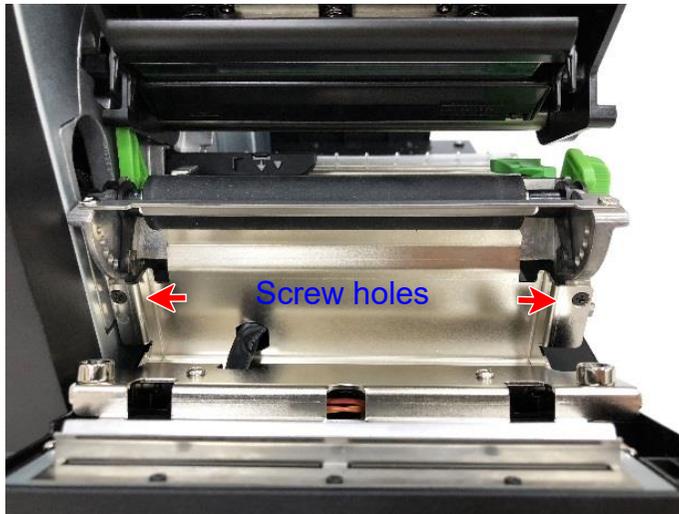
- Reverse the steps to remove the slot-in Wi-Fi & Bluetooth housing.

3.14 Installing the Cutter Module (Optional)

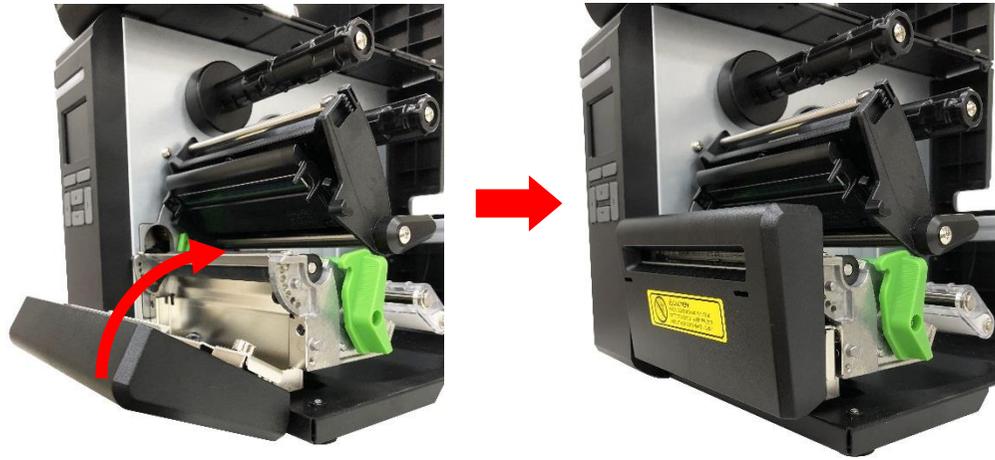
1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Open the top cover.
3. Remove the lower front panel. For how to remove the lower front panel, refer to [Removing the Lower Front Panel](#).
4. Connect the cable for the cutter module to the connector on the printer.



5. Open the cutter module and install the two screws to secure the cutter module in place ensuring that the cutter module is aligned with the two positioning holes on the lower mechanism.



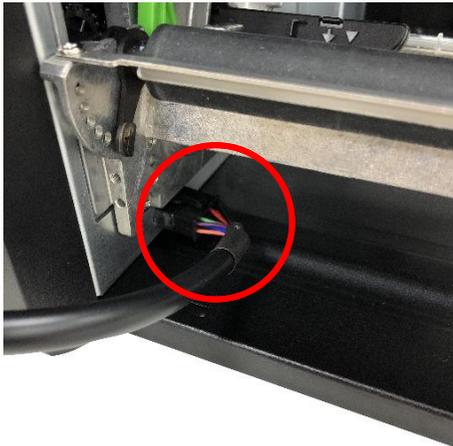
6. Close the cutter module as indicated.



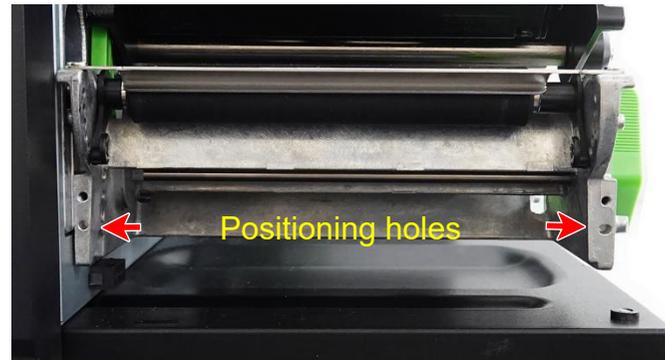
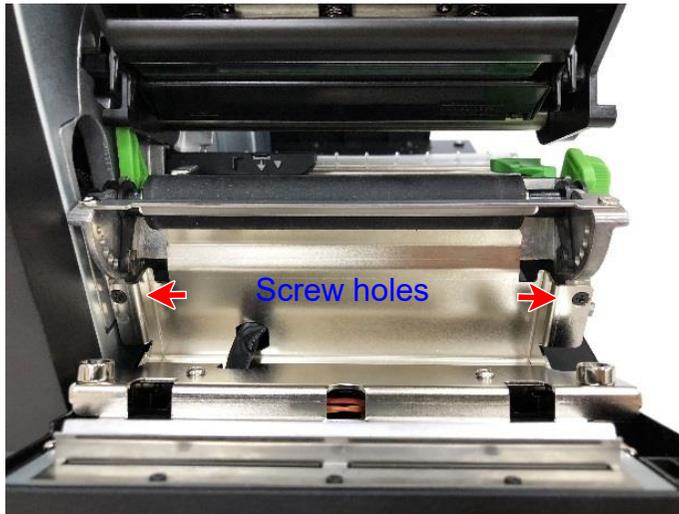
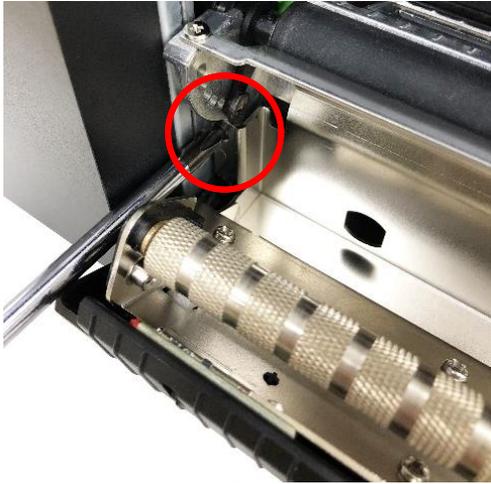
7. Reverse the steps to remove the cutter module from the printer.

3.15 Installing the Peel-off Module (Optional)

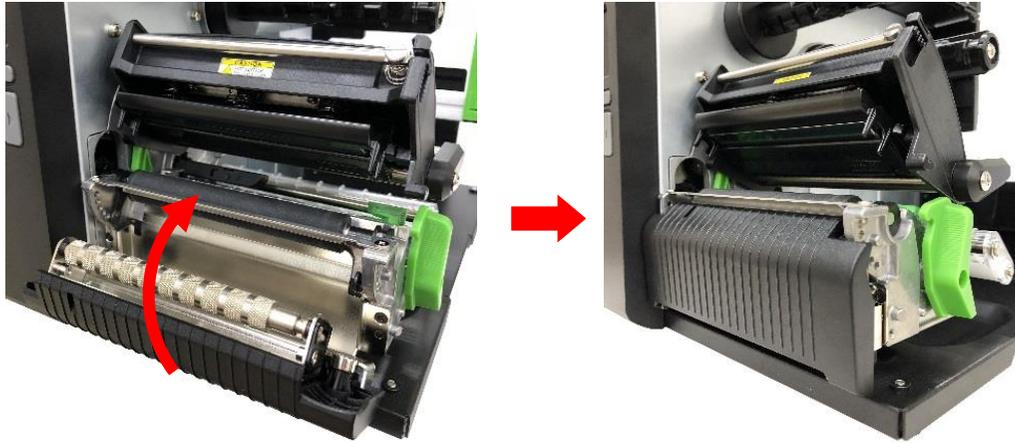
1. Follow the steps in [Before You Begin](#) to prepare the printer.
2. Open the top cover.
3. Remove the lower front panel. For how to remove the lower front panel, refer to [Removing the Lower Front Panel](#).
4. Connect the cable for the peel-off module to the connector on the printer.



5. Open the peel-off module and install the two screws to secure the peel-off module in place ensuring that the peel-off module is aligned with the two positioning holes on the lower mechanism



6. Close the peel-off module as indicated.



7. Reverse the steps to remove the peel-off module from the printer.

4 Troubleshooting

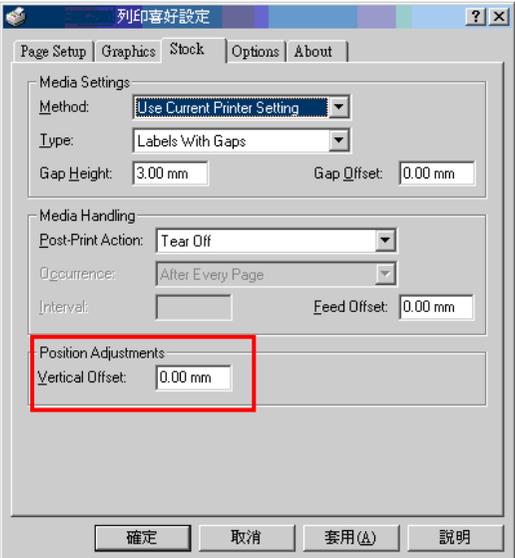
4.1 Common Problems

Problem	Possible Cause	Recovery Procedure
Power indicator/ LCD does not illuminate	The power cord is not properly connected.	<ul style="list-style-type: none"> • Plug the power cord in printer and outlet. • Switch the printer on.
LED turn on (Carriage Open)	The printer head is open.	Please close the print carriages.
Not Printing	<ul style="list-style-type: none"> • Check if interface cable is well connected to the interface connector. • Check if wireless or Bluetooth device is well connected between host and printer. • The port specified in the Windows driver is not correct. 	<ul style="list-style-type: none"> • Re-connect cable to interface or change a new cable. • If using serial cable, <ul style="list-style-type: none"> • Please replace the cable with pin to pin connected. • Check the baud rate setting. The default baud rate setting of printer is 9600,n,8,1. • If using the Ethernet cable, <ul style="list-style-type: none"> • Check if the Ethernet RJ-45 connector green LED is lit on. • Check if the Ethernet RJ-45 connector amber LED is blinking. • Check if the printer gets the IP address when using DHCP mode. • Check if the IP address is correct when using the static IP address. • Wait a few seconds let the printer get the communication with the server

Problem	Possible Cause	Recovery Procedure
		<p>then check the IP address setting again.</p> <ul style="list-style-type: none"> • Please reset the wireless device setting. • Select the correct printer port in the driver. • Printhead's harness connector is not well connected with printhead. Turn off the printer and plug the connector again. • Check your program if there is a command PRINT at the end of the file and there must have CRLF at the end of each command line.
No print on the label	<ul style="list-style-type: none"> • Label is not loaded correctly. • Use wrong media type. 	<ul style="list-style-type: none"> • Follow the instructions to reload the media. • The print density setting not correct. • Clean the printhead.
No Paper	<ul style="list-style-type: none"> • Running out of label. • The label is installed incorrectly. • Gap/black mark sensor is not calibrated. 	<ul style="list-style-type: none"> • Supply a new label roll. • Reinstall the label roll. • Calibrate the gap/black mark sensor.
Paper jam	<ul style="list-style-type: none"> • Gap/black mark sensor is not set properly. • Make sure label size is set properly. • Labels may be stuck inside the printer mechanism. 	<ul style="list-style-type: none"> • Calibrate the media sensor. • Set media size correctly. • Remove the stuck label inside the printer mechanism.
Can't downloading the file to memory (FLASH / CARD)	The space of memory is full.	Delete unused files in the memory.

Problem	Possible Cause	Recovery Procedure
SD card is unable to use	<ul style="list-style-type: none"> • SD card is damaged. • SD card doesn't insert correctly. • Use the non-approved SD card manufacturer. 	<ul style="list-style-type: none"> • Use the supported capacity SD card. • Insert the SD card again.
Poor Print Quality	<ul style="list-style-type: none"> • Media is not loaded correctly. • Dust or adhesive accumulation on the printhead. • Print density is not set properly. • The type of media is not compatible. • Printhead element is damaged. • The printhead pressure is not set properly. 	<ul style="list-style-type: none"> • Reload the media. • Clean the printhead. • Clean the platen roller. • Adjust the print density and print speed. • Run printer self-test and check the printhead test pattern if there is dot missing in the pattern. • Use proper media type. • The release lever does not latch the printhead properly.
Missing printing on the left or right side of label	Wrong label size setup.	Set the correct label size.
Gray line on the blank label	<ul style="list-style-type: none"> • The printhead is dirty. • The platen roller is dirty. 	<ul style="list-style-type: none"> • Clean the printhead. • Clean the platen roller.
Irregular printing	<ul style="list-style-type: none"> • The printer is in Hex Dump mode. • The RS-232 setting is incorrect. 	<ul style="list-style-type: none"> • Turn off and on the printer to skip the dump mode. • Re-set the Rs-232 setting.
Label feeding is not stable (skew) when printing	The media guides do not touch the edge of the media.	<ul style="list-style-type: none"> • If the label is moving to the right side, please move the label guide to left.

Problem	Possible Cause	Recovery Procedure
		<ul style="list-style-type: none"> • If the label is moving to the left side, please move the label guide to right.
Skip labels when printing	<ul style="list-style-type: none"> • Label size is not specified properly. • Sensor sensitivity is not set properly. • The media sensor is covered with dust. 	<ul style="list-style-type: none"> • Check if label size is setup correctly. • Calibrate the sensor by Auto Gap or Manual Gap options. • Clear the Gap/Black mark sensor by blower.
Wrinkle problem	<ul style="list-style-type: none"> • Printhead pressure is incorrect. • Media installation is incorrect. • Print density is incorrect. • Media feeding is incorrect. 	<ul style="list-style-type: none"> • Please set the suitable density to have good print quality. • Make sure the label guides touch the edge of the media guide.
RTC time is incorrect when reboot the printer	The battery has run down.	Check if there is a battery on the main board.
The left side printout position is incorrect	<ul style="list-style-type: none"> • Wrong label size setup. • The parameter Shift X in printer is incorrect. 	Set the correct label size.

Problem	Possible Cause	Recovery Procedure
<p>The printing position of small label is incorrect</p>	<ul style="list-style-type: none"> Media sensor sensitivity is not set properly. Label size is incorrect. The parameter Shift Y is incorrect. The vertical offset setting in the driver is incorrect. 	<ul style="list-style-type: none"> Calibrate the sensor sensitivity again. Set the correct label size and gap size. Enter LCD menu (or via TSC Console) to fine tune the parameter of Shift Y. If using the software BarTender, please set the vertical offset in the driver.  <p>The screenshot shows the '列印嗜好設定' (Print Preference Setting) dialog box. It has tabs for 'Page Setup', 'Graphics', 'Stock', 'Options', and 'About'. The 'Options' tab is active. Under 'Media Settings', 'Method' is 'Use Current Printer Setting', 'Type' is 'Labels With Gaps', 'Gap Height' is 3.00 mm, and 'Gap Offset' is 0.00 mm. Under 'Media Handling', 'Post-Print Action' is 'Tear Off', 'Occurrence' is 'After Every Page', and 'Feed Offset' is 0.00 mm. The 'Position Adjustments' section is highlighted with a red box, showing 'Vertical Offset' set to 0.00 mm. At the bottom are buttons for '確定' (OK), '取消' (Cancel), '套用(A)' (Apply), and '說明' (Help).</p>

5 Maintenance

This session presents the clean tools and methods to maintain the printer.

■ For Cleaning

Depending on the media used, the printer may accumulate residues (media dust, adhesives, etc.) as a by-product of normal printing. To maintain the best printing quality, you should remove these residues by cleaning the printer periodically. Regularly clean the printhead and supply sensors once change a new media to keep the printer at the optimized performance and extend printer life.

■ For Disinfecting

Sanitize your printer to protect yourself and others and can help prevent the spread of viruses.

■ Important

- Set the printer power switch to O (Off) prior to performing any cleaning or disinfecting tasks. Leave the power cord connected to keep the printer grounded and to reduce the risk of electrostatic damage.
- Do not wear rings or other metallic objects while cleaning any interior area of the printer.
- Use only the cleaning agents recommended in this document. Use of other agents may damage the printer and void its warranty.
- Do not spray or drip liquid cleaning solutions directly into the printer. Apply the solution on a clean lint-free cloth and then apply the dampened cloth to the printer.
- Do not use canned air in the interior of the printer as it can blow dust and debris onto sensors and other critical components.
- Only use a vacuum cleaner with a nozzle and hose that are conductive and grounded to drain off static build up.
- All reference in these procedures for use of isopropyl alcohol requires that a 99% or greater isopropyl alcohol content be used to reduce the risk of moisture corrosion to the printhead.
- Do not touch printhead by hand. If you touch it carelessly, please use 99% Isopropyl alcohol to clean it.
- Always taking personal precaution when using any cleaning agent.

Cleaning Tools:

- Cotton swab
- Lint-free cloth
- Brush with soft non-metallic bristles
- Vacuum cleaner
- 75% Ethanol (for disinfecting)
- 99% Isopropyl alcohol (for printhead and platen roller cleaning)
- Genuine printhead cleaning pen
- Mild detergent (without chlorine)

Cleaning Process:

Printer Part	Method	Cleaning Frequency
Printhead	<ol style="list-style-type: none"> 1. Always turn off the printer before cleaning the printhead. 2. Allow the printhead to cool for at least one minute. 3. Use a cotton swab and 99% Isopropyl Alcohol or genuine printhead cleaning pen to clean the printhead surface. 	Clean the printhead when changing a new label roll.
Platen Roller	<ol style="list-style-type: none"> 1. Turn off the printer. 2. Rotate the platen roller and wipe it thoroughly with the lint-free 99% Isopropyl Alcohol. 	Clean the platen roller when changing a new label roll
Peel Bar	Use the lint-free cloth with 99% Isopropyl Alcohol to wipe it.	As needed
Sensor	<ol style="list-style-type: none"> 1. Use brush with soft non-metallic bristles or a vacuum cleaner to remove paper dust. 2. Clean upper and lower media sensors to ensure reliable Top of Form and Paper Out sensing. 	Monthly
Exterior	Clean the exterior surfaces with a clean, lint-free cloth (water-dampened cloth). If necessary, use a mild detergent or desktop cleaning solution then use the 75% Ethanol to wipe it.	As needed
Interior	Clean the interior of the printer by removing any dirt and lint with a vacuum cleaner, as described above, or use a brush with soft non-metallic bristles then use the 75% Ethanol to wipe it.	As needed

Revision History

Date	Description	Editor
2024/04/17	Official release.	Peter Yao



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