1004	REG:FD:GLOS:F	Adjust Sub Scan Registration (Glossy Paper: FA)
	Use this SP code to adjust writing in the the sub scan registration for glossy paper. Do this setting when registration does not match the direction of paper feed selected in the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1005	REG:TR1:GLOS:F	Adjust Main Scan Registration (Glossy Paper: FA)
	Use this SP code to adjust writing in the main scan direction for glossy paper loaded in Tray 1. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1006	REG:TR2:GLOS:F	Adjust Main Scan Registration (Tray 2: Glossy Paper: FA)
	Use this SP code to adjust writing in the main scan direction for glossy paper loaded in Tray 2. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1007	REG:MAN:GLOS:F	Adjust Main Scan Registration (Bypass: Glossy Paper: FA)
	Use this SP code to adjust writing in the main scan direction for glossy paper loaded in the bypass tray. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	

Service Tables

1008	REG:FD:OHP:F	Adjust Sub Scan Registration (OHP: FA)
	Use this SP code to adjust writing in the sub scan direction for transparencies (OHP). Do this setting when registration does not match the direction of paper feed selected in the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1009	REG:TR1:OHP:F	Adjust Main Scan Registration (Tray 1: OHP: FA)
	Use this SP code to adjust writing in the main scan direction for transparencies (OHP) loaded in Tray 1. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1010	REG:MAN:OHP:F	Adjust Main Scan Registration (Bypass: OHP: FA)
	Use this SP code to adjust writing in the main scan direction for transparencies (OHP) loaded in the bypass tray. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1011	REG:FD2:NORM:F	Adjust Sub Scan Registration (Normal Paper: 2nd Registration: FA)
	Use this SP code to adjust writing in the sub scan registration for normal paper. Do this setting when it is necessary to fine adjust the line feed position. [-128 to +127/**FA**/1/0.1 mm]	

1012	REG:FD2:GLOS:F	Adjust Sub Scan Registration (Glossy Paper: 2nd Registration: FA)
	For Future Use. Use this SP code to adjust writing in the sub scan registration for glossy paper. Do this setting when it is necessary to fine adjust the line feed position. [-128 to +127/**FA**/1/0.1 mm]	
1013	REG:FD2:OHP:F	Adjust Sub Scan Registration (OHP: 2nd Registration: FA)
	For Future Use. Use this SP code to adjust writing in the sub scan direction for transparencies (OHP). Do this setting when it is necessary to fine adjust the line feed position. [-128 to +127/**FA**/1/0.1 mm]	

Paper Feed

1014	FDLEN:F	Adjust Amount of Paper Feed (FA)
	Do this SP adjust the amount of line feed for 1 scan line. Do this setting only if the line feed amount cannot be adjusted on the user menu of the printer operation panel with "Adj. Paper Feed." [-1000000 to +1000000/**FA**/1 µm]	
1015	FDLEN:OFFSET	Adjust Amount of LF Offset in Sub Scan Direction
	Use this SP to set the amount of line feed before the print head begins its 2nd pass during bi-directional printing. Do this SP when it is necessary to correct color offset that occurs during bi-directional printing. [-128 to +128/**FA**/1/Vertical Encoded Pulse Count]	

Service Tables

Carriage

1016	ADJ:SIDEBOARD	Adjust Sideboard (Carriage Home Position)
	Use this SP to set the reference position for installation of the right plate. Do this SP to correct the alignment of the capping position with the carriage. [-128 to +128/FA/1/0.1 mm]	

Suction Vents

1017	PRGPOS:R	Adjust Position of Right Suction Vent **DFU**
	Use this SP to adjust the venting position of the right air vent. Do this SP after it has been determined that the ink is not venting at the center of the right ink suction vent. [-128 to +128/FA/1/0.1 mm]	
1018	PRGPORS:L	Adjust Position of Left Suction Vent **DFU**
	Use this SP to adjust the venting position of the left ink suction vent. (Do this SP after it has been determined that the ink is not venting at the center of the left ink suction vent. [-128 to +128/FA/1/0.1 mm]	

Charge Width Setting Mj1: Simplex (DFU)

1100	CHG:W1:EDGE:1	LE/TE: Mj1: ID1
1102	CHG:W1:EDGE:2	LE/TE: Mj1: ID2
1104	CHG:W1:EDGE:3	LE/TE: Mj1: ID3
1106	CHG:W1:EDGE:4	LE/TE: Mj1: ID4
1101	CHG:W1:MIDL:1	MIDLL: Mj1: ID1
1103	CHG:W1:MIDL:2	MIDLL: Mj1: ID2
1105	CHG:W1:MIDL:3	MIDL: Mj1: ID3
1107	CHG:W1:MIDL:4	MIDL: Mj1: ID4

Charge Width Setting Mj2: Simplex (DFU)

1108	CHG:W1:EDGE:5	LE/TE: Mj2: ID1
1110	CHG:W1:EDGE:6	LE/TE: Mj2: ID2
1112	CHG:W1:EDGE:7	LE/TE: Mj2: ID3
1114	CHG:W1:EDGE:8	LE/TE: Mj2: ID4
1109	CHG:W1:MIDL:5	MIDL: Mj2: ID1
1111	CHG:W1:MIDL:6	MIDL: Mj2: ID2
1113	CHG:W1:MIDL:7	MIDL: Mj2: ID3
1115	CHG:W1:MIDL:8	MIDL: Mj2: ID4

Service Tables

Charge Width Setting Mj3: Simplex (DFU)

1116	CHG:W1:EDGE:9	LE/TE: Mj3: ID1
1118	CHG:W1:EDGE:10	LE/TE: Mj3: ID2
1120	CHG:W1:EDGE:11	LE/TE: Mj3: ID3
1122	CHG:W1:EDGE:12	LE/TE: Mj3: ID4

Charge Width Setting Mj3: Simplex (DFU)

1117	CHG:W1:MIDL:9	MIDL: Mj3: ID1
1119	CHG:W1:MIDL:10	MIDL: Mj3: ID2
1121	CHG:W1:MIDL:11	MIDL: Mj3: ID3
1123	CHG:W1:MIDL:12	MIDL: Mj3: ID4

Charge Width Setting Mj4: Simplex (DFU)

1124	CHG:W1:EDGE:13	LE/TE: Mj4: ID1
1126	CHG:W1:EDGE:14	LE/TE: Mj4: ID2
1128	CHG:W1:EDGE:15	LE/TE: Mj4: ID3
1130	CHG:W1:EDGE:16	LE/TE: Mj4: ID4

Charge Width Setting Mj4: Simplex (DFU)

1125	CHG:W1:MIDL:13	MIDL: Mj4: ID1
1127	CHG:W1:MIDL:14	MIDL: Mj4: ID2
1129	CHG:W1:MIDL:15	MIDL: Mj4: ID3
1131	CHG:W1:MIDL:16	MIDL: Mj4: ID4

Charge Width Setting Mj1 : Duplex (DFU)

1132	CHG:W2:EDGE:1	LE/TE: Mj1: ID1
1134	CHG:W2:EDGE:2	LE/TE: Mj1: ID2
1136	CHG:W2:EDGE:3	LE/TE: Mj1: ID3
1138	CHG:W1:EDGE:4	LE/TE: Mj1: ID4
1133	CHG:W2:MIDL:1	MIDL: Mj1: ID1
1135	CHG:W2:MIDL:2	MIDL: Mj1: ID2
1137	CHG:W2:MIDL:3	MIDL: Mj1: ID3
1139	CHG:W2:MIDL:4	MIDL: Mj1: ID4

Service Tables

Charge Width Setting Mj2: Duplex (DFU)

1140	CHG:W2:EDGE:5	LE/TE: Mj2: ID1
1142	CHG:W2:EDGE:6	LE/TE: Mj2: ID2
1144	CHG:W2:EDGE:7	LE/TE: Mj2: ID3
1146	CHG:W2:EDGE:8	LE/TE: Mj2: ID4
1141	CHG:W2:MIDL:5	MIDL: Mj2: ID1
1143	CHG:W2:MIDL:6	MIDL: Mj2: ID2
1145	CHG:W2:MIDL:7	MIDL: Mj2: ID3
1147	CHG:W2:MIDL:8	MIDL: Mj2: ID4

Charge Width Setting Mj3: Duplex (DFU)

1148	CHG:W2:EDGE:9	LE/TE: Mj3: ID1
1150	CHG:W2:EDGE:10	LE/TE: Mj3: ID2
1152	CHG:W2:EDGE:11	LE/TE: Mj3: ID3)
1154	CHG:W2:EDGE:12	LE/TE: Mj3: ID4
1149	CHG:W2:MIDL:9	MIDL: Mj3: ID1
1151	CHG:W2:MIDL:10	MIDL: Mj3: ID2
1153	CHG:W2:MIDL:11	MIDL: Mj3: ID3
1155	CHG:W2:MIDL:12	MIDL: Mj3: ID4

Charge Width Setting Mj4: Duplex (DFU)

1156	CHG:W2:EDGE:13	LE/TE: Mj4: ID1
1158	CHG:W2:EDGE:14	LE/TE: Mj4: ID2
1160	CHG:W2:EDGE:15	LE/TE: Mj4: ID3
1162	CHG:W2EDGE:16	LE/TE: Mj4: ID4
1157	CHG:W2:MIDL:13	MIDL: Mj4: ID1
1159	CHG:W2: MIDL:14	MIDL: Mj4: ID2
1161	CHG:W2: MIDL:15	MIDL: Mj4: ID3
1163	CHG:W2: MIDL:16	MIDL: Mj4: ID4

Calibrate Humidity/Temperature for Duplex (DFU)

1164	CHG:HUMI:B	Calibrate Humidity Setting for Duplex
1165	CHG:TEMP:B	Calibrate Temperature Setting for Duplex

Service
Tables

Charge ID Tables: Mj1

1200	CHG:PITCH:A1	Mj1: Less Than 10% Lookup Table
1201	CHG:PITCH:A2	Mj1: 10% → 25% Lookup Table
1202	CHG:PITCH:A3	Mj1: 25% → 35% Lookup Table
1203	CHG:PITCH:A4	Mj1: 35% → 45% Lookup Table
1204	CHG:PITCH:A5	Mj1: 45% → 55% Lookup Table
1205	CHG:PITCH:A6	Mj1: 55% → 65% Lookup Table
1206	CHG:PITCH:A7	Mj1: 65% → 75% Lookup Table
1207	CHG:PITCH:A8	Mj1: More than 75% Lookup Table
	Use this SP to configure the charge ID table for printing on normal paper in High Speed (Draft) mode. Do this SP when mist build-up on the paper in use is clogging the print head nozzles. This setting is linked to the charge pitch settings (SP1100 to 1107, SP1133 to 1139). [0 to 0xffff ffff/0/1/---] For more details, please refer to Section 4 "Transport Belt Charge Adjustments."	

Charge ID Tables: Mj2

1208	CHG:PITCH:B1	Mj2: Less Than 10% Lookup Table
1209	CHG:PITCH:B2	Mj2: 10% → 25% Lookup Table
1210	CHG:PITCH:B3	Mj2: 25% → 35% Lookup Table
1211	CHG:PITCH:B4	Mj2: 35% → 45% Lookup Table
1212	CHG:PITCH:B5	Mj2: 45% → 55% Lookup Table
1213	CHG:PITCH:B6	Mj2: 55% → 65% Lookup Table
1214	CHG:PITCH:B7	Mj2: 65% → 75% Lookup Table
1215	CHG:PITCH:B8	Mj2: More than 75% Lookup Table
	Use this SP to configure the charge ID table for printing on any paper in any mode except: normal paper in High Speed (Draft) mode and glossy paper in High Quality mode. Do this SP when mist build-up on the paper in use is clogging the print head nozzles during printing with any paper in any mode, except: normal paper in High Speed (Draft) mode and glossy paper in High Quality mode. This setting is linked to the charge pitch settings (SP1108 to 1115, SP1140 to 1147). [0 to 0xffff ffff/0/1/---] For more details, please refer to Section 4 "Transport Belt Charge Adjustments."	

Service Tables

Charge ID Tables: Mj3

1216	CHG:PITCH:C1	Mj3: Less Than 10% Lookup Table
1217	CHG:PITCH:C2	Mj3: 10% → 25% Lookup Table
1218	CHG:PITCH:C3	Mj3: 25% → 35% Lookup Table
1219	CHG:PITCH:C4	Mj3: 35% → 45% Lookup Table
1220	CHG:PITCH:C5	Mj3: 45% → 55% Lookup Table
1221	CHG:PITCH:C6	Mj3: 55% → 65% Lookup Table
1222	CHG:PITCH:C7	Mj3: 65% → 75% Lookup Table
1223	CHG:PITCH:C8	Mj3: More than 75% Lookup Table
	For Future Use. Use this SP to configure the charge ID table for future print modes. Do this SP when mist build-up on the paper in use is clogging the print head nozzles. This setting is linked to the charge pitch settings (SP1116 to SP1123, SP1148 to SP1155). [0 to 0xffff ffff/0/1/---]	

Charge ID Tables: Mj4

1224	CHG:PITCH:D1	Mj4: Less Than 10% Lookup Table
1225	CHG:PITCH:D2	Mj4: 10% → 25% Lookup Table
1226	CHG:PITCH:D3	Mj4: 25% → 35% Lookup Table
1227	CHG:PITCH:D4	Mj4: 35% → 45% Lookup Table
1228	CHG:PITCH:D5	Mj4: 45% → 55% Lookup Table
1229	CHG:PITCH:D6	Mj4: 55% → 65% Lookup Table
1230	CHG:PITCH:D7	Mj4: 65% → 75% Lookup Table
1231	CHG:PITCH:D8	Mj4: More than 75% Lookup Table
		Use this SP to configure the charge ID table for printing on glossy paper in Quality mode. Do this SP when mist build-up on glossy paper in use is clogging the print head nozzles. This setting is linked to the charge pitch settings (SP1124 to 1131, SP1156 to 1163). [0 to 0xffff ffff/0/1/---]

Service Tables

Set Charge Area 1

1232	CHG:AREA1:OHP	Set Charge of Area 1 for LE/TE: OHP
	Use this SP to set the size of the leading and trailing edges of transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the leading and trailing edge of transparencies for printing. The areas of the leading and trailing edges is shown below. [0 to 0xffff ffff/0/1/---]	
1233	CHG:AREA1:F	Set Charge of Area 1 for LE/TE: Simplex: Any Other Than OHP
	Use this SP to set the size of the leading and trailing edges for the 1st side of any paper except transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the leading and trailing edges on the 1st side any paper except transparencies. The areas of the leading and trailing edges is shown below. [0 to 0xffff ffff/0/1/---]	
1234	CHG:AREA1:B	Set Charge of Area 1 for LE/TE: Duplex: Any Other Than OHP
	Use this SP to set the size of the leading and trailing edges for the 2nd side (duplex printing) of any paper except transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the leading and trailing edges on the 2nd side any paper except transparencies for duplex printing. The areas of the leading and trailing edges are shown below. [0 to 0xffff ffff/0/1/---]	

Set Charge Area 2

1235	CHG:AREA2:OHP	Set Charge of Area 2 for MIDL: OHP
	Use this SP to set the size of the MIDL area of transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the MIDL area of transparencies for printing. The MIDL area is shown below. [0 to 0xffff ffff/0/1/---]	
1236	CHG:AREA2:F	Set Charge of Area 2 for MIDL: Simplex: Any Other Than OHP
	Use this SP to set the size of the MIDL on the 1st side of any paper except transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the MIDL area on the 2nd side of any paper other than transparencies. The MIDL area is shown below. [0 to 0xffff ffff/0/1/---]	
1237	CHG:AREA2:B	Set Charge of Area 2 for LE/TE: Duplex: Any Other Than OHP
	Use this SP to set the size of the MIDL on the 2nd side of any paper except transparencies (OHP) for duplex printing. Do this setting when you want to adjust pitch amount of the charge applied to the MIDL area on the 2nd side of any paper other than transparencies for duplex printing. The MIDL area is shown below. [0 to 0xffff ffff/0/1/---]	

Service Tables

j014t911
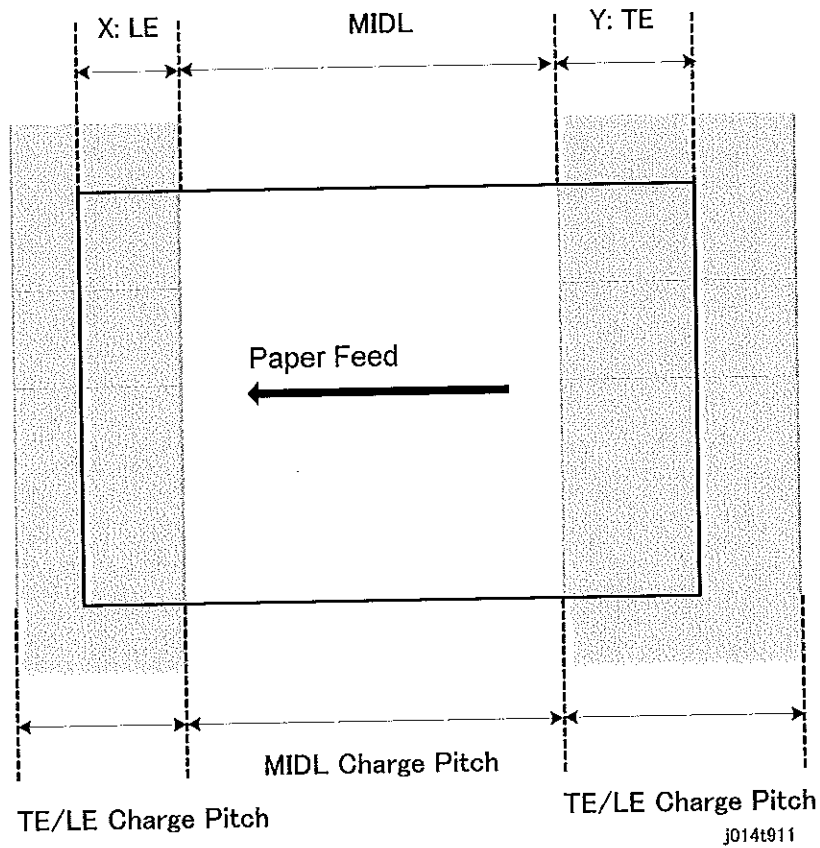
Set Charge for Target Market

1238	CHG:REGION	Set Charge for Geographic Region
	Use the SP to set the charge for the areas listed below. 0: Enable geographical area setting 1: Japan 2: NA (North America) 3: Europe 4: China (Mainland) 5: China (Taiwan) "5" and "4" refer to same pitch table. 6: Asia. "4" "5" "6" refer to same charge pitch table If any item other than "0" is selected that item and its setting is enabled and takes priority. [0 to 255/0/1/---]	

Print Head Temperature Thresholds

1300	HTEMP:H:STOP	Trigger Shutdown: Standby, Printing
1301	HTEMP:H:JUDG	Trigger Shutdown: Power On
1302	HTEMP:H:RCVR	Recovery After High Temp Shutdown
1303	HTEMP:L:RCVR	Recovery After Low Temp Shutdown
1304	HTEMP:L:JUDG	Trigger Shutdown: Power On
1305	HTEMP:L:STOP	Trigger Shutdown: Standby, Printing
	Use this SP to set the threshold for the operating temperature range of the print head. [0 to 65535/0/1/0.1°C]	

Ambient Temperature Thresholds

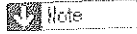| 1306	ETEMP:H:STOP	High Temperature to Trigger Shutdown: Standby, Printing
1307	ETEMP:H:JUDG	High Temperature to Trigger Shutdown: Power On
1308	ETEMP:H:RCVR	Recovery After High Temp Shutdown
1309	ETEMP:L:RCVR	Recovery After Low Temp Shutdown
1310	ETEMP:L:JUDG	Low Temperature to Trigger Shutdown: Power On
1311	ETEMP:L:RCVR	Low Temperature to Trigger Shutdown: Standby, Printing
	Use this SP to set the threshold for the operating humidity range of the print head. [0 to 65535/0/1/0.1°C]	

Service Tables

5.3.3 GROUP 2000

Set Threshold for Near-Full Alert

2000	TH:WASTE:R:SNS	Ink Collector Unit Sensor
	Use this SP to set the threshold value to trigger near full alert for the Ink Collector tank sensor. [0 to 1023/0/1/---]	
2001	TH:WASTE:R:SOFT	Software Count : Ink Collector Unit Near Full
	Use this SP to set the threshold value to trigger the near-full alert for the ink collector unit sensor. [0 to 4294967295/0/1/nl]	
2002	TH:WASTE:R:FULL	Software Count : Ink Collector Unit Full Alert
	Use this SP to set the threshold value of the firmware counter to trigger the full alert for the right ink collector unit sensor. [0 to 4294967295/0/1/nl]	
2003	TH:WASTE:L:NEAR	Software Count : Left Ink Collector Unit Near Full
	Use this SP to set the threshold value of the firmware counter to trigger the near-full alert for the left Ink Collector tank sensor. [0 to 4294967295/0/1/nl]	
2004	TH:WASTE:L:FULL	Software Count: Left Ink Collector Unit Full Alert
	Use this SP to set the threshold value of the firmware counter to trigger the full alert for the left Ink Collector tank sensor. [0 to 4294967295/0/1/nl]	

Set Threshold for Automatic Print Head Cleaning

Note

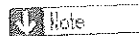- SP2100 to SP2110 are for future use and not used at the present time.

2100	TH:ACL:MIST:B	Before Capping (Mist Count)
	Use this SP to set the threshold value of the mist counter that triggers automatic print head cleaning before capping at the end of a print job. [0 to 4294967295/0/1/nl]	
2101	TH:ACL:MIST:P	During Printing
	Use this SP to set the threshold value of the mist counter that triggers automatic print head cleaning between pages during a print job. [0 to 4294967295/0/1/nl]	
2102	TH:ACL:FEED	Before Capping (Paper Dust Count)
	Use this SP to set the threshold value of the paper dust counter that triggers automatic print head cleaning before capping at the end of a print job. [0 to 65535/0/1/Pages]	
2103	TH:ACL:AL:T1H1	Idle Time (1 Hour): Humidity Step 1
2104	TH:ACL:AL:T1H2	Idle Time (1 Hour): Humidity Step 2
2105	TH:ACL:AL:T1H3	Idle Time (1 Hour): Humidity Step 3
2106	TH:ACL:AL:T1H4	Idle Time (1 Hour): Humidity Step 4
	Use this SP to set the threshold value for the de-capping time for automatic print head cleaning done before the start of printing. [0 to 65535/0/1/sec.]	

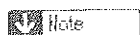| 2107	TH:ACL:AL:T2H1	Idle Time (2 Hours): Humidity Step 1
2108	TH:ACL:AL:T2H2	Idle Time (2 Hours): Humidity Step 2
2109	TH:ACL:AL:T2H3	Idle Time (2 Hours): Humidity Step 3
2110	TH:ACL:AL:T2H4	Idle Time (2 Hours): Humidity Step 4
	Use this SP to set the threshold value for the de-capping time for automatic print head cleaning done before the start of printing. [0 to 65535/0/1/sec.]	

Set Threshold Idle Time for Maintenance Alarm

🛑 Note

- SP2111 to SP2114 are for future use and not used at the present time.

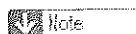| 2111	TH:ALM:TM1	Time 1: 20 Hours
2112	TH:ALM:TM2	Time 2: 7 Days
2113	TH:ALM:TM3	Time 3: 1 Month
2114	TH:ALM:TM4	Time 4: 3 Months
	For Future Use. Use this SP to set the threshold time for the printer to remain idle for maintenance to execute before the start of a print job. (Default: 7 Days). These threshold values are related to SP2115 to 2118. [0 to 65535/0/1/sec.]	

Set Maintenance Method

Note

- SP2115 to SP2118 are for future use and not used at the present time.

2115	TH:ALM:TM1:MNT1	After Time 1 Alarm (SP2111): Venting
2116	TH:ALM:TM1:MNT2	After Time 2 Alarm (SP2112): Cleaning
2117	TH:ALM:TM1:MNT3	After Time 3 Alarm (SP2113): Cleaning [1]
2118	TH:ALM:TM1:MNT4	After Time 4 Alarm (SP2114): Cleaning [2]
	Use this SP to select the type of maintenance that will be executed before the first print job begins after the idle time threshold has elapsed. [1] Air venting/filling is done if Bit 1 of SW8-3 is ON. [2] Print head refreshing (flushing) is done if Bit 2 of SW8-3 is ON. [0 to 65535/0/1/hours.] **Note:** These SP codes are not available for this machine.	

Set Threshold for Venting During Printing

Note

- SP2200 to SP2202 are for future use and not used at the present time.

2200	TH:PRG:HUMI1	35% Humidity
2201	TH:PRG:HUMI2	65% Humidity
	Use this SP to set the threshold value in the humidity table switches to the table for air venting during printing. - SP2200: Looks up the low humidity table (35%). - SP2201: Looks up the high humidity table (65%). [0 to 100/0/1/°C.]	

2202	TH:PRG:TM	
	For Future Use. Use this SP to set the threshold time for the printer to flush the print heads before the start of a print job. [0 to 4294967295/0/1/nl]	

5.3.4 GROUP 3000

Adjust Printhead Gap for dpi

3000	GAP:300:H1:G:F	Print Head 1: 300 dpi: 1st Pass
3001	GAP:300:H1:B:F	Print Head 1: 300 dpi: 2nd Pass
3002	GAP:300:H2:B:F	Print Head 2: 300 dpi: 2nd Pass
3003	GAP:300:H3:G:F	Print Head 3: 300 dpi: 1st Pass
3004	GAP:300:H3:B:F	Print Head 3: 300 dpi: 2nd Pass
3005	GAP:300:H4:G:F	Print Head 4: 300 dpi: 1st Pass
3006	GAP:300:H4:B:F	Print Head 4: 300 dpi: 2nd Pass
	[-128 to +127/**FA**/1/count.]	
3007	GAP:600:H1:G:F	Print Head 1: 600 dpi: 1st Pass
3008	GAP:600:H1:B:F	Print Head 1: 600 dpi: 2nd Pass
3009	GAP:600:H2:B:F	Print Head 2: 600 dpi: 2nd Pass
3010	GAP:600:H3:G:F	Print Head 3: 600 dpi: 1st Pass
3011	GAP:600:H3:B:F	Print Head 3: 600 dpi: 2nd Pass
3012	GAP:600:H4:G:F	Print Head 4: 600 dpi: 1st Pass
3013	GAP:600:H4:B:F	Print Head 4: 600 dpi: 2nd Pass
	Use this SP to adjust the print head gap for 600 dpi printing. [-128 to +127/**FA**/1/count.]	
3014	GAP:1200:H1:G:F	Print Head 1: 1200 dpi: 1st Pass
3015	GAP:1200:H1:B:F	Print Head 1: 1200 dpi: 2nd Pass
3016	GAP:1200:H2:B:F	Print Head 2: 1200 dpi: 2nd Pass
3017	GAP:1200:H3:G:F	Print Head 3: 1200 dpi: 1st Pass

3018	GAP:1200:H3:B:F	Print Head 3: 1200 dpi: 2nd Pass
3019	GAP:1200:H4:G:F	Print Head 4: 1200 dpi: 1st Pass
3020	GAP:1200:H4:B:F	Print Head 4: 1200 dpi: 2nd Pass
	Use this SP to adjust the print head gap for 1200 dpi printing. [-128 to +127/FA/1/count.]	

Set Print Head Rank (Wave)

3100	HRANK:H1:W	Print Head 1
3101	HRANK:H2:W	Print Head 2
3102	HRANK:H3:W	Print Head 3
3103	HRANK:H4:W	Print Head 4
	Use this SP to set the print head rank (wave rank) [0 to 7/FA/1/---]	

Set Print Head Rank (Voltage)

3104	HRANK:H1:V	Print Head 1
3105	HRANK:H2:V	Print Head 2
3106	HRANK:H3:V	Print Head 3
3107	HRANK:H4:V	Print Head 4
	Use this SP to set the print head rank (voltage rank) [0 to 7/FA/1/---]	

Set Amount for Standard Ink Coverage

3200	COVER:REG:B	Black: 319 u1
3201	COVER:REG:M	Magenta: 273 u1
3202	COVER:REG:C	Cyan: 187 u1
3203	COVER:REG:Y	Yellow: 276 u1
	Use this SP to adjust the standard amount of ink to be applied for full coverage areas. [0 to 65535/0/1/um]	

Gamma: K, C, M, Y

3300	GAMMA:K	
3301	GAMMA:C	
3302	GAMMA:M	
3303	GAMMA:Y	
	This SP prints the Gamma Adjustment Chart and allows you to set the optimum settings for gamma adjustment. The optimum settings are printed on a decal attached to the carriage.	

5.3.5 GROUP 4000

Not used.

5.3.6 GROUP 5000

Reset and Restoration Settings

5000	RST:FACT	Restore Factory Default Setting
	Resets and threshold settings and user adjusted values.	
5001	RST:INIT CNT:F	Reset Initial Tank Fill Count to Manufacturing Operation Count
	Resets the initial fill counter to the initial factory setting (-2).	
5002	RST:INIT CNT:A	Reset Initial Tank Fill Count to Factory Shipping
	Resets the initial fill counter to the initial factory setting before shipping (-1).	
5003	RST:WASTE:R	Reset Ink Collector Count/Flag: Right Ink Collector Unit
	Resets the ink flag and ink counter for the right Ink Collector tank.	
5004	RST:WASTE:L	Reset Ink Collector Count/Flag: Left Ink Collector Unit
	Resets the ink counter for the left Ink Collector tank.	

Maintenance, Replacement

5007	WASHING	Execute Auto Washing
	Executes the automatic flushing procedure.	
5100	INK DISCHARGE	Purge Maintenance: Right Vent
	For Future Use. Moves the carriage in order to access the right air vent for cleaning.	
5101	CARRIAGE CHANGE	Set Printer in Carriage Replace Mode
	Use this SP to reset the print head rank setting after print head replacement and to re-initialize the initial filling counter. **Carriage Replacement** 1. Enter the print head rank (wave) of ▪ Print head 1. ▪ Print head 2. ▪ Print head 3. ▪ Print head 4. 2. Enter the print head rank (voltage) of ▪ Print head 1. ▪ Print head 2. ▪ Print head 3. ▪ Print head 4. **Initial Fill Counter Reset** 1. Turn the printer off. 2. After executing this menu, turn the printer on to start initial filling of the print head tanks. 3. After executing this menu, the carriage adjustment mode can be executed.	

Service Tables

5102	CARRIAGE ADJUST	Set Printer n Carriage Adjust Mode
	Use this SP to adjust the print head gap after print head replacement and print the Nozzle Check pattern. Carriage Adjustment Mode Flow Before executing this menu, you must execute the carriage replacement mode. 1. Print the print head gap adjustment chart (High Speed). 2. Adjust the gap (High Speed). 3. Print the print head gap adjustment chart (High Speed). 4. Print the print head gap adjustment chart (Std. (Speed Priority). Std. (Quality Priority)). 5. Adjust the gap (Std. (Quality Priority, Std. (Speed Priority)). 6. Print the print head gap adjustment chart (Std. (Speed Priority). Std. (Quality Priority)). 7. Print the print head gap adjustment chart (High Quality). 8. Adjust the gap (High Quality). 9. Print the print head gap adjustment chart (High Quality). 10. Print the Nozzle Check test pattern.	
5200	PRINT SMC	Print an Engine Maintenance Summary
	Use this SP to print an engine maintenance summary. You need at least 8 sheets of paper to do this print. It will take at least 3 minutes before the print will start.	
5300	DUMMY NUMBER	Set a Dummy Number
	Use this SP to set the dummy number.	

5301	ENGINE SW1	Engine Switch 1

Bit	Setting
0	Controls the operation of the suction cap on the maintenance unit. Never change this setting. 1: On (default) 0: Off
1	Switches drive cleaning control on and off. 1: Executes drive cleaning. Automatically resets to "0" (off) after drive cleaning is finished. Do this type of cleaning only after print head cleaning and print head flushing have failed to recover operation of the machine.
2	This SP shows the cleaning execution flag after flushing the printer heads. Never change this setting. 1: Cleaning 0: No cleaning (default)
3	Controls operation of the ink supply pumps. [0 to 1/1/1] 1: Disables operation of ink supply pumps after long period of storage. 0: Allows pumps to operate after long period of storage.
4	Never change these settings.
5	
6	
7	

Service Tables

5302	ENGINE SW2	Engine Switch 2
	Bit	**Setting**
	0 - 7	Not used

Input Check: Sensors 1/2

5400	INPUT CHK1	Check Input Sensors
	Use this SP to display the on/off status of each sensor and switch. The status of each sensor (0, 1) is displayed on the 2nd line of the display.	

```
I N P U T    C H K 1
0 0 0 1 0 1 0 1 1 0 0 1 1 0 0 0
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
                          j015s001
```

No.	Meaning	No.	Meaning
0	Top Cover Switch	8	PFU Relay Sensor
1	Duplex Cover Sensor	9	Paper Sensor (Tray1)
2	Duplexer Set Sensor	10	Paper Sensor (Tray2)
3	Multi Bypass Set Sensor	11	Not used
4	PFU Set Sensor	12	Env. Selector Sensor
5	Registration Sensor 1	13	Ink Coll. Tank Sensor
6	Registration Sensor 2	14	Maintenance HP Sensor
7	Trailing Edge Sensor	15	Right Front Door Sensor

Input Check: Sensors

5401	INPUT CHK2	Check Input Sensors
	Use this SP to display the on/off status of each sensor. The status of each sensor (0, 1) is displayed on the 2nd line of the display.	

```
I N P U T   C H K 2

0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
                              j015s002
```

No.	Meaning
0	USB Connection Detection
1	GJ10 Option Detection
2	Jam Feed Door Switch
3	Tray 1 Cover
4	Tray 2 Cover

Service Tables

Input Check: Temperature and Humidity

5402	INPUT CHK HTEMP	Display Print Head Temperature
	Displays the temperature reading of the print head temperature sensor. Units: 0.1°C	
5403	INPUT CHK HUTMP	Display Temperature/Humidity Sensor Reading: Temperature
	Use this SP to display the temperature reading of temperature/humidity sensor. Units: 0.1°C	
5404	INPUT CHK HUMI	Display Temperature/Humidity Sensor Reading: Humidity
	Use this SP to display the humidity reading of temperature/humidity sensor. Units: 0.1%	

Input Check: Air

5405	INPUT CHK AIR1	Tank 1: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 1.	
5406	INPUT CHK AIR2	Tank 2: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 2.	
5407	INPUT CHK AIR3	Tank 3: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 3.	
5408	INPUT CHK AIR4	Tank 4: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 4.	
5409	INPUT CHK AIR5	Tank 5: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 5.	
5410	INPUT CHK AIR6	Tank 6: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 6.	

Service
Tables

Input Check: Ink Cartridge Set Sensors

5411	INPUT CHK CART	Display Status of Ink Cartridge Set Sensors
	Use this SP to display the status of the cartridge set sensors for each ink cartridge. The status of each sensor is assigned to a column in the 2nd line of the operation panel display as shown below.	

```
I N P U T   C H K   C A R T
0 0 0 0 0 0 1 0 0 1 0 0 1 0 0 1
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
```
J015s003

No.	Meaning	No.	Meaning
0	K Ink Cartridge Set	8	M Ink Cartridge Refill
1	K Ink Cartridge New	9	Y Ink Cartridge Set
2	K Ink Cartridge Refill	10	Y Ink Cartridge New
3	C Ink Cartridge Set	11	Y Ink Cartridge Refill
4	C Ink Cartridge New	12	Not Used
5	C Ink Cartridge Refill	13	
6	M Ink Cartridge Set	14	
7	M Ink Cartridge New	15	

Input Check: Ink Cartridge Levels

5412	INPUT CHK RES:Y	Yellow Ink Cartridge
5413	NPUT CHK RES:M	Magenta Ink Cartridge
5414	NPUT CHK RES:C	Cyan Ink Cartridge
5415	NPUT CHK RES:K	Black Ink Cartridge
	Use this SP to display the amount of ink that remains in each ink cartridge. Units: %	

Input Check: Ink Collector Unit Sensor

5416	INPUT CHK WASTE	Current Analog Reading
	Use this SP to display the analog reading of the Ink Collector tank sensor.	

Encoder Readings

5417	INPUT CHK MENC	Horizontal Encoder
	Use this SP to display the current reading of the main scan encoder.	
5418	INPUT CHK SENC	Vertical Encoder
	Use this SP to display the current reading of the sub scan encoder.	

Service Tables

Board Temperature Sensors

5419	INPUT CHK PTEMP	PSU Ambient Temperature Sensor
	Displays the temperature reading of the PSU ambient temperature sensor. **Note**: At present nothing displays because there is no temperature sensor in the PSU. Units: 0.1°C	
5420	INPUT CHK DTEMP	Drive Board Temperature Sensor
	Displays the temperature reading of the temperature sensor in the DRV board circuits. Units: 0.1°C	

5.3.7 GROUP 6000

Not Used

5.3.8 GROUP 7000

Display Charge Count

7000	CHG CNT:S:P:M	Single Counter: Monochrome Application
7001	CHG CNT:S:P:L	Single Counter: Multi-Level Color Application
7002	CHG CNT:S:P:C	Single Counter: Color Application
7003	CHG CNT:W:P:M	Double Counter: Monochrome Application
7004	CHG CNT:W:P:L	Double Counter: Multi-Level Color Application
7005	CHG CNT:W:P:C	Double Counter: Color Application
	Use this sensor to display the charge counts.	

Display Coverage Count

7006	COVER CNT:P:M	Monochrome Application
7007	COVER CNT:P:L	DColor Application
7008	COVER CNT:P:C	Multi-Level Color Application
	Use this sensor to display the charge counts.	

Service Tables

Display User Cleaning Count

7100	USER CL CNT:H1	Print Head 1
7101	USER CL CNT:H2	Print Head 2
7102	USER CL CNT:H3	Print Head 3
7103	USER CL CNT:H4	Print Head 4
	Use this SP to display the total number of print head cleanings executed from the printer driver and from the printer operation panel.	

Display User Flushing Count

7104	USER RF CNT:H1	Print Head 1
7105	USER RF CNT:H2	Print Head 2
7106	USER RF CNT:H3	Print Head 3
7107	USER RF CNT:H4	Print Head 4
	Use this SP to display the total number of print head flushings executed from the printer driver and from the printer operation panel.	

Display Count: Air Purges/Re-fillings After SC990

7108	AOFL CNT:S:H1	Print Head 1
7109	AOFL CNT:S:H2	Print Head 2
7110	AOFL CNT:S:H3	Print Head 3
7111	AOFL CNT:S:H4	Print Head 4
	Use this SP to display the number of air purge/ink tank re-fillings after SC990 has occurred.	

Display Count: Air Purges/Re-fillings After Ink End

7112	AOFL CNT:I:H1	Print Head 1
7113	AOFL CNT:I:H2	Print Head 2
7114	AOFL CNT:I:H3	Print Head 3
7115	AOFL CNT:I:H4	Print Head 4
	Use this SP to display the number of air purge/ink tank re-fillings after an ink tank has run out of ink.	

Display Count: Air Purges/Re-Fillings After Air Detected

7116	AOFL CNT:A:H1	Print Head 1
7117	AOFL CNT:A:H2	Print Head 2
7118	AOFL CNT:A:H3	Print Head 3
7119	AOFL CNT:A:H4	Print Head 4
	Use this SP to display the number of air purge/ink tank re-fillings after the air sensor detected air in a print head ink tank.	

Display Count: Air Detected at Power On

7120	AIR CNT:P:T1	Print Head Tank 1
7121	AIR CNT:P:T2	Print Head Tank 2
7122	AIR CNT:P:T3	Print Head Tank 3
7123	AIR CNT:P:T4	Print Head Tank 4
7124	AIR CNT:P:T5	Print Head Tank 5
7125	AIR CNT:P:T6	Print Head Tank 6
	Use this SP to display the number of times air was detected by the air sensor a print head tank at power on.	

Display Count: Air Detected Before Capping, Between Pages, or When Ink Cartridge Replaced

7126	AIR CNT:BPC:T1	Print Head Tank 1
7127	AIR CNT:BPC:T2	Print Head Tank 2
7128	AIR CNT:BPC:T3	Print Head Tank 3
7129	AIR CNT:BPC:T4	Print Head Tank 4
7130	AIR CNT:BPC:T5	Print Head Tank 5
7131	AIR CNT:BPC:T6	Print Head Tank 6
	Use this SP to display the number of times the air sensor detected air in an an ink tank (1) re-filling before capping at the end of a print job, (2) re-filling between pages, (3) after replacing and ink cartridge.	

Display Count: Air Detected in Print Head Tank After During Maintenance After Purge

7132	AIR CNT:A:T1	Print Head Tank 1
7133	AIR CNT:A:T2	Print Head Tank 2
7134	AIR CNT:A:T3	Print Head Tank 3
7135	AIR CNT:A:T4	Print Head Tank 4
7136	AIR CNT:A:T5	Print Head Tank 5
7137	AIR CNT:A:T6	Print Head Tank 6
	Use this SP to display the number of times air was detected by the air sensor in a print head tank during automatic print head maintenance triggered by the printer remaining idle.	

Display Count: Automatic Cleanings Between Page Prints

7138	ACL CNT:P:H1	Print Head 1
7139	ACL CNT:P:H2	Print Head 2
7140	ACL CNT:P:H3	Print Head 3
7141	ACL CNT:P:H4	Print Head 4
	Use this SP to display the number of automatic print head cleanings between page prints while print jobs were executing.	

Service Tables

Display Count: Automatic Cleanings Before Print Head Capping

7142	ACL CNT:B:H1	Print Head 1
7143	ACL CNT:B:H2	Print Head 2
7144	ACL CNT:B:H3	Print Head 3
7145	ACL CNT:B:H4	Print Head 4
	Use this SP to display the number of automatic print head cleanings before print head capping.	

Display Count: Automatic Cleanings After Printer Has Remained Idle

7146	ACL CNT:A:TM1	Idle Time 1
7147	ACL CNT:A:TM2	Idle Time 2
7148	ACL CNT:A:TM3	Idle Time 3
7149	ACL CNT:A:TM4	Idle Time 4
	For Future Use. (SP7148 and 7149) Use this SP to display the number of automatic print head cleanings triggered by automatic maintenance after the printer remained idle longer than the specified threshold time.	

Display Count: Maintenance Operations After Printer Idle

7150	AMNT CNT:TM1	Idle Time 1
7151	AMNT CNT:TM2	Idle Time 2
7152	AMNT CNT:TM3	Idle Time 3
7153	AMNT CNT:TM4	Idle Time 4
	Use this SP to display the number of times maintenance executed automatically.	

Display Count: Total Ink Cartridge Out

7154	EMPTY CNT:C1	Ink Cartridge 1
7155	EMPTY CNT:C2	Ink Cartridge 2
7156	EMPTY CNT:C3	Ink Cartridge 3
7157	EMPTY CNT:C4	Ink Cartridge 4
	Use this SP to display the number of times that each ink cartridge has become empty.	

Display Count: Ink Cartridge Out (Equal or More Than Guaranteed Service Life)

7158	END CNT:C1	Ink Cartridge 1
7159	END CNT:C2	Ink Cartridge 2
7160	END CNT:C3	Ink Cartridge 3
7161	END CNT:C4	Ink Cartridge 4
	Use this SP to display the number of times that each ink cartridge equaled or surpassed the guaranteed service life of the cartridge.	

Service
Tables

Display Software Count: Near End for Ink Collector Unit

7200	WASTE CNT:R:NEAR	Right Ink Collector Unit
	Use this SP to display the current software count for the flushing tank. **Note**: The near-end threshold is 413 ml.	

Display Count: Tank Full: Ink Collector Unit

7201	WASTE CNT:R:FULL	Right Ink Collector Unit
	Use this SP to display the current count for the number of times the status of the right Ink Collector tank has changed from near-full to full. Note: The full threshold is 3 ml.	

Display Count: Tank Full: Ink Collector Unit

7202	WASTE CNT:L:FULL	Left Ink Collector Unit
	Use this SP to display the current count for the number of times the status of the left Ink Collector tank has changed from near-full to full.	

Display Count: Swing Plate Contacts With Carriage

7203	SWNG PLATE CNT	Left Ink Collector Unit
	This SP code is for future use and not used at this time. This SP logs the number of times the swing plate operates to rid itself of accumulated ink due to air purging.	

Display Count: Mist Counter for Automatic Cleaning

7204	MIST CNT:T1	Print Head Tank 1
7205	MIST CNT:T2	Print Head Tank 2
7206	MIST CNT:T3	Print Head Tank 3
7207	MIST CNT:T4	Print Head Tank 4
7208	MIST CNT:T5	Print Head Tank 5
7209	MIST CNT:T6	Print Head Tank 6
	Use this SP to display the number of times that the swing plate of the left Ink Collector tank has made contact with the carriage.	

Display Count: Paper Dust Counter for Automatic Cleaning

7210	FEED:CNT:H1	Print Head Tank 1
7211	FEED:CNT:H2	Print Head Tank 2
7212	FEED:CNT:H3	Print Head Tank 3
7213	FEED:CNT:H4	Print Head Tank 4
	Use this SP to display the current reading of the ink mist counter that determines when to execute automatic cleaning.	

Display Count: Cap Off Time for Automatic Print Head Cleaning

7214	DECAP TIME	Print Head Tank 1
	Use this SP to display the de-capping time used to determine whether automatic cleaning is executed after the printer returns from idle mode.	

Service Tables

Display Humidity Reading Before Automatic Print Head Cleaning

7215	HUMI:ACL:AL	
	Use this SP to display the temperature reading before capping operation used to determine whether automatic print head cleaning is done after the printer returns from idle mode.	

Display Count: Ink Cartridge Replacements

7300	CART CHG CNT:K	K (Black)
7301	CART CHG CNT:C	C (Cyan)
7302	CART CHG CNT:M	M (Magenta)
7303	CART CHG CNT:Y	Y (Yellow)
	Use this SP to display the number of times the carriage has been replaced.	

7304	CART RFIL CNT:K	Print cartridge refill count: K (Black)
7305	CART RFIL CNT:C	Print cartridge refill count: C (Cyan)
7306	CART RFIL CNT:M	Print cartridge refill count: M (Magenta)
7307	CART RFIL CNT:Y	Print cartridge refill count: Y (Yellow)
	Use this SP to display the number of times the print cartridges have been refilled.	

Display Date of Ink Collector Unit Replacement

7400	WASTE:DATE	YY:MM:DD
	Use this SP to displayt the date the Ink Collector tanks were replaced. Date Standard: 2000	

Display Standby Time

7401	PWAIT:DATE	YY:MM:DD
	Display the total time the printer has remained in standby mode. Date Standard: 2000	

Display Operation Start Date

7402	START:DATE	YY:MM:DD
	Display the total time the printer has remained in full operation. Date Standard: 2000	

Service Tables

Display SC Code Log

7403	SC CODE1	Log 1: Previous
7404	SC CODE2	Log 2: Previous -1
7405	SC CODE3	Log 3: Previous -2
7406	SC CODE4	Log 4: Previous -3
7407	SC CODE5	Log 5: Previous -4
	Use this SP to display the SC code history. ■ The occurrences of SC codes are stored in the order 1, 2, 3, 4, 5. ■ Duplicate occurrences of SC codes are not recorded (each SC code recorded only once).	

Display Jam Log

7408	JAM CODE1	Log 1: Previous
7409	JAM CODE2	Log 2: Previous -1
7410	JAM CODE3	Log 3: Previous -2
7411	JAM CODE4	Log 4: Previous -3
7412	JAM CODE5	Log 5: Previous -4
	Use this SP to display the jam code history. The occurrences of jam codes are stored in the order 1, 2, 3, 4, 5.	

Display Total Count: Jam Log

7413	JAM COUNT1	Log 1: Previous
7414	JAM COUNT2	Log 2: Previous -1
7415	JAM COUNT3	Log 3: Previous -2
7416	JAM COUNT4	Log 4: Previous -3
7417	JAM COUNT5	Log 5: Previous -4
	Use this SP to display the number of times jam codes have been issued. The occurrences of jam codes are stored in the order 1, 2, 3, 4, 5.	

Display Total Count: Ink Fill Log

7418	FILL PROGRESS1	Log 1: Previous
7419	FILL PROGRESS2	Log 2: Previous -1
7420	FILL PROGRESS3	Log 3: Previous -2
7421	FILL PROGRESS4	Log 4: Previous -3
	Use this SP to display the number of times initial tank filling has been performed.	

Display Maintenance Log

7422	LAST MNT:TM1	Log 1: Previous
7423	LAST MNT:TM2	Log 2: Previous -1
7424	LAST MNT:TM3	Log 3: Previous -2
	Use this SP the total time for all maintenance executions.	

Service Tables

Display Maintenance Log: By Type of Maintenance

7425	LAST MAINTE1	Log 1: Previous
7426	LAST MAINTE2	Log 2: Previous -1
7427	LAST MAINTE3	Log 3: Previous -2

	Use this SP to display the types of maintenance executed. The types of maintenance are number coded as shown below:	
	1	Maintenance at power on
	6	Maintenance idle operation
	7	Auto print head cleaning after ilde time elapsed
	8	Maintenance air detection
	9	Ink tank filling before maintenance page
	10	Ink tank filling between maintenance pages
	11	Ink tank filling before maintenance capping
	12	Maintenance cartridge replacement
	13	Cleaning between maintenance pages
	14	Cleanings before maintenance capping
	15	Maintenance manual cleaning
	16	Maintenance manual flushing

Display Maintenance Log: Total Count

7428	LAST MNT CNT1	Log 1: Previous
7429	LAST MNT CNT2	Log 2: Previous -1
7430	LAST MNT CNT3	Log 3: Previous -2
	Use this SP to display the total count for all maintenance executions.	

Display Near Full Flag: Right Ink Collector Unit

7431	WASTE NEAR FLG	
	Use this SP to display the near-full flag of the right Ink Collector tank.	

Display Position of Tank Full Feeler for Each Print Head Tank After Air Purge

7500	INIT POS:T1	Print Head Tank 1
7501	INIT POS:T2	Print Head Tank 2
7502	INIT POS:T3	Print Head Tank 3
7503	INIT POS:T4	Print Head Tank 4
7504	INIT POS:T5	Print Head Tank 5
7505	INIT POS:T6	Print Head Tank 6
	Use this SP to display the detected position of the print head tank full sensor at air venting/ink filling.	

Service Tables

Display Normal Position for Detection of Full Print Head Tank

7506	FULL POS:T1	Print Head Tank 1
7507	FULL POS:T2	Print Head Tank 2
7508	FULL POS:T3	Print Head Tank 3
7509	FULL POS:T4	Print Head Tank 4
7510	FULL POS:T5	Print Head Tank 5
7511	FULL POS:T6	Print Head Tank 6
	Use this SP to display the usual position of the print tank full sensor when the ink tank is filled	

Display Count: Number of Drive Cleanings

7512	DCL CNT:H1	Print Head 1
7513	DCL CNT:H2	Print Head 2
7514	DCL CNT:H3	Print Head 3
7515	DCL CNT:H4	Print Head 4
	Use this SP to display the number of automatic print head cleanings done during printing	

Display Count: Ink Supply Time Up

7516	PTMOUT:CNT:T1	Print Head Tank 1
7517	PTMOUT:CNT:T2	Print Head Tank 2
7518	PTMOUT:CNT:T3	Print Head Tank 3
7519	PTMOUT:CNT:T4	Print Head Tank 4
7520	PTMOUT:CNT:T5	Print Head Tank 5
7521	PTMOUT:CNT:T6	Print Head Tank 6
	Use this SP to display the number of times near-end/end was detected by timeup while ink was being supplied to the ink tanks.	

Display Count: Automatic Print Head Cleanings (After De-Cap Time Elapsed)

7522	ACL:CNT:D:H1	Print Head 1
7523	ACL:CNT:D:H2	Print Head 2
7524	ACL:CNT:D:H3	Print Head 3
7525	ACL:CNT:D:H4	Print Head 4
	Use this SP to display the number of times the automatic print head cleaning executed triggered by time exceeded the threshold set for the de-capping time.	

Service Tables

Display Count: Maintenance Cleanings of Right Vent

7526	PMNT:CNT	Right Vent Purges
	Use this SP to display the number of times the right air vent was cleaned during maintenance.	

Display Count: Air Detections Before Maintenance Cleanings

7527	PMNT CNT:A:T1	Print Head Tank 1
7528	PMNT CNT:A:T2	Print Head Tank 2
7529	PMNT CNT:A:T3	Print Head Tank 3
7530	PMNT CNT:A:T4	Print Head Tank 4
7531	PMNT CNT:A:T5	Print Head Tank 5
7532	PMNT CNT:A:T6	Print Head Tank 6
	Use this SP to display the number of times air was detected during maintenance cleaning of the right ink suction vent.	

DETAILED DESCRIPTION SECTION

SECTION 6	DETAILED DESCRIPTION REVISION HISTORY	
Page	Date	Added/Updated/New
		None

6. DETAILED DESCRIPTION SECTION

6.1 IMPORTANT PARTS

6.1.1 J015

Front View: J015
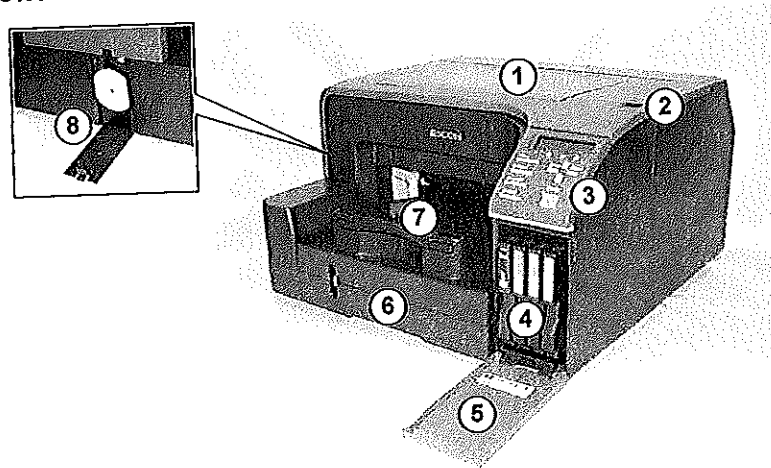
j016d907

1. **Top Cover**
   Open to see inside the printer if a jam occurs.

2. **Envelope selector**
   Push back to print on envelopes. Pull forward to print on all other types of paper.

3. **Operation panel**
   Operation keys and the 2-line LCT

4. **Print cartridges (K), (C), (M), (Y)**
   Supply ink to the print heads.

5. **Right front cover**
   Open only to install or replace Ink cartridges. Otherwise, this cover should be closed.

6. **Tray 1**
   This is the standard tray that holds paper fed to the machine.

7. Paper output tray and extension

Holds paper that has exited the printer. Pull out the output tray extension when printing on paper longer than B5.

8. Paper jam feed wheel

Open this door and turn the wheel in either direction to remove a jam sheet. A decal attached to the door illustrates where the paper exits when turned to the left or right.
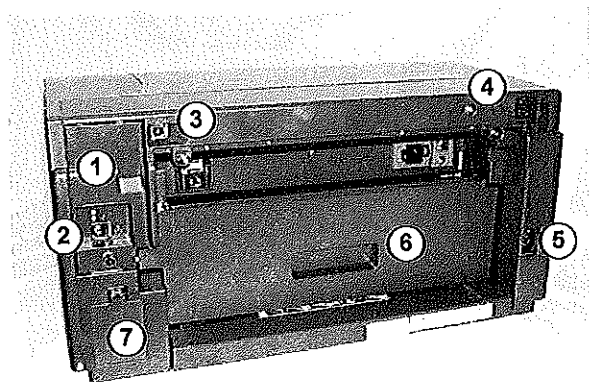
Rear View: J015
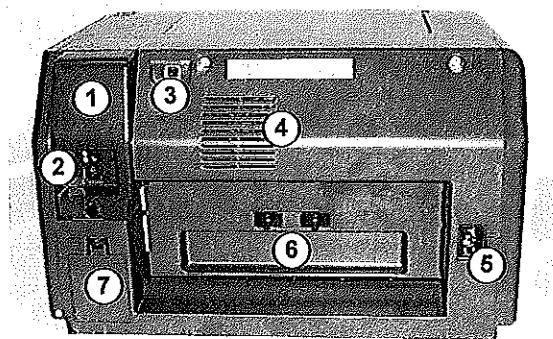
j016d908

1. NIB connector cover

Open to connect telephone line, extension telephone, USB cable, or install the NIB. (The NIB is standard for the J014.)

2. Ethernet Port

Connect the Ethernet cable here with NIB is installed.

3. USB slot

This is the connection point for the USB cable from the PC.

4. Vent

Vents air from inside the machine to prevent overheating. Never block this vent.

5. Power cord

The connection point for the power cord. Use only the power cord provided with the printer. Make sure you ground (earth) the head of the plug at the power source.

- The detachable power cord is provided with the EU model only.
- The power cord of the NA model is permanently attached.

6. **Rear cover**

   Opens for paper jam removal. To remove paper that has jammed and wrapped around the guide board, rotate the jam feed wheel on the right side of the printer.
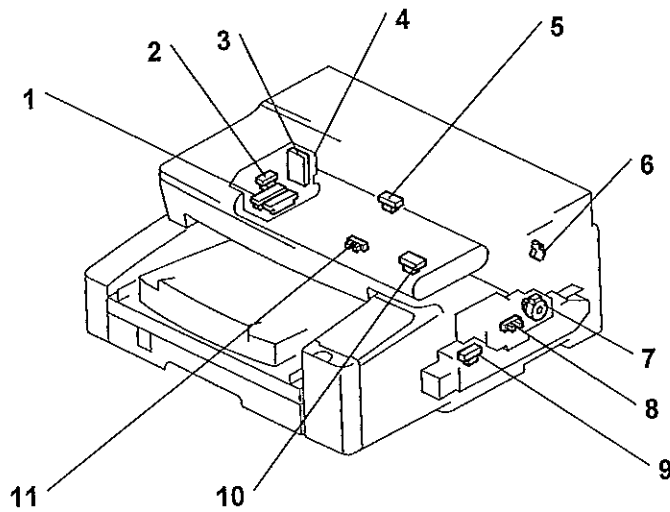
7. **Ink collector unit cover**

   Open and remove the ink collector tank when it needs to be replaced, or before servicing the printer.

Detailed Description Section

6.1.2 J016

Front View: J016
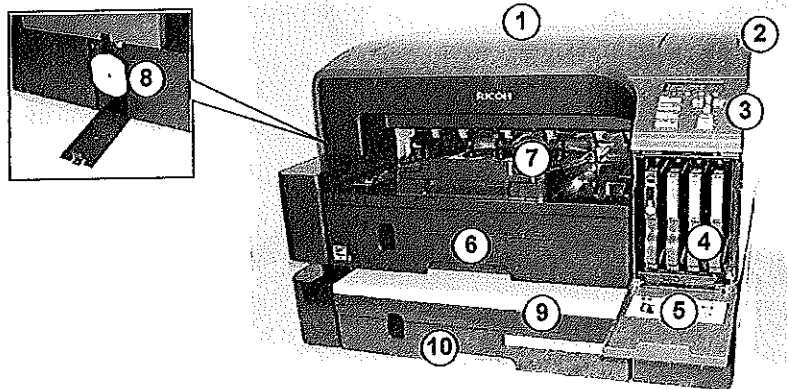
j016d901

1. **Top Cover**
   Open to see inside the printer if a jam occurs.

2. **Envelope selector**
   Push back to print on envelopes. Pull forward to print on all other types of paper.

3. **Operation panel**
   Operation keys and the 2-line LCT

4. **Print cartridges (K), (C), (M), (Y)**
   Supply ink to the print heads.

5. **Right front cover**
   Open only to install or replace Ink cartridges. Otherwise, this cover should be closed.

6. **Tray 1 (standard)**
   This is the standard tray that holds paper fed to the machine.

7. **Paper output tray and extension**
   Holds paper that has exited the printer. Pull out the output tray extension when printing on paper longer than A4 or LTR.

8. **Paper jam feed wheel**
   Open this door and turn the wheel in either direction to remove a jam sheet. A decal attached to the door illustrates where the paper exits when turned to the left or right.

9. **Paper Feed Unit (option)**

Houses Tray 2.

10. **Tray 2**

Holds an additional 500 sheets of paper.

Rear View: J016

j016d902

1. **NIB connector cover**

Open to connect telephone line, extension telephone, USB cable, or install the NIB. (The NIB is standard for the J014.)

2. **Ethernet Port**

Connect the Ethernet cable here with NIB is installed.

3. **USB slot**

This is the connection point for the USB cable from the PC.

4. **Vent**

Vents air from inside the machine to prevent overheating. Never block this vent.

5. **Power cord**

The connection point for the power cord. Use only the power cord provided with the printer. Make sure you ground (earth) the head of the plug at the power source.

- The detachable power cord is provided with the EU model only.
- The power cord of the NA model is permanently attached.

6. **Rear cover**

   Opens for paper jam removal. To remove paper that has jammed and wrapped around the guide board, rotate the jam feed wheel on the right side of the printer. This cover must be removed before installation of the duplex unit. This cover or the duplex unit must be installed for the printer to operate.

7. **Ink collector unit cover**

   Open and remove the ink collector unit when it needs to be replaced, or before servicing the printer.

6.2 ELECTRICAL COMPONENTS

6.2.1 OVERVIEW

J015

j015d020

1	Print Heads
2	1st Registration Sensor
3	HRB
4	Horizontal Encoder Sensor
5	2nd Registration Sensor
6	Rear Jam Removal Door Switch
7	Maintenance Motor
8	Maintenance HP Sensor
9	Ink Collector Unit Sensor
10	Temperature/Humidity Sensor
11	Paper End Sensor

Detailed Description Section

Electrical Components

j015v102
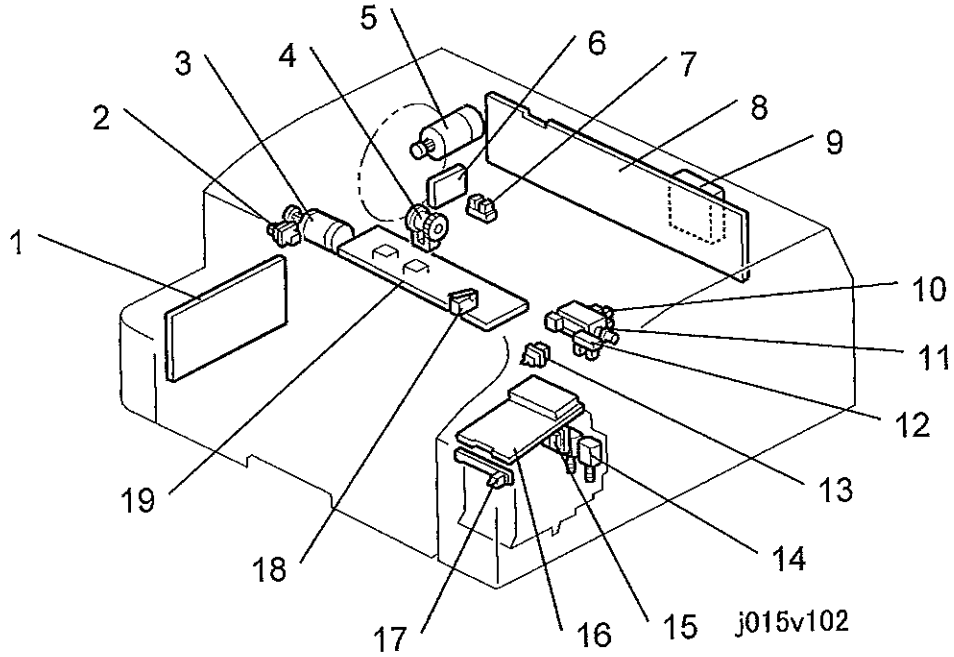
1	PSU	11	Air Release Solenoid
2	Jam Feed Door Switch	12	Carriage Position Sensor
3	Vertical Motor	13	Paper Tray Switch
4	Paper Feed Clutch	14	Ink Pump Motors (x2)
5	Horizontal Motor	15	CCB
6	SENC	16	OPU PCB
7	Vertical Encoder Sensor	17	Right Front Door Switch
8	Control Board	18	Top Cover Switch
9	Cooling Fan	19	HVPS
10	Ink Level Sensor		

J016
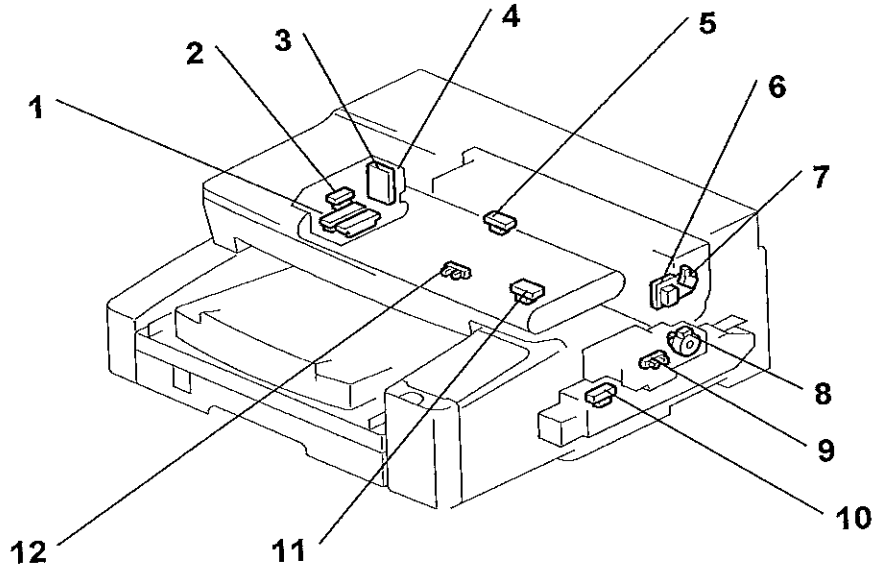
j016d020

1	Print Heads
2	1st Registration Sensor
3	HRB
4	Horizontal Encoder Sensor
5	2nd Registration Sensor
6	DIB
7	Duplexer Cover Switch
8	Maintenance Motor
9	Maintenance HP Sensor
10	Ink Collector Unit Sensor
11	Temperature/Humidity Sensor
12	Paper End Sensor

Detailed Description Section

Electrical Components

j016v102
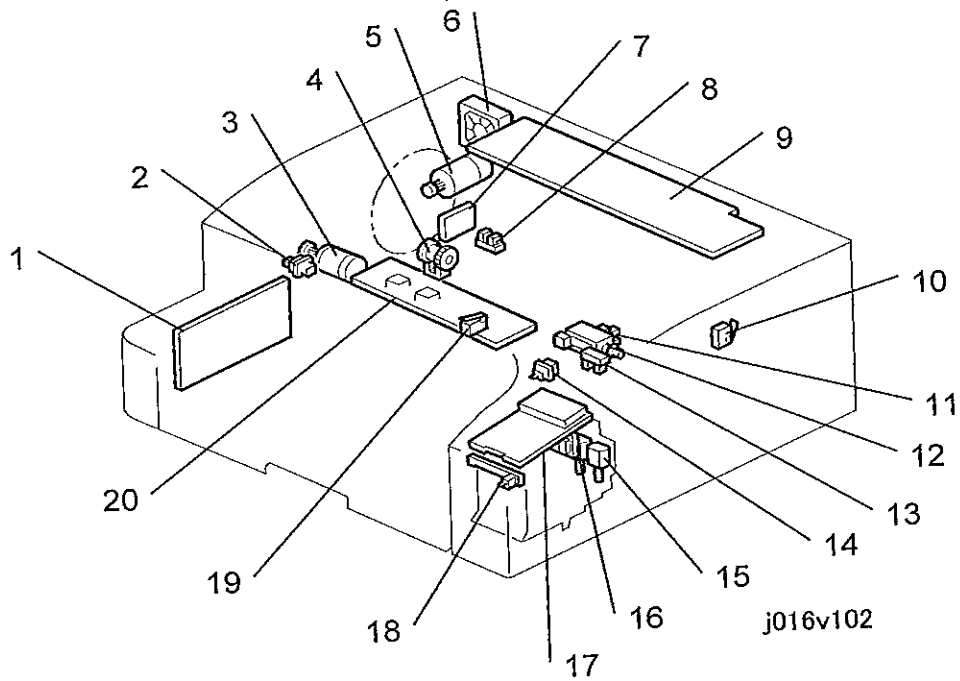
1	PSU	11	Ink Level Sensor
2	Jam Feed Door Switch	12	Air Release Solenoid
3	Vertical Motor	13	Carriage Position Sensor
4	Paper Feed Clutch	14	Paper Tray Switch
5	Horizontal Motor	15	Ink Pump Motors (x2)
6	Cooling Fan	16	CCB
7	SENC	17	OPU PCB
8	Vertical Encoder Sensor	18	Right Front Door Switch
9	Control Board	19	Top Cover Switch
10	Rear Plate, Duplexer Switch	20	HVPS

6.2.2 ELECTRICAL COMPONENT SUMMARY

No.	Component	Function
Clutches		
CL	Bypass Paper Feed Clutch – CL4 (J106 only)	A one-way clutch that controls the operation of the pick-up roller. Releases and allows the pick-up roller (a half roller) to rotate and pick-up the sheet and feed it. When the roller reaches its point of half-rotation, the pawl of the clutch stops the pick-up roller. The paper feed motor continues to rotate and drive the paper feed rollers that transport the paper out of the bypass unit.
CL	PFU Paper Feed Clutch – CL2 (J106 only)	A one-way clutch that controls the operation of the pick-up roller. Releases and allows the pick-up roller (a half roller) to rotate and pick-up the sheet and feed it. When the roller reaches its point of half-rotation, the pawl of the clutch stops the pick-up roller. The paper feed motor continues to rotate and drive the paper feed rollers that transport the paper out of the PFU paper tray.
CL	Paper Feed Clutch - CL1	This is the magnetic clutch that controls the operation of the paper feed roller.

Detailed Description Section

Motors		
MT	Bypass Paper Feed Motor – STM4 (J106 only)	Mounted in the multi bypass tray. Drives the pick-up roller and paper feed rollers that feed paper from the bypass tray into the printer.
MT	Cooling Fan	Mounted on the right rear corner of the printer (viewed from the back). This fan pulls hot air from the interior of the printer and pushes it out through a ventilation port.
MT	Horizontal Motor - DCM1	Mounted on the left side of the printer, drives forward and reverse to control the timing belt that moves the carriage left and right during printing. The operation of the motor is controlled by the horizontal encoder sensor (a long film strip) mounted behind the carriage.
MT	Ink Pump Motor (KC) – DCM3	Runs forward to pump cyan (C) to Print Head 2, reverses to pump black (K) to Print Head 2.
MT	Ink Pump Motor (M) – DCM4	Runs forward to pump yellow (Y) to Print Head 1, reverses to pump magenta (M) to Print Head 1.
MT	Maintenance Motor – MT STM1	Mounted in the maintenance unit. Drives the maintenance unit: 1) Rotates forward to drive the shaft that raises and lowers the caps during print head cleaning, 2) Reverses to drive the simple tube pump that siphons ink from the print head through the right, 3) Raises and lowers the wiper that removes ink collected around the print head.
MT	PFU Paper Feed Motor – STM2 (J106 only)	Mounted in the PFU. Drives the pick-up roller and paper feed rollers that feed paper from the PFU tray into the printer.

MT	Vertical Motor (DCM2)	Mounted behind the vertical encoder wheel and to the left of the PSU. This motor, controlled by the rotation fo the vertical encoder wheel and SENC board, drives the paper rollers that drive the transport belt.

PCBs

PCB	CCB (Cartridge Control Board)	Mounted in the cartridge holder behind the right front door of the printer. This PCB relays signals between the control board on top of the printer and the ink pump motors that supply ink to the ink tanks. It also relays the ID chip signals that detect whether the ink cartridges are installed properly in the correct slots of the cartridge holder.
PCB	CTL (Control Board)	Mounted on top of the printer and below the top cover (protected by a metal plate). Controls overall operation of the printer, mainly: 1) image data processing, 2) interface management (USB, duplexer, bypass tray, PFU, etc.) 3) all sensors, motors, other devices.
PCB	DIB (Duplex Interface Board) (J106 only)	Mounted in the duplex unit. This PCB controls the operation of the duplexer. This PCB also contains the duplexer cover switch that detects when the duplexer cover is open and closed. The printer will not operate if the duplexer is not installed properly, or if the duplexer cover is open.

Detailed Description Section

PCB	Duplexer Detection Board (J106 only)	Mounted behind the printer. The metal prongs of the DIB contact this board make the connection between the DIB and the duplexer cover switch mounted on the DIB. This contact must be closed for the printer to operate. The duplexer is not an option. It must be installed at all times, even when printing on only one side.
PCB	HRB (Head Relay Board)	Mounted behind the print heads on the carriage. This board performs many important functions: 1) contains the horizontal encoder sensor that reads the horizontal encoder (the film strip) that controls the reverse/forward timing of the horizontal motor that moves the carriage during printing, 2) relays the readings of the 1st registration sensor mounted on the left edge of the carriage, 3) contains a small thermistor that detects the temperature around the print heads, 4) receives and relays signals from the ink collector unit to the control board.
PCB	HVPS (High Voltage Power Supply)	Mounted under the top cover and above the transport belt. Generates the voltages applied to the transport belt that hold the paper on the belt during printing. Two interlock switches, one connected to the top cover and the other to the duplexer cover, prevent the HVPS from operating if either or both covers are open.

PCB	ID Chip 1	The identification chip of the black (K) ink cartridge.
PCB	ID Chip 2	The identification chip of the cyan (C ink cartridge.
PCB	ID Chip 3	The identification chip of the magenta (M) ink cartridge.
PCB	ID Chip 4	The identification chip of the yellow (Y) ink cartridge.
PCB	Multi Bypass Tray Control Board	Mounted inside the multi bypass tray. This is the main control board that controls operation of the bypass tray and interfaces with the printer.
PCB	OPU (Operation Panel Unit	Mounted under the operation panel LCD and keypad. Controls the operation of the operation panel. The right front door sensor is also mounted on this PCB.
PCB	PFU Main Board (J106 only)	Mounted in the optional paper feed unit. This is the board that controls operation of the paper feed unit and interfaces with the printer.
PCB	PSU (Power Supply Unit)	Mounted under the left front cover. Supplies both 37V and 5.1V power to the HVPS and all motors in the printer.

Detailed Description Section

PCB	SENC (Sub Scan Encoder)	A small PCB mounted below and slightly to the left of the vertical encoder wheel. The vertical encoder sensor is mounted and positioned on this PCB so the rim of the vertical encoder wheel passes through its gap as the wheel rotates. The sensor reads the code on the rim of the wheel to control the operation of paper feed timing and operation of the vertical feed motor.

Print Heads

PH	Print Head 1	Contains 2 ink tanks: M, Y
PH	Print Head 2	Contains 2 ink tanks: C, K

Sensors

SN	1st Registration Sensor	Attached to the left side of the carriage. As the carriage moves from side to side during printing. The registration sensor performs two important functions for print control: 1) It detects the leading edge of every sheet, and 2) it detects the width of the 1st sheet of every print job when the carriage and sensor pass horizontally over the vertical edge of the 1st sheet as it feeds.
SN	2nd Registration Sensor	Located in the center of the printer above the transport belt and behind the horizontal motor timing belt. This photosensor detects the leading and trailing edge of each sheet when the printer is printing at high speed. These readings are used to control job timing and to detect paper jams.

SN	Air Sensors	A pair of vertical pins at the top of each ink tank. This pair of pins detects changes in the voltage differential on the surface of the ink inside the print head tank. When these terminals detect air in the tank, this actuates the air release solenoid and vents air from the tank through the air release valve. This allows more ink to enter the tank.
SN	Carriage Position Sensor	Mounted under the right, front corner of the top cover. Detects the position of the carriage and print heads above the paper. When the envelope selector is pulled forward, the feeler leaves the gap and switches the sensor off. This mechanism is used to detect the up and down position of the carriage and print heads.
SN	Ink Cartridge Set Switches	A microswitch for each ink cartridge connected in series and mounted on the ink cartridge detection plate at the back of the right front cover that holds the ink cartridges. A metal contact on the back of the ink cartridge makes contact with the microswitch when the ink cartridge is inserted. This tells the machine whether the ink cartridge is inserted or inserted correctly.
SN	Ink Collector Unit Sensor	A "smart" reflective sensor mounted at the back of the ink collector unit. Detects when the collector unit is almost full and alerts the operator that the ink collector unit needs to be replaced.

Detailed Description Section

SN	Ink Level Sensor	Mounted above the front guide rail. Monitors the positions of the ink level lever of each ink tank. The vacuum created inside the ink tanks as ink is consumed gradually draws the base of the spring-loaded arms in against the sides of the tank. Drawing the base closer to the side of the tank forces the tip of the arm out. The ink level sensor detects the position of the tip every time it passes through the gap of the sensor.
SN	Maintenance HP Sensor	An interrupt sensor mounted in the maintenance unit that controls the operation of the maintenance motor in the print head cleaning cycle. At the beginning of the cleaning cycle, a feeler leaves the gap of this sensor and switches the motor on. At the end of the cleaning cycle the feeler rotates into the gap, switches the sensor off. This switches the motor off and the caps and wiper remain down at the home position.
SN	PFU Paper Sensor 1 (J106 only)	Located below the bottom plate of the paper cassette in Tray 2 (the optional paper feed unit). A spring loaded bottom plate keeps the top of the stack against the pick-up roller for paper feed. A free-swinging feeler rests on top of the stack. After the last sheet feeds, one end of the feeler falls down through a cutout in the bottom plate. An actuator on the other end of the feeler swings up and out of the gap in the paper end sensor. This signals paper end.

SN	Paper End Sensor – Tray 1	Located below the transport belt. A spring loaded bottom plate keeps the top of the stack against the pick-up roller for paper feed. A free-swinging feeler rests on top of the stack. After the last sheet feeds, one end of the feeler falls down through a cutout in the bottom plate. An actuator on the other end of the feeler swings up and out of the gap in the paper end sensor. This signals paper end.
SN	Temperature/ Humidity Sensor	Located inside the printer near the transport belt. The temperature/humidity sensor constantly measures temperature and humidity around the transport belt. The printer uses these readings to adjust the amount of charge applied to the areas of the belt that contact the leading edge, center, and trailing edge of the paper. For more, please refer to Section "4. Troubleshooting."
SN	Trailing Edge Sensor	Mounted at the right, rear corner of the printer (viewed from the back). The feeler of this interrupt sensor is mounted in the center of the paper path and connected to a long shaft. The end of the shaft has an actuator that moves in and out of the sensor gap. The feeler is pushed down by every sheet of paper and the actuator leaves the gap, then the feeler pops up again after the trailing edge passes and the actuator enters the gap and switches the sensor off. The length of time the sensor remains on is used to measure the length of the paper for print timing control. The sensor issues a paper end alert if the sensor does not turn on after two rotations of the paper feed roller.

Detailed Description Section

Electrical Components

SN	Vertical Encoder Sensor	Mounted on the SENC PCB with the rim of the vertical encoder wheel positioned in its gap. This sensor reads the code on the rim of the vertical encoder wheel as it rotates to control the operation of the vertical motor during paper feed.
SN	Horizontal Encoder Sensor	Mounted on the carriage with the horizontal encoder (a film strip) positioned in its gap. This sensor reads the code on the edge of the horizontal encoder as the carriage and print heads move horizontally to control the operation of the horizontal motor during printing as the carriage moves left and right during printing.
Solenoids		
SOL	Air Release Solenoid – SOL 1	Located under the right corner of the front cover, near the envelope selector. When the air level sensors detect that there is air in a tank, the system activates the air release solenoid to suck air from the tank. The partial vacuum pulls in the sides of the tank. This changes the position of the feeler on the side of the tank (used for ink level detection) and pulls ink into the tank from the ink supply tube.

Switches

SW	Top Cover Switch	Mounted under the front edge of the top cover of the printer. Detects when the top cover of the printer is open or closed. The printer will not operate if the top cover is open.
SW	Jam Feed Door Switch	Mounted on the left side, detects when the jam feed door is open and closed.
SW	Paper Tray Switch	Mounted inside the paper cassette well, detects when the paper tray and output tray are removed and inserted. Signals an error if both the paper tray and output tray are not inserted correctly.
SW	Duplexer Cover Switch (J106 only)	Mounted on the DIB inside the duplexer. Detects when the duplexer cover is open or closed. The printer will not operate if the duplexer cover is open.
SW	Rear Jam Removal Door Switch (J015 only)	Detects when the door is opened and closed.

Thermistor

TH	Thermistor	This is a small bulb thermistor on the end of a wire and attached to the HRB. This thermistor measures the temperature around the print heads.

Detailed Description Section

6.3 PRINT HEADS

6.3.1 OVERVIEW
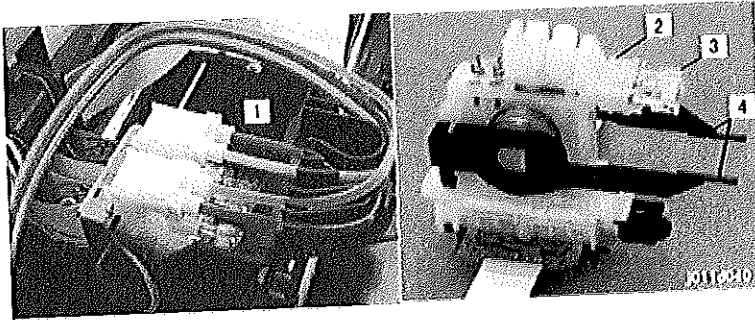
1	Carriage Unit
2	Print Head Tank
3	Air Release Valve
4	Ink Level Levers

6.3.2 PRINT HEAD

The wide print head increases the width of the band printed with one pass. This lets the machine print faster.
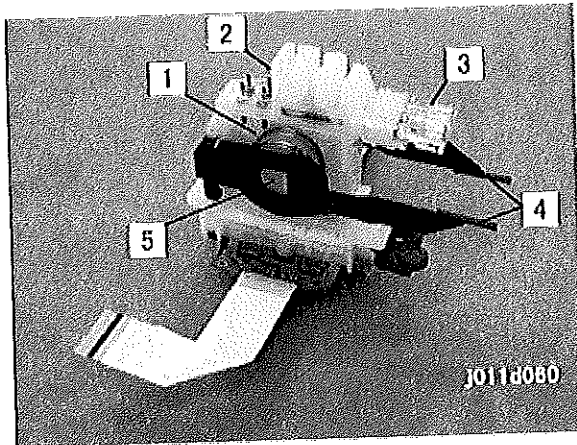
Print Head Specifications

Item	J015/J016
Number of Print Heads	2 (Y/M, K/C)
Number of Nozzles	192 x 4 colors 192 nozzles x 2 lines/head
Array	Cross-Hatch (150 dpi x 2 lines)
Voltage Element	Piezoelectric

Detailed Description Section

6.3.3 PRINT HEAD TANK

1	Ink Reservoir
2	Ink Supply Port
3	Air Release Valve
4	Ink Level Levers
5	Plastic Bellows

The printer employs a dual-tank system.

Each ink cartridge (Y, M, C, K) is connected to a print head tank via a plastic tube.

The first tank of the dual-tank system is the ink cartridge that supplies the ink through a tube to the print head tank unit. The second tank is the small ink reservoir inside the print head tank unit.

The high volume ink cartridges and the carriage components are extremely lightweight.

A print head tank has four main parts as shown above:

- **Ink reservoir**. This is where ink collects before it is fed to the print head below.
- **Ink supply port**. Ink enters here from the ink cartridge mounted under the operation panel.

- **Plastic bellows.** A spring forces out the flexible, thin plastic film on the left side of the ink tank.
- **Ink level lever.** When the ink tank is mounted in the printer, this lever pushes the bellows down to increase pressure in the ink reservoir. The ink level sensor mounted on the carriage detects the position of these arms to determine the amount of ink remaining in a tank. (The actuator spreads outward when the bellows gradually collapses as ink is consumed.)
- **Air release valve.** Purges air periodically to keep the ink inside the ink tank unit under the prescribed pressure and the amount of air in the tank low.

j014d090
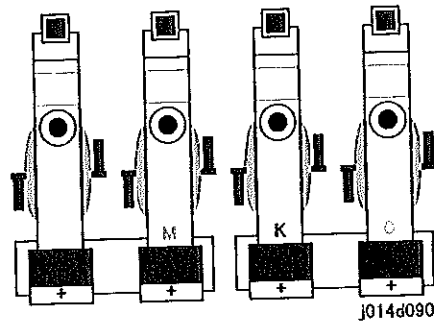
The illustration above shows the arrangement of the print heads and print head tanks.

- Two print head tanks are mounted on one print head unit.
- Each print head tank unit feeds to its own nozzle array (one for each color).
- Each print head tank holds 4.3 ml of ink.

6.3.4 INK EJECTION DEVICE
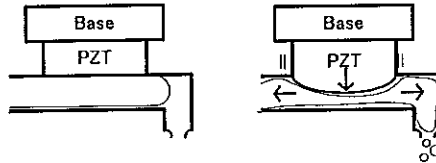
Each print head uses a piezo-electric element (PZT) . This forces ink from the ink reservoirs out of the ink nozzles and onto the paper.

This is done with pressure. At the prescribed time, an electric charge is applied to the PZT. This makes the PZT expand. The expansion of the PZT puts pressure on the ink below. This makes the ink move in both directions. The ink on the right is forced out the ejection port.

This device is unique. Other printers on the market use small heaters that form bubbles to eject ink from the ports.

6.3.5 INK NEAR END
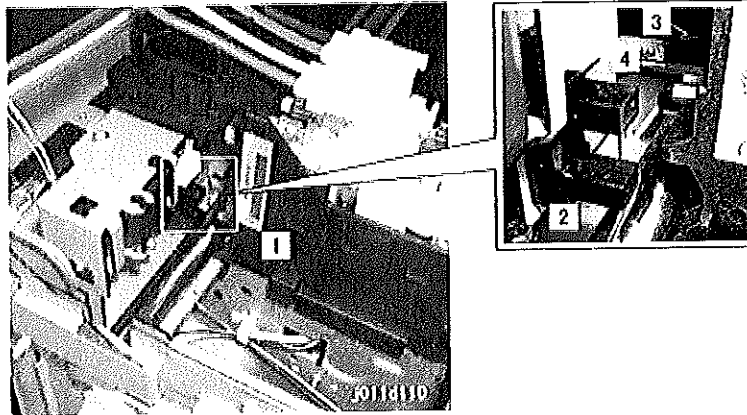
The printer detects ink near-end in two ways:

- The printer software maintains a count of how much ink is consumed from each cartridge and signals near-end when a cartridge is nearly empty.
- As a backup method, the ink level sensor monitors the positions of the ink level levers on the sides of the ink tanks. This is described below.

Each print head in the ink tank unit [1] has a ink level lever This lever presses against a spring loaded bellows in the center of the print head tank. The right side of each tank is constructed of flexible plastic:

- As ink enters the tank, the pressure of the ink pushes against the side of the tank and moves the lever away from the side of the print head tank.
- As ink is consumed during printing, the vacuum created by the ink leaving the tank pulls the lever toward the side of the print head tank.

The ink level sensor [2], mounted above the front guide rail, checks the left and right positions of the ink level levers [3] and [4] every time the carriage passes.

When the ink level sensor detects that a lever is completely flat against the side of the tank, the printer sends a prescribed amount of ink to the tank from the ink cartridge.

The sensor signals the 'ink near-end' if the ink level lever does not return to the full position (away from the side of the tank) within the prescribed time after the printer requests a refill from the ink cartridge.

After the near-end alert, the printer will continue to print with the ink that remains in the partially filled tank until the printer issues the ink end alert.

Detailed Description Section

6.3.6 INK OUT
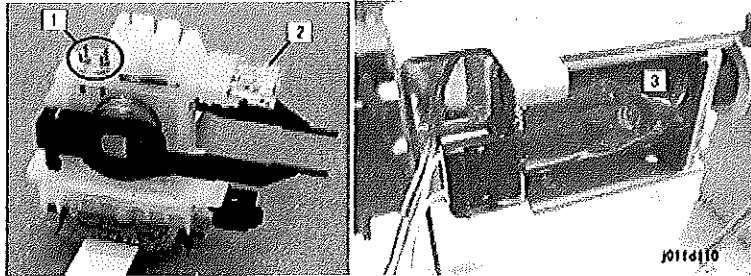
A pair of vertical sensor pins [1] is provided for each tank. These pins detect changes in the voltage differential on the surface of the ink inside the print head tank to detect the presence of air. When these terminals detect air in the tank, air escapes through the air release valve [2] opened by the air release solenoid [3]. This allows more ink to enter the tank.

This is a continuous operation. The sensor pin readings signal the ink-out condition when:

- The ink near-end alert has been issued.
- The continued presence of air in the tank indicates that no ink remains in the tank.

As a backup measure, the firmware counts the amount of ink consumed after every near end occurrence. When this count reaches the value prescribed for the ink cartridge, this will also signal an ink-out condition.