Service Manual

DAQSTATION
DX100/DX200

YOKOGAWA
Yokogawa Electric Corporation

SM 04L01A01-01E
4th Edition

Important Notice To the User

This manual contains information for servicing the YOKOGAWA DAQSTATION DX100/DX200. Check the serial number to confirm that this service manual corresponds to your instrument. *Make sure not to use the wrong manual.*

Before any maintenance and servicing, *read all safety precautions carefully.*

Only properly trained personnel may carry out maintenance and servicing in accordance with and to the extent permitted by this service manual.

Do not disassemble the instrument or its parts, unless otherwise clearly permitted by this service manual.

Do not replace any part or assembly, unless otherwise clearly permitted by this service manual.

Yokogawa Electric Corporation (YOKOGAWA) does not in principle supply parts other than those listed in the customer maintenance parts list in this service manual (mainly *modules* and *assemblies*). Therefore if an assembly fails, the user should replace the whole assembly and *not* components within the assembly (see NOTE). If the user attempts to repair the instrument by replacing individual components within the assembly, YOKOGAWA assumes no responsibility for any consequences, such as defects in instrument accuracy, functionality, or reliability, or user safety hazards.

YOKOGAWA does not offer more detailed maintenance and service information than that contained in this service manual.

All reasonable efforts have been made to assure the accuracy of the content of this service manual. However, there may still be errors such as clerical errors or omissions. YOKOGAWA assumes no responsibility of any kind concerning the accuracy or contents of this service manual, nor for the consequences of any errors.

Note

YOKOGAWA instruments have been designed in a way that the replacement of electronic parts can be done on an assembly (module) basis by the user. YOKOGAWA instruments have also been designed in a way that troubleshooting and replacement of any faulty assembly can be done easily and quickly. Therefore, YOKOGAWA strongly recommends replacing the entire assembly over replacing parts or components within the assembly. The reasons are as follows:

- The instruments use high-performance microprocessors, large scale CMOS gate arrays and surface-mount components to provide state-of-the-art performance and functions.
- Repair of components can only be performed by specially trained and qualified maintenance personnel with special highly-accurate tools, including costly ones.
- When taking the service life and cost of the instruments into consideration, the replacement of assemblies offers the user the possibility to use YOKOGAWA instruments more effectively and economically with a minimum in downtime.

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4th Edition : June 2010 (YK)

Introduction

This manual contains information for servicing the YOKOGAWA DAQSTATION DX100/DX200.

Note

This is the third edition of the manual, dated August 2007.

WARNING

This service manual is to be used by properly trained personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to the Safety Precautions prior to performing any service.
Even if servicing is carried out by qualified personnel according to this service manual, YOKOGAWA assumes no responsibility for any result occurring from this servicing.

Safety Precautions

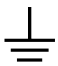
The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific WARNINGS given elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument.
YOKOGAWA ELECTRIC CORPORATION assumes no liability for the customer's failure to comply with these requirements.

General Definitions of Safety Symbols Used on Equipment and in Manuals

High temperature. To avoid injury caused by hot surfaces, the operator must not touch the heatsink.

Danger. Affixed to the instrument, this symbol indicates danger to personnel or the instrument and the operator must refer to the user's manual. The symbol is also used in the corresponding place in user's manual.

Protective grounding terminal,to protect against electrical shock. This symbol indicates that the terminal must be connected to ground before operation of equipment.



Functional earth terminal. This terminal should not be used as a "Protective earth terminal."

WARNING Describes precautions that should be observed to prevent serious injury or death to the user.

CAUTION Describes precautions that should be observed to prevent minor or moderate injury, or damage to the instrument.

WARNING

Power Supply
Ensure the source voltage matches the voltage of the power supply before turning ON the power.

Protective Grounding
The protective earth terminal must be connected to ground to prevent an electric shock before turning ON the power.

Necessity of Protective Grounding
Never cut off the internal or external protective earth wire or disconnect the wiring of the protective earth terminal. Doing so poses a potential shock hazard.

Fuse
To prevent a fire, make sure to use a fuse with the specified standard (current, voltage, type). Before replacing the fuse, turn off the power and disconnect the power source. Do not use a different fuse or short-circuit the fuse holder.
See page 3-3 or 3-4 in chapter 3.

Defect in the Protective Earth Terminal and Fuse
Do not operate the instrument when the protective earth terminal or fuse might be defective.

Do Not Operate New Flammable Meterials
Do not operate the instrument in the presence of flammable liquids or vapors. Operation of any electrical instrument in such an environment constitutes a safety hazard.

Do Not Remove Any Covers
There are some components inside the instrument containing high voltages. Do not remove any cover if the power supply is connected. The cover should be removed by qualified personnel only.

External Connection
To ground securely, connect the protective grounding before connecting to the measurement or control unit. Also, before touching the circuit, turn off the power to the circuit and check that there is no voltage being generated.

Overview of This Manual

This manual is meant to be used by qualified personnel only. Make sure you read the safety precautions at the beginning of this manual and the warnings and cautions contained in any relevangt chapters prior to carrying out servicing.

This manual contains the following chapters.

1 General Information
Provides an introduction and describes safety considerations.

2 Performance Tests
Describes the tests for checking the performance of the instrument.

3 Adjustment
Describes the adjustments which can be performed by users.

4 Principles of Operation
Function block diagrams and principles of operation.

5 Troubleshooting
Describes procedures for troubleshooting and how to handle the replacement of parts.

6 Schematic Diagram
Contains the system configuration diagram.

7 Customer Maintenance Parts List
Contains exploded views and a list of replaceable parts.

Specifications are not included in this manual; for specifications, refer to IM 04L01A01-01E or IM 04L02A01-01E.

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Chapter 1 Principles of Operation

This chapter describes the principles of operation for the DX100 and DX200.

1.1 Block Diagram of the DX

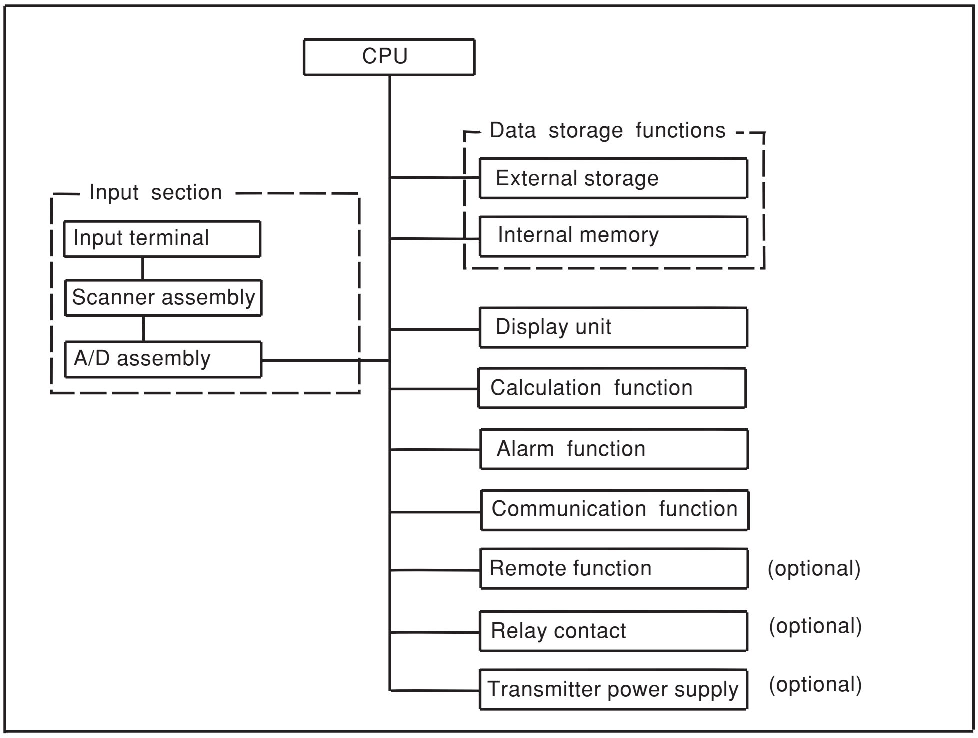


Figure 1 Block diagram

For datails see schematic diagram page 6-1 and 6-2.

1.2 Input Section

1.2.1 A/D Assembly

The A/D assembly has items such as a programmable gain amp, voltage reference, PWM modulator, current source for RTD measurements, differential amp, voltage source for RJC, serial parallel converter, control logic, and an occurred scanner SSR control signal.

The A/D assembly uses a sinewave oscillating type self-resonant switching power supply (DC/DC converter), and noise filtering is achieved by signal integration.

The A/D assembly detects the frequency of the power while it is ON and the integrated time becomes 20 ms or 16.67 ms. Therefore it carries a very high rate of noise rejection for the power frequency (in auto mode).

In case the power frequency of the instrument and of the measured object are different, the appropriate integrated time is manually selectable. In case of the DX106, DX112, DX210, DX220, or DX230, the selection of 100 ms for 50/60 Hz is also available. A 16 bit resolution is achieved regardless of the integrated time.

1.2.2 Input Terminal

The input terminal is removable. The internal printboard is isothermal because a print board with a metal core is being used. Therefore, stable reference junction compensation is realized.

1.2.3 Scanner Assembly

An in-house SSR (solid state relay) is being used for the scanner. The SSR, having a semiconductor switch, has a withstand voltage as high as 1500 V and a leakage current of only 1 nA. For that reason, it has the following features.
1) Semi-infinite life due to the absence of mechanical contacts
2) Silent operation
3) No occurrence of thermoelectric power.

On the other hand, compared to a mechanical relay, the SSR has, the disadvantage of a bigger ON resistance and OFF capacity. As a result, RTD measurement and noise resistance characteristics are affected. Regarding RTD measurements, a differential amp was inserted into the previously mentioned analog circuit without increasing the number of parts, so that it would receive no influence from ON resistance.

For RTD measurements there is generally no insulation between channels.

1.3 Data Storage Functions

For storing data, the DX has 1.2 MB of internal memory and is equipped with a 3.5-inch floppy disk drive (1.44 MB 2HD), a Zip drive, or an ATA flash memory card drive. The measured data can also be saved to external storage media such as floppy disks, Zip disks, and ATA flash memory cards.

1.4 Display Unit

The DX has a 5.5-inch (DX100) or 10.4-inch (DX200) TFT color LCD on which it displays the measured results (240 (vertical) × 320 (horizontal) pixels for the DX100 or 480 (vertical) × 640 (horizontal) pixels for the DX200).

1.5 Calculation Function

The DX performs differential computation, linear scaling, and square roots using a microprocessor on the CPU board.

1.6 Alarm Function

The following six alarm types can be set.
High limit (H), low limit (L), differential high limit (h), differential low limit (l), rate-of-change on increase (R), rate-of-change on decrease (r), alarm delay upper limit alarm (T), or alarm delay lower limit alarm (t).

1.7 Other Functions

1 Communication function:
Ethernet (standard)
RS-232/RS-422A/FOUNDATION Field bus interface added (optional).

2 Remote function:
The trigger, start/stop, time adjustment, and other functions can be controlled remotely (optional).

3 Relay contact:
Alarm output and memory end/fail output (optional).

4 Transmitter power supply:
DC24 V output for transmitter (optional).

Chapter 2 Testing

This chapter describes the following tests.

2.1 Acceptance test
2.2 Self Diagnostic test
2.3 Performance test

2.1 Acceptance Test

This section describes the procedure to perform the acceptance test.

1 Read the preface, to the user's manual, "Checking the Package Contents" and verify that you have all of the contents.
2 Make sure to understand the operating procedures as described in the user's manual.
3 Check each function using the user's manual.
4 Read and implement section 2.2, "Self Diagnostic Test."
5 Read and implement section 2.3, "Performance Test."

2.2 Self Diagnostic Test

The DX is provided with complete self diagnostic functions to enhance reliability in measurement and serviceability.
When you turn ON the power, the DX will automatically execute the following types of diagnoses alternately and display the results. After these tests are completed, the DX is ready for use.

1 Main ROM sum test
2 Main RAM write/read test
3 A/D and A/D ROM sum test
4 Acquisition memory test

Table 2 shows the order and results of the self diagnostic tests.

Code	Message
901	ROM failure.
902	RAM failure.
910	A/D memory failure for all input channels.
911	Channel 1 A/D memory failure.
912	Channel 2 A/D memory failure.
913	Channel 3 A/D memory failure.
914	Channel 4 A/D memory failure.
921	Channel 1 A/D calibration value error.
922	Channel 2 A/D calibration value error.
923	Channel 3 A/D calibration value error.
924	Channel 4 A/D calibration value error.
930	Memory acquisition failure.
940	The Ethernet module is down.

2.3 Performance Test

This paragraph describes several tests to verify the operation of the DX's performance against published specifications.

2.3.1 Before You Begin
2.3.2 Measurement Accuracy Test
2.3.3 Reference Junction Compensation Accuracy Test

The performance tests need not be performed in any specific order.

2.3.1 Before You Begin

Testing Conditions
When carrying out the performance tests described in the following pages, make sure the instrument is tested under the following conditions:

Ambient temperature:	23±2°C
Humidity:	55±10%RH
Power supply voltage:	90 to 132 VAC, 180 to 250 VAC
Power supply frequency:	50/60 Hz±1%

Preparation
Perform the following steps before carrying out the performance tests described in the following pages.

1 Turn ON the power supply and verify that the DX passes the self diagnostic test without any problems.
2 Allow a warm up time of at least 30 minutes for required instruments and the unit under test.

Instruments Required for Tests

Instrument	Required Specifications	Recommended
DC Voltage Generator	Accuracy: ± 50ppm	FLUKE 5520A
Decade Resistance Box	Accuracy: ± 10ppm	YOKOGAWA 279301
Thermostatic Chamber	± 0.01°C	
Thermocouple	Calibrated	

2.3.2 Measurement Accuracy Test

Connection

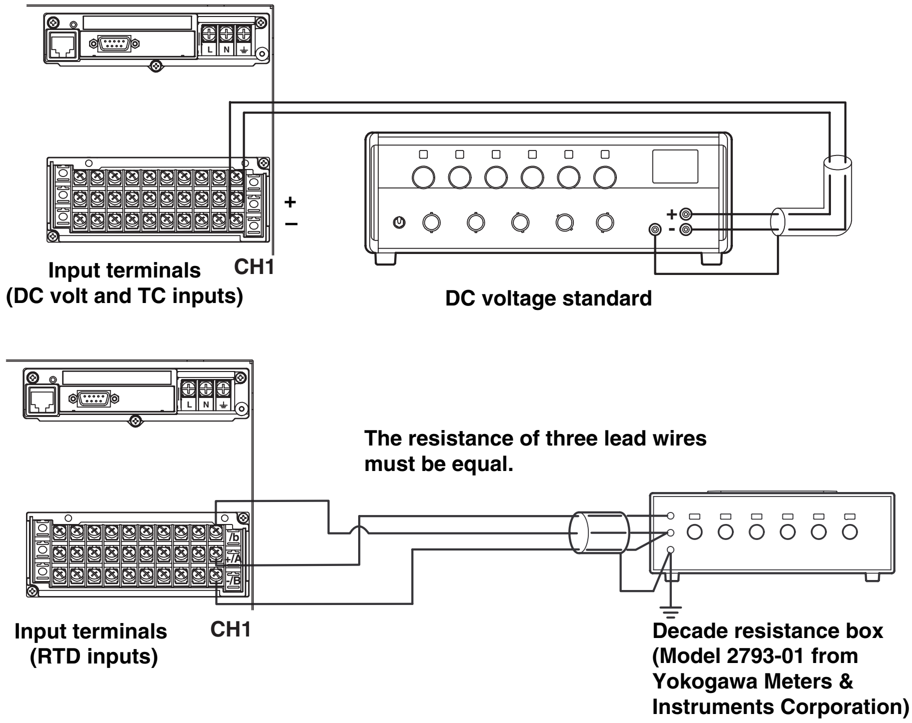


Figure 2.1 Connection diagram

Procedure

1 Connect the equipment as shown in Figure 2.1
2 Carry out the preparations as described in 2.3.1
3 Apply input voltage/resistance to the DX and verify that the measured value lies within the tolerance for each range according to the table below.

Table of tolerance

Range	Input Voltage	Tolerance	Specification
20 mV	-20 mV	-20.04 to -19.96	±(0.1% of reading + 2 digits)
	0 mV	-0.02 to +0.02	
	+20 mV	+19.96 to +20.04	
60 mV	-60 mV	-60.08 to -59.92	
	0 mV	-0.02 to +0.02	
	+60 mV	+59.92 to +60.08	
200 mV	-200 mV	-200.4 to -199.6	
	0 mV	-0.2 to +0.2	
	+200 mV	+199.6 to +200.4	
2 V	-2 V	-2.004 to -1.996	
	-1 V	-1.003 to -0.997	
	0 V	-0.002 to +0.002	
	+1 V	+0.997 to +1.003	
	+2 V	+1.996 to +2.004	
6 V	-6 V	-6.008 to -5.992	
	0 V	-0.002 to +0.002	
	+6 V	+5.992 to +6.008	
20 V	-20 V	-20.04 to -19.96	
	0 V	-0.02 to +0.02	
	+20 V	+19.96 to +20.04	
50 V	-30 V	-30.06 to -29.94	±(0.1% of reading + 3 digits)
	0 V	-0.03 to +0.03	
	+30 V	+29.94 to +30.06	

Range	Temperature	Input Resistance	Tolerance	Specification
Pt100	-200°C	18.52 Ω	-200.6 to -199.4	±(0.15% of reading+0.3°C)
	0°C	l00.00 Ω	-0.3 to +0.3	
	600°C	313.71 Ω	+598.8 to +601.2	

For /N1 model

Range	Temperature	Input Resistance	Tolerance	Specification
Pt100	-200°C	18.52 Ω	-201.2 to -198.8	±(0.3% of reading+0.6°C)
	0°C	l00.00 Ω	-0.6 to +0.6	
	600°C	313.71 Ω	+597.6 to +602.4	
Cu10 (GE)	-200°C	1.326 Ω	-201.8 to -198.2	±(0.4% of reading+1.0°C)
	0°C	9.036 Ω	-1.0 to +1.0	
	300°C	20.601 Ω	+297.8 to +302.2	
Cu25	-200°C	3.750 Ω	-201.4 to -198.6	±(0.3% of reading+0.8°C)
	0°C	25.000 Ω	-0.8 to +0.8	
	300°C	56.875 Ω	+298.3 to +301.7	

Note

The error of a connected apparatus is not included in the tolerance.

2.3.3 Reference Junction Compensation Accuracy Test

Connection

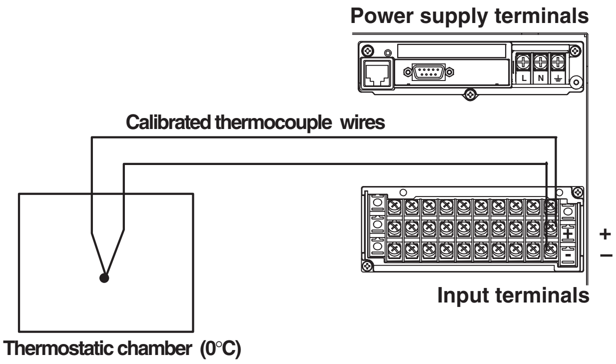


Figure 2.2 Connection diagram

Procedure

1 Connect the instruments as shown in figure 2.2.
2 Carry out the preparations as described in 2.3.1.
3 Carry out stable ambience and secure the terminal cover to avoid the influence of wind.
4 Set the input range for the desired thermocouple, and set the span to ±50°C.
5 Verify that the measured value lies within the tolerance.

Tolerance

Temperature	Thermocouple	Tolerance
0°C	K,T	± 0.5°C *

* Detremining the actual temperature measured accuracy consists of adding the RJC compensation accuracy and temperature range accuracy. In other words, the actual measured value which lying within the tolerance consists of adding this value and 0˚C measured accuracy (T and K range).
Test should be done under stable ambience with the terminal cover secured to avoid the influence of wind.

Chapter 3 Replacing Parts

This chapter describes what to do when parts need to be replaced, either for preventive maintenance or because of failure.

3.1 Replaceable Parts
3.2 When Repair is Necessary
3.3 Recommended Replacement Periods for Worn Parts
3.4 Replacing the Fuse
3.5 Replacing the Battery

3.1 Replaceable Parts

When replacement of parts is necessary, we strongly recommend replacement with an assembly unit. YOKOGAWA instruments have been designed in a way that the replacement of parts can be done on an assembly (module) basis by the user.

Parts supplied by YOKOGAWA are listed in the Customer Maintenance Parts List (CMPL), in chapter 7. Smaller parts than listed in the CMPL are not supplied. The CMPL comprises the following:
- The item number,
- The YOKOGAWA part number,
- The item quantity,
- A description.

3.2 When Repair is Necessary

When repair is necessary, clearly state the information listed below and forward it to the nearest sales representative or service center. Addresses may found on the back cover of this manual.
- Your address.
- Name and telephone number of the person in charge.
- Model code and suffix code of the instruments, which can be found on the name plate. The name plate is found on the right inside of the recorder.
- Detailed explanation of the problem, including measures taken and displayed messages.

3.3 Recommended Replacement Periods for Worn Parts

To maintain the reliability of this recorder and in order for this recorder to deliver outstanding performance for a long time, periodic replacement of worn parts is recommended. The replacement parts may change to accommodate preventive maintenance over extended time. Be sure to check with your nearest YOKOGAWA dealer.
The recommended replacement periods for worn parts are shown in the following table. The periods shown in this table assume that the recorder is operating under standard operating conditions. Please consider the actual operating conditions when determining the replacement provids for your recorder.
The replacement of the worn parts except the fuse must be conducted by qualified YOKOGAWA personnel. When required, contact your nearest Sales & Service Office; the addresses may be found on the back of this manual.

DX100

Item	Replacement	Part Name	Part Number	Specifications	Quantity Used
Fuse	2 years	FUSE	A1347EF	250 V, 1 A, time lag (except for /P1 model)	1
Fuse	2 years	FUSE	A1352EF	250 V, 4 A, time lag (for /P1 model)	1
LCD	5 years	Back light module			1
Battery	10 years	Lithium battery			1
Rubber strip	5 years	Dust and water proof rubber strip		for front panel for front cover	1 each
Floppy disk drive	5 years	–	–		1
Zip disk drive	5 years	–	–		1
PWB assembly	5 years 5 years 5 years	Power Assy* Sub Power Assy* AD Assy*			1 1 Up to models

* Replacement Period at the Upper Limit of the Normal Operating Temperature (50°C)
The replacement period varies depending on the temperature in which the instrument is operated, and the instrument's specifications. If the instrument is used in a 30°C environment, it may be operational for 10 years or more.

DX200

Item	Replacement	Part Name	Part Number	Specifications	Quantity Used
Fuse	2 years	FUSE	A1423EF	250 V, 1.25 A, time lag (except for /P1 model)	1
Fuse	2 years	FUSE	A1463EF	250 V, 6.3 A, time lag (for /P1 model)	1
LCD	5 years	Back light module			1
Battery	10 years	Lithium battery			1
Rubber strip	5 years	Dust and water proof rubber strip		for front panel for front cover	1 each
Floppy disk drive	5 years	–	–		1
Zip disk drive	5 years	–	–		1
PWB assembly	5 years 5 years 5 years	Power Assy* Sub Power Assy* AD Assy*			1 1 Up to models

* Replacement Period at the Upper Limit of the Normal Operating Temperature (50°C)
The replacement period varies depending on the temperature in which the instrument is operated, and the instrument's specifications. If the instrument is used in a 30°C environment, it may be operational for 10 years or more.

Note

- The LCD replacement period indicates the half life of the brightness when the brightness is set to the factory default setting. The half life is shortened as the brightness is set higher. The deterioration of brightness varies depending on the condition of use, and its determination is subjective. Consider these facts for determining the actual replacement period.
- The color of the LCD may become yellowish as time elapses. The discoloration tends to progress faster as the brightness is set higher.

3.4 Replacing the Fuse

Replace the fuse at least once every two years for preventive maintenance.

DX100

WARNING

- For safety reasons, make sure to turn OFF the power switch and disconnect the recorder from the main power supply before replacing the fuse.
- To prevent the possibility of fire, use only the specified fuse purchased from YOKOGAWA.
- Never short circuit the fuse holder to bypass the use of a fuse.
- To avoid the possibility of electric shock, open the front panel only when replacing the fuse.
- Do not touch the rear side of the front panel when replacing the fuse, because it can become hot.
- Make sure not to damage the cable while replacing the fuse.

Follow the procedures below to replace the fuse.

1. Turn OFF the power switch.
2. Disconnect the recorder from the main power supply.
3. Open the cover and remove the two screws.
4. Pull the front panel slightly toward you and lift it.
5. While pushing in the fuse carrier located to the right of the power switch, turn it counter-clockwise approximately 45 degrees. The carrier and the fuse will slide out.
6. Replace with a new fuse, insert the carrier in the fuse holder, and turn it clockwise while pushing in the carrier to fix it in place.
7. Lift the front panel slightly, and attach it to the top and then the bottom of the rubber packing. Secure the front panel with screws.

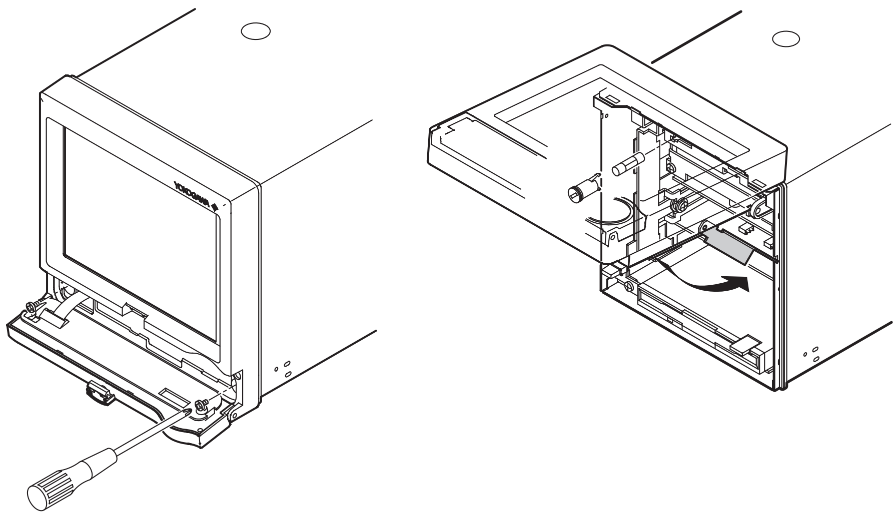


Figure 3.1 Fuse illustration (DX100)

Note

For recorders which are mounted vertically side-by-side, the front panels will interferes with those of the instrument above it such that they cannot be opened. Therefore you must first open the top front panel and then the ones directly below it, one by one. For the same reason, when closing front panels, first close the bottom front panel and then the ones above it.

DX200

WARNING

- For safety reasons, make sure to turn OFF the power switch and disconnect the recorder from the main power supply before replacing the fuse.
- To prevent the possibility of fire, use only the specified fuse purchased from YOKOGAWA.
- Never short circuit the fuse holder to bypass the use of a fuse.

Follow the procedures below to replace the fuse.

1. Turn OFF the power switch.
2. Disconnect the recorder from the main power supply.
3. While pushing in the fuse carrier located to the right of the power switch, turn it counter-clockwise approximately 45 degrees. The carrier and the fuse will slide out.

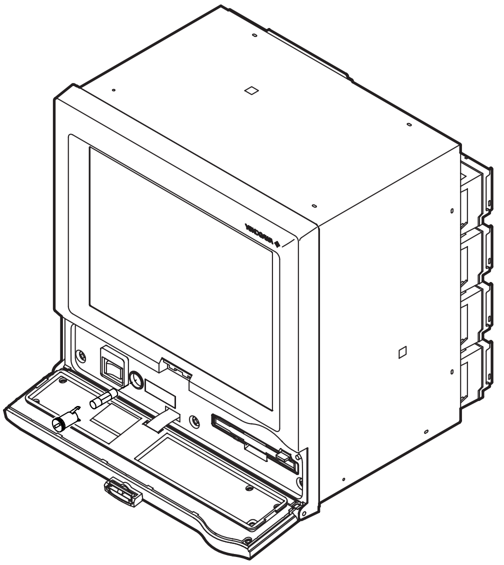


Figure 3.2 Fuse illustration (DX200)

4. Replace with a new fuse, insert the carrier to the fuse holder, and turn it clockwise while pushing in the carrier to fix it in place.

3.5 Replacing the Battery

This battery will last for ten years under normal operating conditions. For replacement, please contact your nearest sales and service office; addresses may be found on the back cover of this manual.

To avoid injury, do not replace the lithium battery yourself or disassemble this recorder to attempt the replacement.

Chapter 4 Adjustments

This chapter describes how to adjust the DAQSTATION DX100/DX200.
Adjustment is required when the performance test results in an excessive tolerance error, or after replacing the AD board assembly. In addition, adjustments are recommended once a year to maintain high accuracy.

This chapter consists of the following sections.

4.1 Before You Begin
4.2 AD Board Offset and Gain Adjustment

4.1 Before You Begin

Adjustment Conditions

When carrying out the adjustments described below, make sure the recorder's environment meets the following conditions.

Ambient temperature:	23 ± 5°C
Humidity:	35 to 75% RH
Power supply voltage:	rated voltage ± (rated voltage x 5%)

Preparation

Perform the following steps before carrying out the adjustments.

1 Turn on the power supply and verify that the unit under adjustment passes the self-diagnostic tests without any problems.
2 Allow a warm-up time of at least 30 minutes for the required instruments and the unit under adjustment.

Required Instruments

Instrument	Required Specifications	Recommended
DC voltage standard	Accuracy: ±50ppm of setting Resolution: 10 μV	FLUKE 5520A
Decade resistance box	Accuracy: ±0.01%	YOKOGAWA 2793
Personal computer	With ETHERNET or RS-232 or RS-422A/485 interface (depends on your system)	

4.2 AD Board Offset and Gain Adjustment

An EEPROM for saving calibrated values is located on every AD board, so you must perform adjustments on each board.

4.2.1 Manual Adjustment

Connection

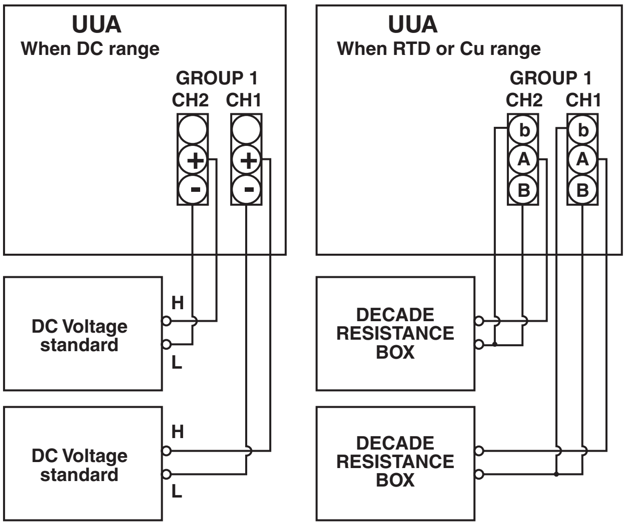


Figure 4.1 Connection diagram.

The AD board may be shared by a number of channels. Connect the object channels to the AD board you want to adjust using the table below as a reference.

Model	A/D No. 1		A/D No. 2		A/D No. 3		A/D No. 4	
	Zero	FS	Zero	FS	Zero	FS	Zero	FS
DX102	CH1	CH2	-	-	-	-	-	-
DX104	CH1	CH2	CH3	CH4	-	-	-	-
DX106	CH1	CH2	-	-	-	-	-	-
DX112	CH1	CH2	-	-	-	-	-	-
DX204	CH1	CH2	CH3	CH4	-	-	-	-
DX208	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
DX210	CH1	CH2	-	-	-	-	-	-
DX220	CH1	CH2	CH11	CH12	-	-	-	-
DX230	CH1	CH2	CH11	CH12	CH21	CH22	-	-

Procedure

1 Connect the equipment according to figure 4.1.

2 Turn on the power while pushing the ↑ key and **DISP/ENTER** key on the UUA (unit under adjustment) to activate the adjustment mode. The Calibration Mode screen will appear in the display.
Select the A/D number that you wish to adjust and press **ENTER**.

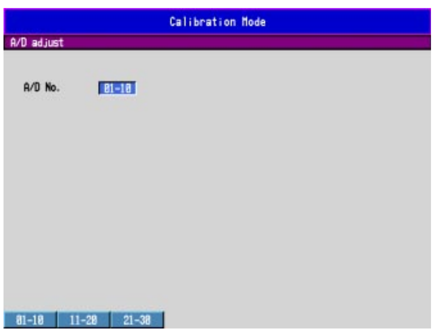


Figure 4.2 A/D No. selecting screen.

3 After step 2, the screen in figure 4.3 will appear.
Select item #2 for **Cal/Exec**.

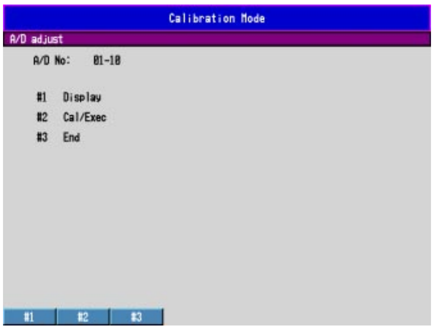


Figure 4.3 Task item select on screen.

4 The screen in figure 4.4 appears.
Select the adjusting range then press **ENTER**.

DX100 DX200

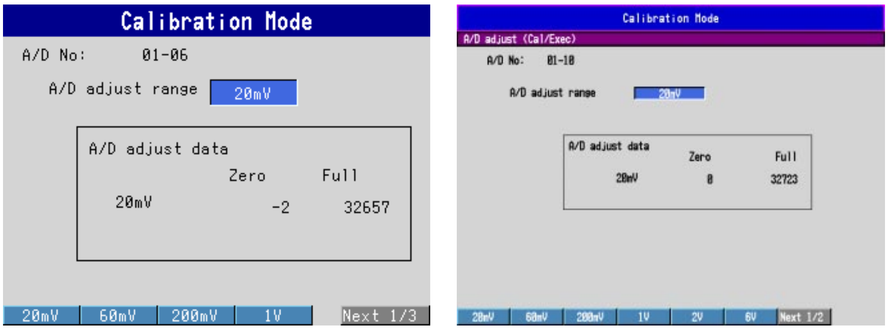


Figure 4.4 Range select on screen.

5 Apply DC voltage or resistance to the input of the selected A/D number on the DX using a voltage standard or decade resistance box.

6 The value is adopted by pressing the **ENTER** key when the calibration value stabilizes.

7 Repeat steps 4 to 6 for all ranges according to table below.

Range	Input at zero point	Input at FS point
20 mV	0 mV	20 mV
60 mV	0 mV	60 mV
200 mV	0 mV	200 mV
1 V	0 V	1 V
2 V	0 V	2 V
6 V	0 V	6 V
20 V	0 V	20 V
Pt100	100 Ω	300 Ω
Pt100*	10 Ω	300 Ω
Cu10*	10 Ω	50 Ω
Cu25*	10 Ω	50 Ω

*: When option /N1 is installed

8 If all ranges are set, push the **ESC** key. The screen returns to figure 4.3.
Select item #3 to end the task.

9 The dialog box in figure 4.5 appears.
Select **Yes** to save the calibrated value to the EEPROM. The screen will return to figure 4.2.

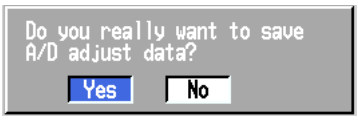


Figure 4.5 calibration value saving screen.

10 Repeat steps 3 to 9 for all A/D number's.

11 If adjustment was successful turn the power to the UUA off.

When you select task #1, *Display* in figure 4.3, the screen below (figure 4.6) will appears. Confirm the calibration value of each range (decimal value = 215: shows converted 15 bits data.)

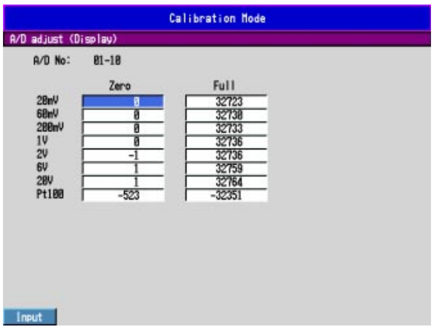


Figure 4.6 Calibration value confirmation screen.

1 When confirmation is finished, press **ESC** to return to the screen in figure 4.3.
Select item #3 to end the task.

2 After step 1, the dialog box in figure 4.5 will appear.
Select **No** for normal operation.

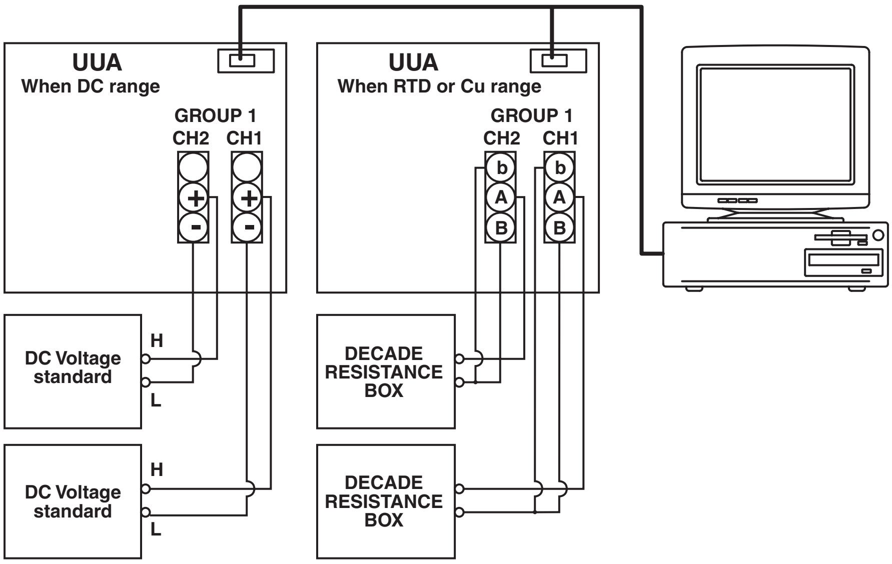
CAUTION

Do not change the displayed value, as it influences the measured value.

4.2.2 PC Controlled Adjustment

You can also adjust the DX using a PC.

Connection



Commands

The commands below are used for adjustment.

Command contents	Syntax	Parameters				
		P1	P2	P3	P4	P5
Change mode	DSp1 (Ex) DS2	Mode*1				
Adjustment executing	XZp1,p2,p3 (Ex) XZ01-02,CAL/EXEC,20mV	Group*2	CAL/ EXEC	Range*3		
Calibration value saving	XZp1,p2,p3 (Ex) XZ01-02,END,STORE	Group*2	END	Way*4		
Calibration value confirmation	XZp1,p2? (Ex) XZ01-02,DISPLAY? or XZp1,p2,p3? (Ex) XZ01-02,DISPLAY,20mV?	Group*2	DISPLAY	Range*3		
Calibration value editing	XZp1,p2,p3,o4,p5 (Ex) XZ01-02,DISPLAY,Pt100,0,-32768	Group*2	DISPLAY	Range*3	Zero calibrated value	FS calibrated value

*1: 0= Change to normal operation, 1= Change to setup mode, 2= Change to adjustment mode
*2: 01-02, 03-04, 05-06, 07-08, 01-06, 01-10, 11-20, or 21-30.
*3: 20mV, 60mV, 200mV, 1V, 2V, 6V, 20V, Pt100, Cu10, or Cu25
*4: STORE (: saved), ABORT (: don't saved)

4

ADJUSTMENTS

Chapter 5 Troubleshooting

This chapter explains the causes of problems and how to identify faulty assemblies through self diagnosis and troubleshooting.

5.1 Procedure

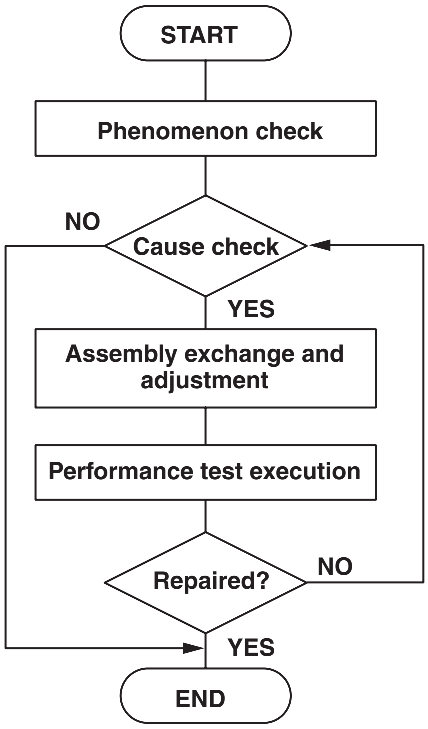
1 Determine the type of problem.
2 Check for possible user error. Check the connections and the settings of equipment to determine whether there was a handling mistake.
3 Execute the self diagnostic test by turning the power ON, and identfy any problem items.
4 Analyze the cause of the problem according to the troubleshooting flow chart.

Do not touch the circuit or parts with live voltage because the power unit contains a high-voltage electrical circuit. The power unit is furnished with a dedicated cover to prevent electric shock. Do not remove this cover. Never touch any part not subject to adjustment.

Make sure to connect input terminals (voltage or current) correctly. The internal circuit may be damaged when wrongly connected.

5.2 Flow Chart

This flow chart consists of general service operations when a fault occurs. This chart is not always suitable for every kind of fault. However, it is recommended to perform operations according to the flow chart.

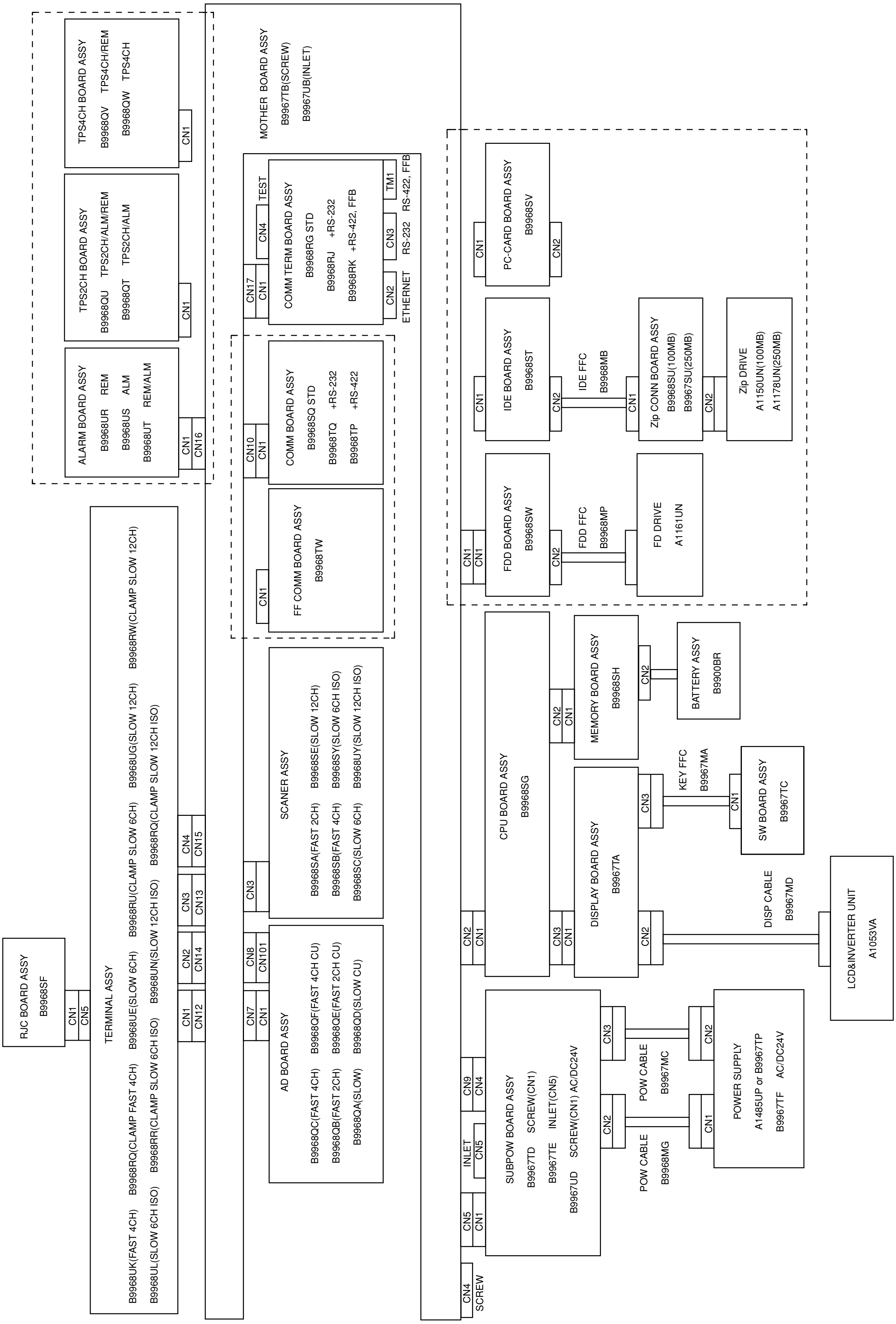


5.3 Troubleshooting Checklist

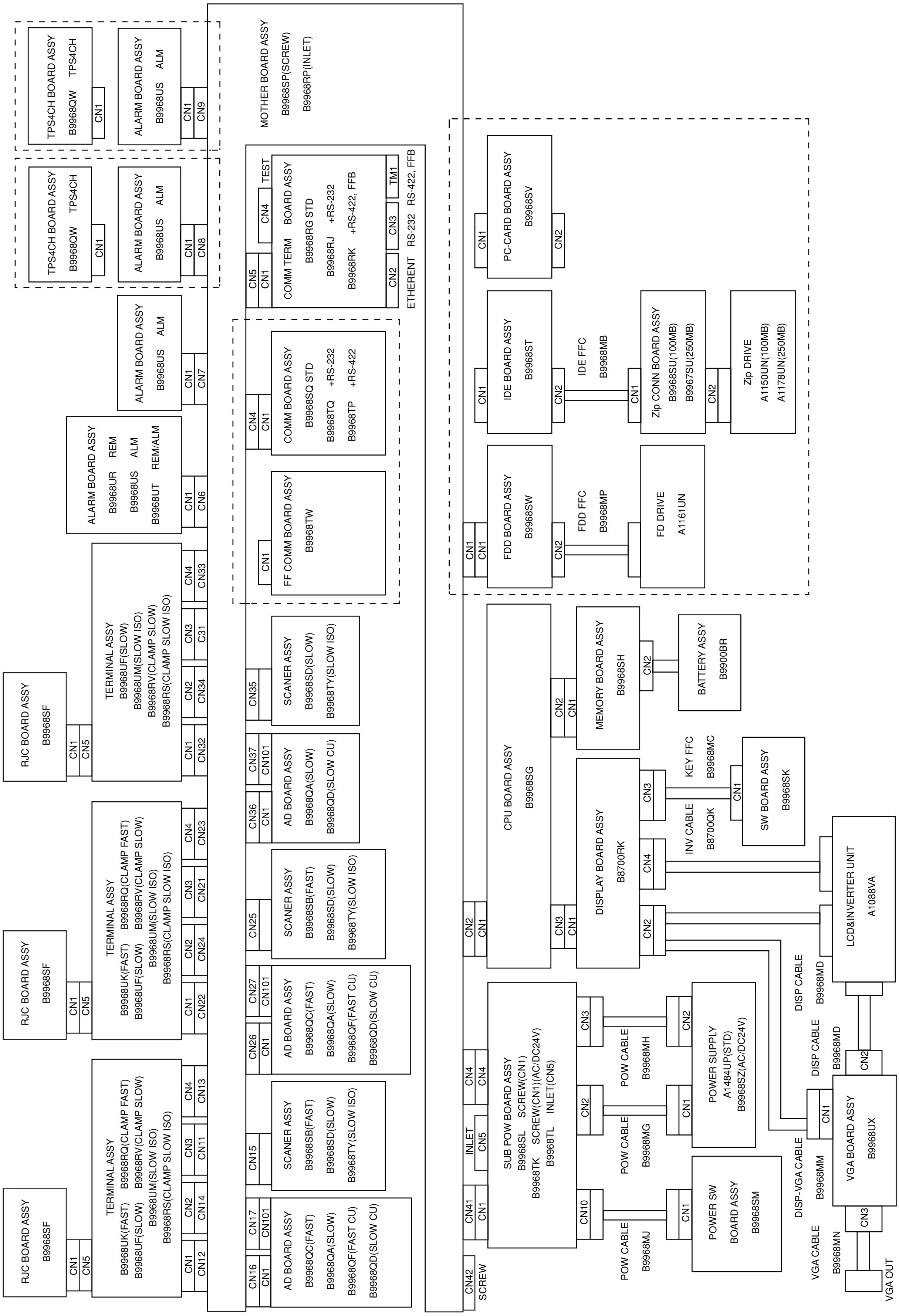
Trouble	Operational			Check Item
	Check	Adjust	Exchange	
Power is not turned ON	✓			Power cable connection
	✓		✓	Fuse is blown
			✓	Power ass'y
			✓	CPU ass'y
			✓	Memory ass'y
			✓	Display ass'y
FAIL state			✓	CPU ass'y
			✓	Memory ass'y
			✓	Display ass'y
			✓	Optional terminal ass'y
Memory cannot be backed up	✓			Battery connector is disconnected?
	✓			Battery voltage is low (less than +3.0V)
			✓	CPU ass'y
			✓	Memory ass'y
			✓	Display ass'y
Panel key operation is not nomlal	✓			FFC ass'y of the keyboard is disconnected/broken
			✓	Keyboard ass'y
			✓	CPU ass'y
			✓	Memory ass'y
			✓	Display ass'y
LCD is not normal	✓			FFC ass'y of the LCD is disconnected/ broken
			✓	CPU ass'y
			✓	Memory ass'y
			✓	Display ass'y
			✓	LCD ass'y
Measured value incorrect	✓			Input wiring is disconnected
	✓			Noise
		✓	✓	A/D ass'y
			✓	Scanner ass'y
Measured temperature is incorrect	✓			Input is disconnected
	✓			Noise
	✓			Terminal cover is removed
	✓			RJC INT/EX T setting
		✓	✓	A/D board ass'y
			✓	Input terminal
			✓	Scanner board ass'y
Measured value fluctuates	✓			Power frequency setting is incorrect
	✓			Noise
External storage media is not normal	✓		✓	Floppy disk/Zip disk/PC card drive unit

Chapter 6 Schematic Diagram

DX100



DX200

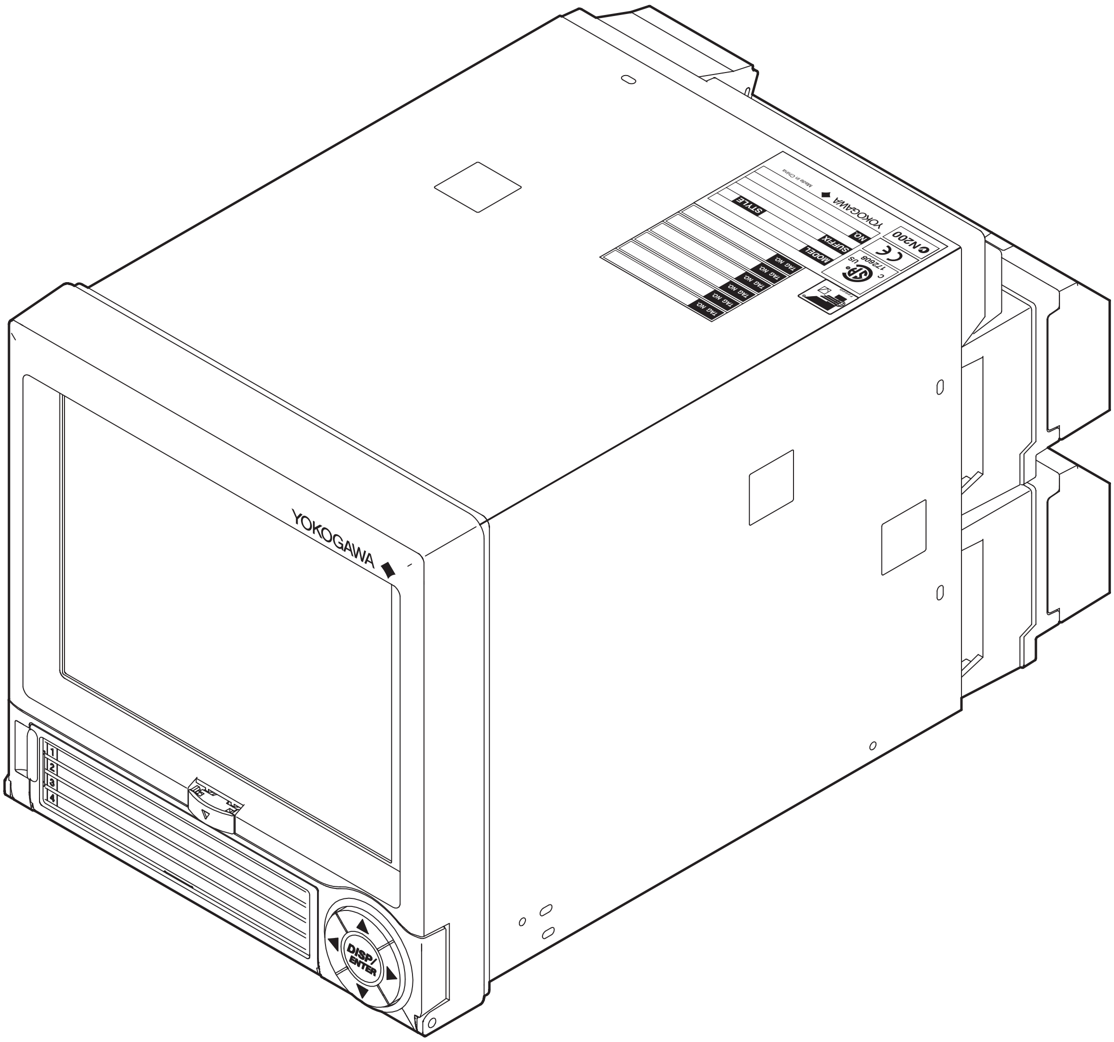


MOTHER BOARD ASSY
B9968SP(SCREW)
B9968RP(INLET)
TPS4CH BOARD ASSY
B9968QW TPS4CH
ALARM BOARD ASSY
B9968US ALM
ALARM BOARD ASSY
B9968UR REM
B9968US ALM
B9968UT REM/ALM
RJC BOARD ASSY
B9968SF
TERMINAL ASSY
B9968UF(SLOW)
B9968UM(SLOW ISO)
B9968RV(CLAMP SLOW)
B9968RS(CLAMP SLOW ISO)
TERMINAL ASSY
B9968UK(FAST) B9968RQ(CLAMP FAST)
B9968UF(SLOW) B9968RV(CLAMP SLOW)
B9968UM(SLOW ISO)
B9968RS(CLAMP SLOW ISO)
COMM TERM BOARD ASSY
B9968RG STD
B9968RJ +RS-232
B9968RK +RS-422, FFB
TEST
ETHERENT RS-232 RS-422, FFB
COMM BOARD ASSY
B9968SQ STD
B9968TQ +RS-232
B9968TP +RS-422
FF COMM BOARD ASSY
B9968TW
SCANER ASSY
B9968SD(SLOW)
B9968TY(SLOW ISO)
AD BOARD ASSY
B9968QA(SLOW)
B9968QD(SLOW CU)
SCANER ASSY
B9968SB(FAST)
B9968SD(SLOW)
B9968TY(SLOW ISO)
AD BOARD ASSY
B9968QC(FAST)
B9968QA(SLOW)
B9968QF(FAST CU)
B9968QD(SLOW CU)
PC-CARD BOARD ASSY
B9968SV
IDE BOARD ASSY
B9968ST
IDE FFC
B9968MB
Zip CONN BOARD ASSY
B9968SU(100MB)
B9967SU(250MB)
Zip DRIVE
A1150UN(100MB)
A1178UN(250MB)
FDD BOARD ASSY
B9968SW
FDD FFC
B9968MP
FD DRIVE
A1161UN
CPU BOARD ASSY
B9968SG
MEMORY BOARD ASSY
B9968SH
BATTERY ASSY
B9900BR
DISPLAY BOARD ASSY
B8700RK
KEY FFC
B9968MC
SW BOARD ASSY
B9968SK
INV CABLE
B8700QK
LCD&INVERTER UNIT
A1088VA
DISP CABLE
B9968MD
SUB POW BOARD ASSY
B9968SL SCREW(CN1)
B9968TK SCREW(CN1)(AC/DC24V)
B9968TL INLET(CN5)
POW CABLE
B9968MH
POW CABLE
B9968MG
POWER SUPPLY
A1484UP(STD)
B9968SZ(AC/DC24V)
POW CABLE
B9968MJ
POWER SW BOARD ASSY
B9968SM
DISP-VGA CABLE
B9968MM
VGA BOARD ASSY
B9968UX
VGA CABLE
B9968MN
VGA OUT
INLET
SCREW

Chapter 7 Customer Maintenance Parts List

7.1 DX100 Customer Maintenance Parts List
7.2 DX100 Standard Accessories
7.3 DX200 Customer Maintenance Parts List
7.4 DX200 Standard Accessories

7.1 DX100 Customer Maintenance Parts List

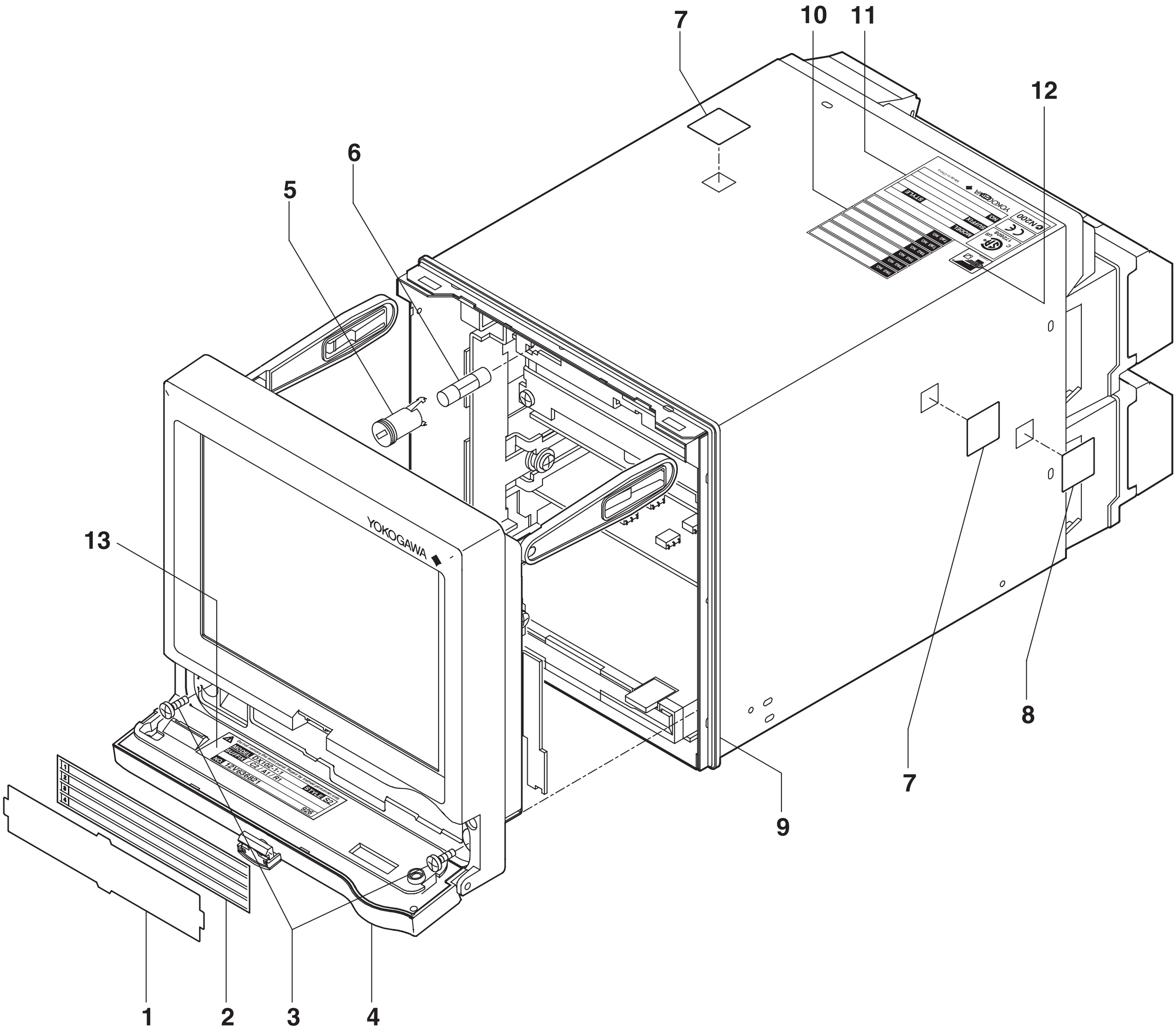


Note:
- **Parts marked with a ◎symbol are Customer Maintenance Parts (CMP).**
- **The contents of this CMPL are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions.**

YOKOGAWA
Yokogawa Electric Corporation

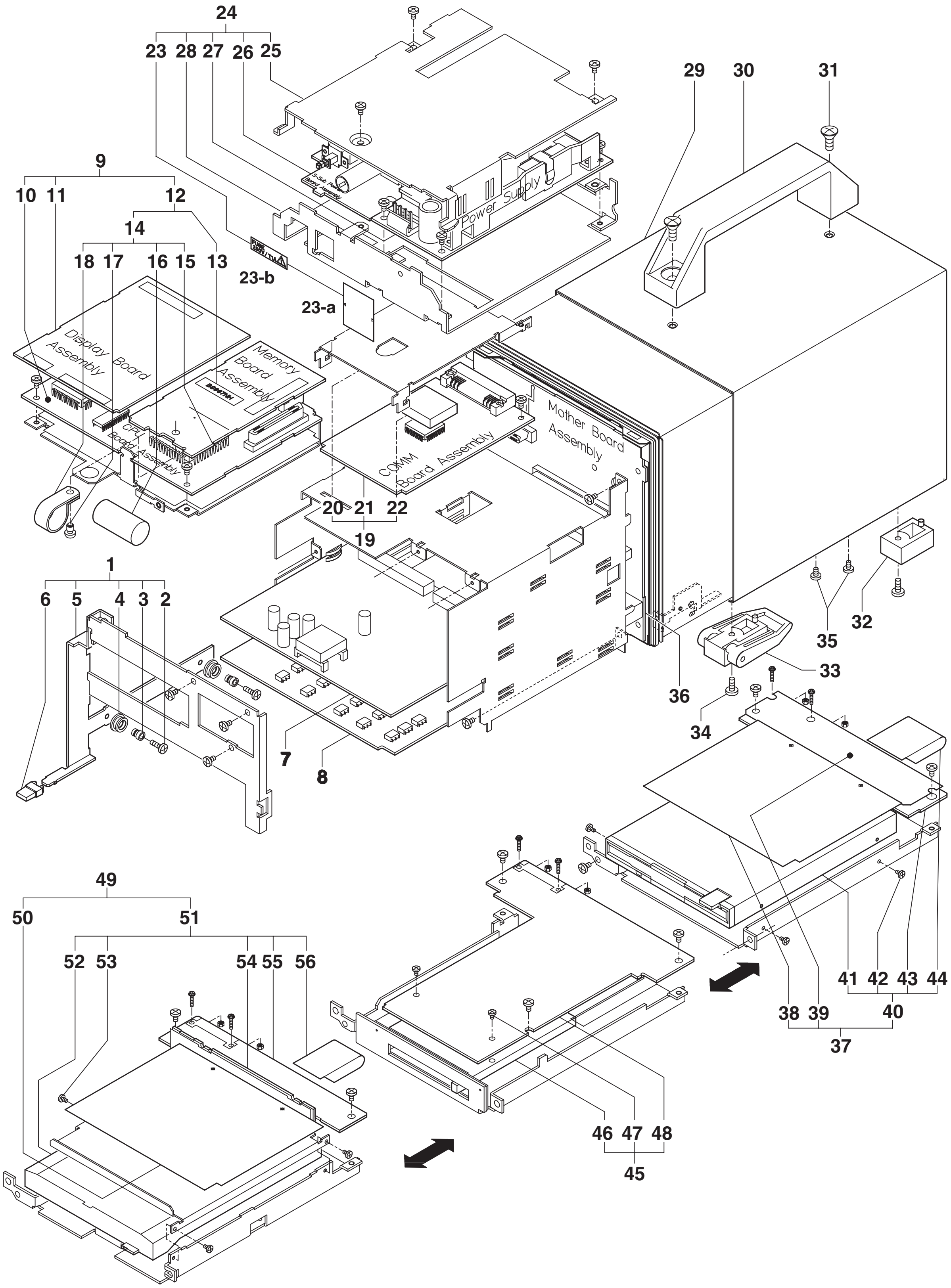
CMPL DX100-01E

Complete Set



Item	Part No.	Qty	Description
◎ 1	B9967AM	1	Tag Cover
◎ 2	B9967AN	1	Tag Plate (DX102,104) } (select)
	B9967AP	1	Tag Plate (DX106,112) } (select)
◎ 3	Y9308LB	2	B.H.Screw,M3x8
4	B9967BA	1	Bezel Assembly (see page 5)
5	-	1	Fuse Holder
◎ 6	A1347EF	1	Fuse (not /P1) } (select)
	A1352EF	1	Fuse (/P1) } (select)
◎ 7	B9968AT	4	Sheet (not /H5□)
◎ 8	B9968AK	2	Sheet (not /H5□)
9	B9967AX	1	Packing
10	B9900BP	–	Tag Plate (Customer Option)
11	B9967AZ	1	Name Plate
12	F9342NF	1	FF Label (/CF1)
13	B9967AC	1	Name Plate

Note:
◎ CMPL parts



24
23 28 27 26 25
29 30 31
9
10 11 12
14
18 17 16 15 13
23-b
23-a
Display Board Assembly
Memory Board Assembly
CPU Board Assembly
Power Supply
COMM Board Assembly
Mother Board Assembly
20 21 22
19
1
6 5 4 3 2
7
8
32
35
33
36
34
49
50 51
52 53 54 55 56
41 42 43 44
38 39 40
37
46 47 48
45

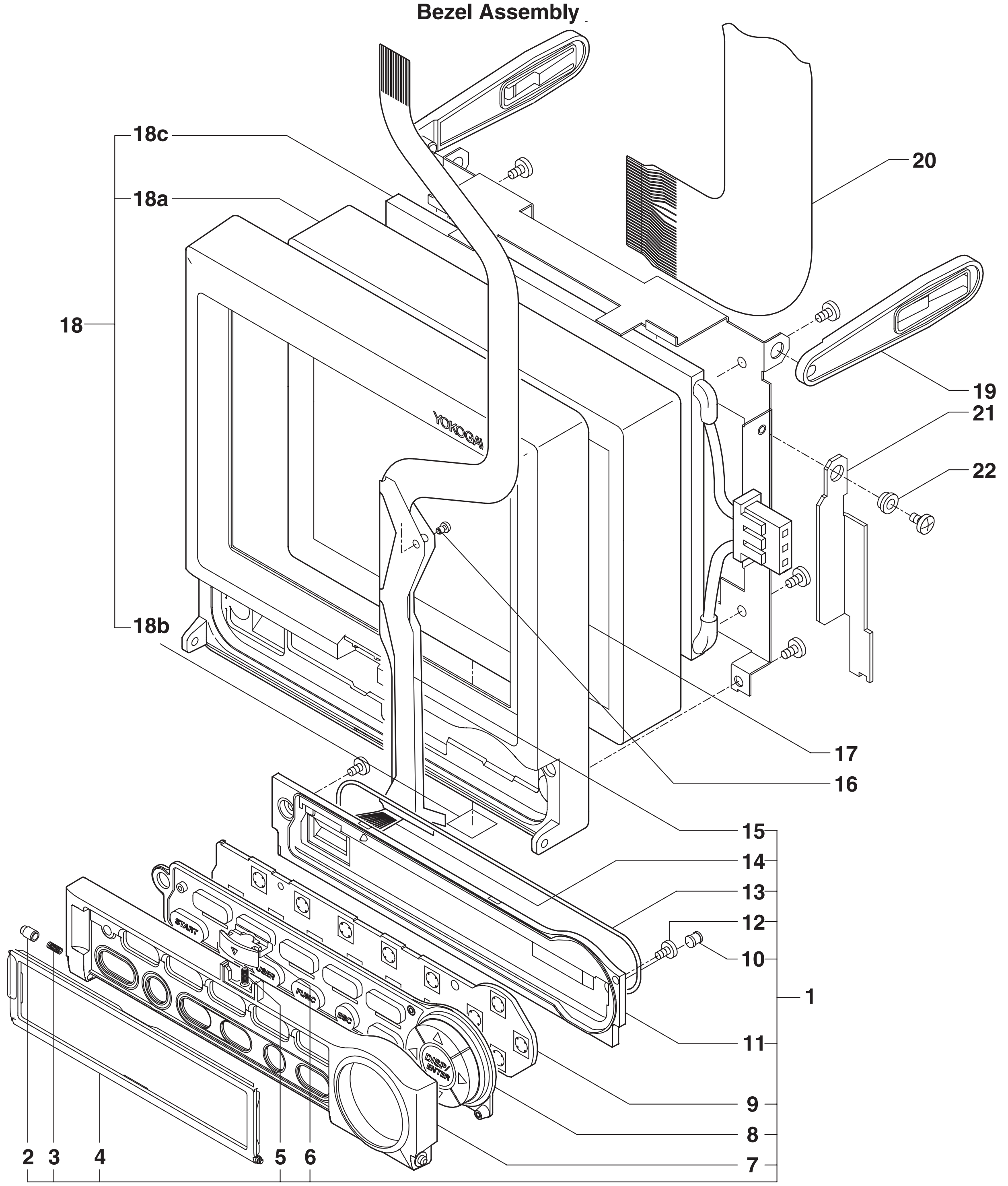
7
CUSTOMER MAINTENANCE PARTS LIST

Item	Part No.	Qty	Description	
1	B9967CS	1	SW Lever Assembly	
2	Y9308LB	2	B.H.Screw,M3x8	
3	B9960MX	2	Stud	
4	B9905CF	2	Roller	
5	B9967CT	1	SW Lever	
6	B9967BQ	1	Knob	
7	B9968QB	1	Fast AD(PT) Assembly (DX102 not /N1)	(select)
	B9968QC	1	Fast 2AD(PT) Assembly (DX104 not /N1)	
	B9968QA	1	Slow AD(PT) Assembly (DX106,112 not /N1)	
	B9968QE	1	Fast AD(CU) Assembly (DX102 /N1)	
	B9968QF	1	Fast 2AD(CU) Assembly (DX104 /N1)	
	B9968QD	1	Slow AD(CU) Assembly (DX106,112 /N1)	
8	B9968SA	1	2ch Scanner Assembly (DX102)	(select)
	B9968SB	1	4ch Scanner Assembly (DX104)	
	B9968SC	1	6ch Scanner Assembly (DX106 not /N1 /N2)	
	B9968SY	1	6ch Scanner Assembly (ISO)(DX106 /N1 /N2)	
	B9968SE	1	12ch Scanner Assembly (DX112 not /N1 /N2)	
	B9968UY	1	12ch Scanner Assembly (ISO)(DX112 /N1 /N2)	
9	B9967DF	1	CPU Board Assembly	
10	B9968SG	1	CPU Board Assembly	
11	B9967TA	1	Display Board Assembly	
12	B9967NH	1	Memory Assembly	
13	B9967AL	1	Name Plate	
14	-	1	Memory Board & Battery Assembly	
15	-	1	Memory Board Assembly	
16	B9900BR	1	Battery Assembly	
17	B9968EM	1	Rivet	
18	A9069KY	1	Clamp	
19	B9967DA	1	COMM Board Assembly (/C2)	(select)
	B9967DB	1	COMM Board Assembly (/C3)	
	B9967DD	1	COMM Board Assembly (not /C2, /C3, /CF1)	
	B9967DT	1	COMM Board Assembly (/CF1)	
20	B9967DC	1	COMM Board Bracket (not /CF1)	(select)
	B9967DU	1	FF COMM Board Bracket (/CF1)	
21	B9968TQ	1	COMM Board Assembly (/C2)	(select)
	B9968TP	1	COMM Board Assembly (/C3)	
	B9968SQ	1	COMM Board Assembly (not /C2, /C3, /CF1)	
	B9967TW	1	COMM Board Assembly (/CF1)	
22	B9968CZ	1	Gel Sheet (not /C3)	(select)
	B9968CZ	2	Gel Sheet (/C3)	
23-a	B9967AK	1	Name Plate	
23-b	B9967AD	1	Name Plate (not /P1)	(select)
	B9967DY	1	Name Plate (/P1)	
24	B9967CU	1	S-Power Assembly (not /H5□, /P1)	(select)
	B9967CV	1	I-Power Assembly (/H5□ and not /P1)	
	B9967DV	1	24V-Power Assembly (/P1)	
25	B9967CW	1	Power Bracket Cover (not /P1)	(select)
	B9967DW	1	Power Bracket Cover (/P1)	
26	B9967TD	1	S-Sub Pow Board Assembly (not /H5□ ,/P1)	(select)
	B9967TE	1	I-Sub Pow Board Assembly (/H5□ and not /P1)	
	B9967UD	1	S-Sub Pow Board Assembly (DC24) (/P1)	
27	B9967TP	1	Power Supply (not /P1)	(select)
	B9967TF	1	DC Power Board Assembly (/P1)	
28	B9967CL	1	Power Bracket Base	
29	B9967DP	1	Case Assembly (/H5□)	
◎ 30	B9961BQ	1	Handle (/H5□)	
◎ 31	Y9412ES	2	F.H.Screw,M4x12 (/H5□)	
◎ 32	B9961BS	2	Foot (/H5□)	
◎ 33	B9961BR	2	Foot (/H5□)	
◎ 34	Y9306LS	4	B.H.Screw,M3x6 (/H5□)	
35	Y9304LB	2	B.H.Screw,M3x4	
36	B9967TB	1	Mother Board Assembly	
37	B9967GB	1	FDD Drive Assembly (DX1□□-1)	
38	B9967DM	1	Sheet	
39	B9967DN	1	Sheet	
40	B9968HG	1	FDD Drive Assembly	
41	A1161UN	1	Memory System	
42	B8703BZ	3	Screw	
43	B9968SW	1	FDD Board Assembly	
44	B9968MP	1	FDD FFC	
45	B9968GL	1	ATA Drive Assembly (DX1□□-3)	
46	A1492JS	1	Socket	
47	Y9208LB	2	Screw	
48	B9968SV	1	PC-Card Assembly	
49	B9967GD	1	Zip Drive Assembly (DX1□□-2)	(select)
	B9967GE	1	Zip Drive Assembly (DX1□□-5)	
50	B9967DM	1	Sheet	
51	B9968GD	1	Zip Drive Assembly (DX1□□-2)	(select)
	B9968HH	1	Zip Drive Assembly (DX1□□-5)	
52	A1150UN	1	Memory System (DX1□□-2)	(select)
	A1178UN	1	Memory System (DX1□□-5)	
53	Y9203LB	3	Screw (DX1□□-2)	(select)
	Y9203LB	6	Screw (DX1□□-5)	
54	B9968SU	1	Zip Conn Board Assembly (DX1□□-2)	(select)
	B9967SU	1	Zip Conn Board Assembly (DX1□□-5)	
55	B9968ST	1	IDE Board Assembly	
56	B9968MB	1	IDE FFC	

Note:

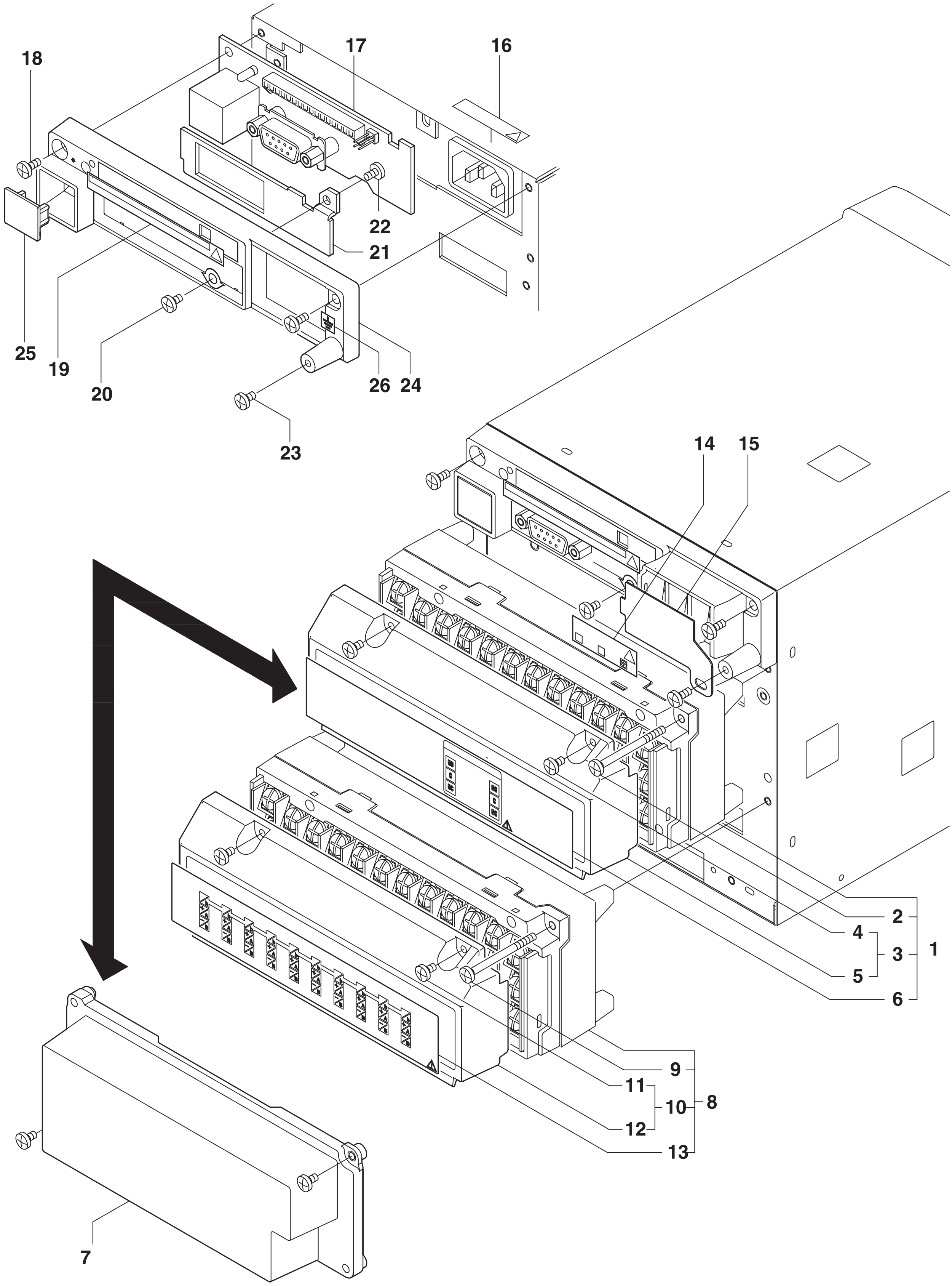
◎ CMPL Parts

Bezel Assembly



Item	Part No.	Qty	Description
1	B9967BH	1	Key Case Assembly
2	B9967BN	1	Hinge Pin
3	B9567AQ	1	Spring
4	B9967BP	1	Front Plate
5	E9655AL	1	Spring
6	B9967BM	1	Door Knob
7	B9967BJ	1	Front Cover
8	B9967BL	1	Key Top
9	B9967TC	1	SW Board Assembly
10	B9967BZ	1	Micro SW Pin
11	B9967BK	1	Front Case

Item	Part No.	Qty	Description
12	B9967BU	2	Screw
13	B9967AY	1	Packing
14	B9967MA	1	Key FPC
15	B9967BT	1	FPC Guard
16	B9967BX	1	Rivet
17	B9967BB	1	Sub Bezel Assembly
18	B9967BF	1	LCD Assembly
18a	A1053VA	1	LCD
18b	B9967AQ	1	Name Plate
18c	A1039VZ	1	Back Light Module
19	B9968BM	2	Hinge Arm
20	B9967MB	1	Display FFC
21	B9967BY	1	Stay Bracket
22	B9968EN	1	Bushing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Item	Part No.	Qty	Description	
1	B9968KA	1	Option Terminal Assembly*1	
	B9968KB	1	Option Terminal Assembly*8,*14	
	B9968KC	1	Option Terminal Assembly*2	
	B9968KD	1	Option Terminal Assembly*9,*15	
	B9968KE	1	Option Terminal Assembly*3	
	B9968KJ	1	Option Terminal Assembly*10	
	B9968KK	1	Option Terminal Assembly*7	
	B9968KL	1	Option Terminal Assembly*5	
	B9968KM	1	Option Terminal Assembly*12,*16	
	B9968KN	1	Option Terminal Assembly*6	(select)
	B9968KP	1	Option Terminal Assembly*13,*17	
	B9968KQ	1	Option Terminal Assembly*4	
	B9968KR	1	Option Terminal Assembly*11	
	B9968KT	1	Option Terminal Assembly*19	
	B9968KU	1	Option Terminal Assembly*20,*24	
	B9968KV	1	Option Terminal Assembly*23	
	B9968KW	1	Option Terminal Assembly*22	
	B9968KX	1	Option Terminal Assembly*18	
	B9968KY	1	Option Terminal Assembly*21	
7	B9968DN	1	Conn Cover Assembly	
2	B9968DJ	2	Screw	
◎ 3	B9968DF	1	Cover Assembly	
4	B9900SG	2	Screw	
5	B9968DG	1	Cover	
◎ 6	B9968EW	1	Name Plate*1	
	B9968EX	1	Name Plate*8,*14	
	B9968EY	1	Name Plate*2	
	B9968EZ	1	Name Plate*9,*15	
	B9968FA	1	Name Plate*3	
	B9968FE	1	Name Plate*10	
	B9968FF	1	Name Plate*7	
	B9968FH	1	Name Plate*5	
	B9968FJ	1	Name Plate*12,*16	
	B9968FK	1	Name Plate*6	(select)
	B9968FL	1	Name Plate*13,*17	
	B9968FM	1	Name Plate*4	
	B9968FN	1	Name Plate*11	
	B9967FM	1	Name Plate*19	
	B9967FL	1	Name Plate*20,*24	
	B9967FN	1	Name Plate*23	
	B9968FP	1	Name Plate*22	
	B9967FK	1	Name Plate*18	
	B9967FJ	1	Name Plate*21	
8	B9968LL	1	Input Terminal Assembly (DX102 not /H2)	
	B9968LJ	1	Input Terminal Assembly (DX104 not /H2)	
	B9968LD	1	Input Terminal Assembly (DX106 not/H2/N1/N2)	
	B9968LM	1	Input Terminal Assembly (DX106 /N1/N2 not /H2)	
	B9968LH	1	Input Terminal Assembly (DX112 not/H2/N1/N2)	
	B9968LR	1	Input Terminal Assembly (DX112 /N1/N2 not /H2)	(select)
	B9968LS	1	Input Terminal Assembly (DX102 /H2)	
	B9968LT	1	Input Terminal Assembly (DX104 /H2)	
	B9968LU	1	Input Terminal Assembly (DX106 /H2 and not /N1/N2)	
	B9968LV	1	Input Terminal Assembly (DX106 /H2 and /N1/N2)	
	B9968LW	1	Input Terminal Assembly (DX112 /H2 and not/N1/N2)	
	B9968LX	1	Input Terminal Assembly (DX112 /H2 and /N1/N2)	
9	B9968DJ	2	Screw	
◎ 10	B9968DF	1	Cover Assembly	
11	B9900SG	2	Screw	
12	B9968DG	1	Cover	

Item	Part No.	Qty	Description	
◎ 13	B9967FD	1	Name Plate (DX102 not /H2)	
	B9968FV	1	Name Plate (DX104 not /H2)	
	B9967FA	1	Name Plate (DX106 not /H2/N1/N2)	
	B9967FE	1	Name Plate (DX106 /N1/N2 not /H2)	
	B9967FB	1	Name Plate (DX112 not /H2/N1/N2)	
	B9967FF	1	Name Plate (DX112 /N1/N2 not /H2)	(select)
	B9968JH	1	Name Plate (DX102 /H2)	
	B9968JJ	1	Name Plate (DX104 /H2)	
	B9968JL	1	Name Plate (DX106 /H2 and not /N1/N2)	
	B9968JM	1	Name Plate (DX106 /H2 and /N1/N2)	
	B9968JN	1	Name Plate (DX112 /H2 and not /N1/N2)	
	B9968JP	1	Name Plate (DX112 /H2 and /N1/N2)	
14	B9967AE	1	Name Plate (not /H5□ /P1)	(select)
	B9967DZ	1	Name Plate (/P1)	
15	B9968EG	1	Power Plate (not /H5□)	
16	B9967AF	1	Name Plate (/H5□ and not /P1)	
17	B9968RJ	1	COMM Term Board Assembly (/C2)	
	B9968RK	1	COMM Term Board Assembly (/C3,/CF1)	(select)
	B9968RG	1	COMM Term Board Assembly (not/C2,/C3,/CF1)	
18	Y9308LB	2	B.H.Screw,M3x8	
19	B9968AJ	1	Sheet (not /C2,/C3,/CF1)	
	B9968AG	1	Name Plate (/C2)	(select)
	B9968AH	1	Name Plate (/C3)	
	B9968AS	1	Name Plate (/CF1)	
20	Y9305LB	1	B.H.Screw,M3x5	
21	B9968EH	1	Blind Bracket (not /C2,/C3,/CF1)	(select)
	B9968EJ	1	RS-232 Bracket (/C2)	
22	Y9305TS	1	Tapping Screw (not /C3,/CF1)	
23	Y9308LB	1	B.H.Screw,M3x8	
24	B9968EE	1	Terminal	
◎ 25	A1447JZ	1	Modular Cover	
26	B9968HE	1	Name Plate (/H5□ and not /P1)	

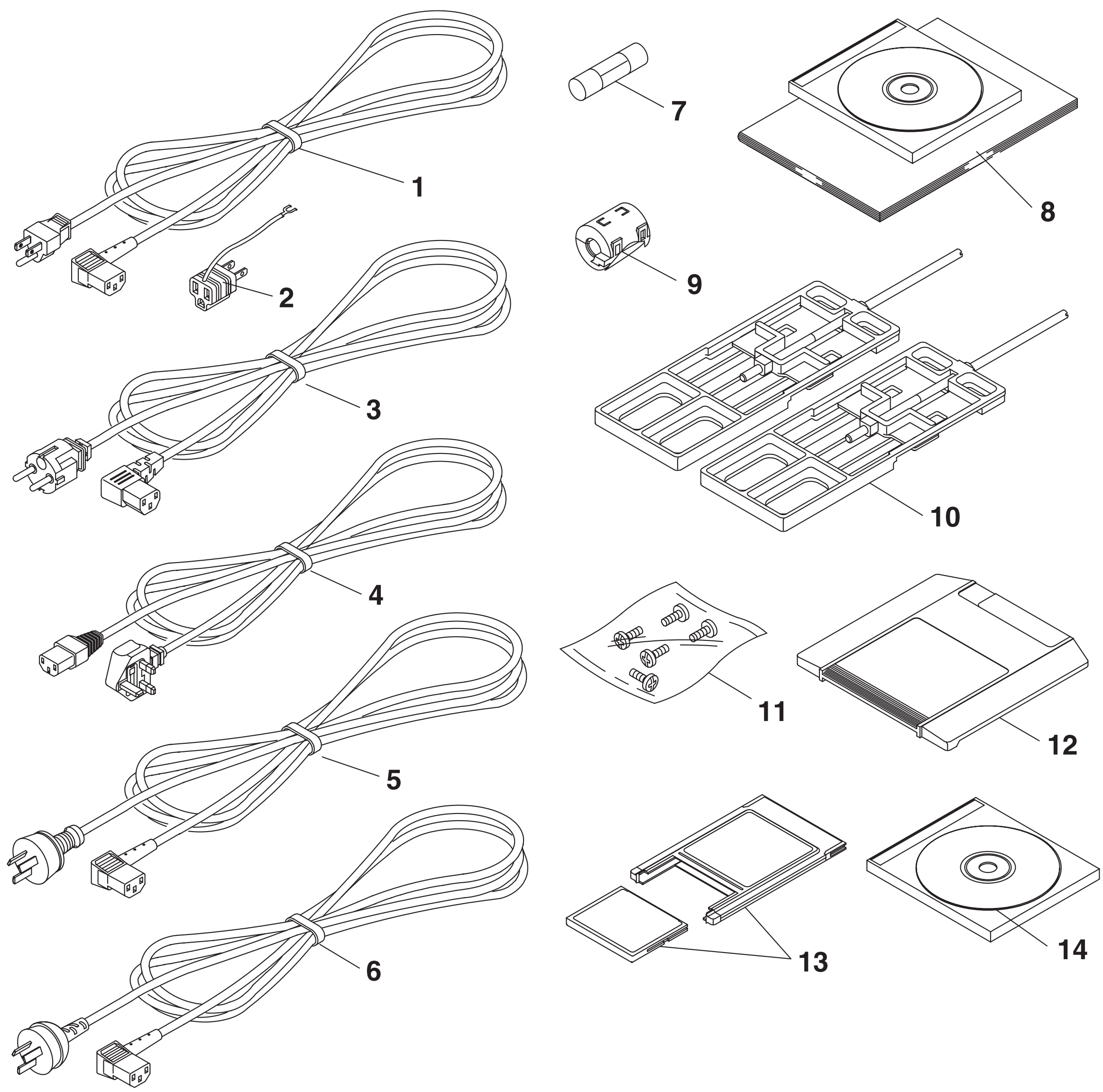
Note:

◎ CMPL Parts

Model Code	Suffix Code (options)				
DX1□□-□-□	/A1				*1
	/A2				*2
	/A3				*3
	/AR1				*14
	/AR2				*15
		/F1			*4
	/A1	/F1			*5
	/A2	/F1			*6
			/R1		*7
	/A1		/R1		*8
	/A2		/R1		*9
	/A3		/R1		*10
		/F1	/R1		*11
	/A1	/F1	/R1		*12
	/A2	/F1	/R1		*13
	/AR1	/F1			*16
	/AR2	/F1			*17
				/TPS2	*18
	/A1			/TPS2	*19
	/AR1			/TPS2	*20
	/A1		/R1	/TPS2	*24
			/R1	/TPS2	*21
				/TPS4	*22
			/R1	/TPS4	*23

7.2 DX100 Standard Accessories

Standard Accessories

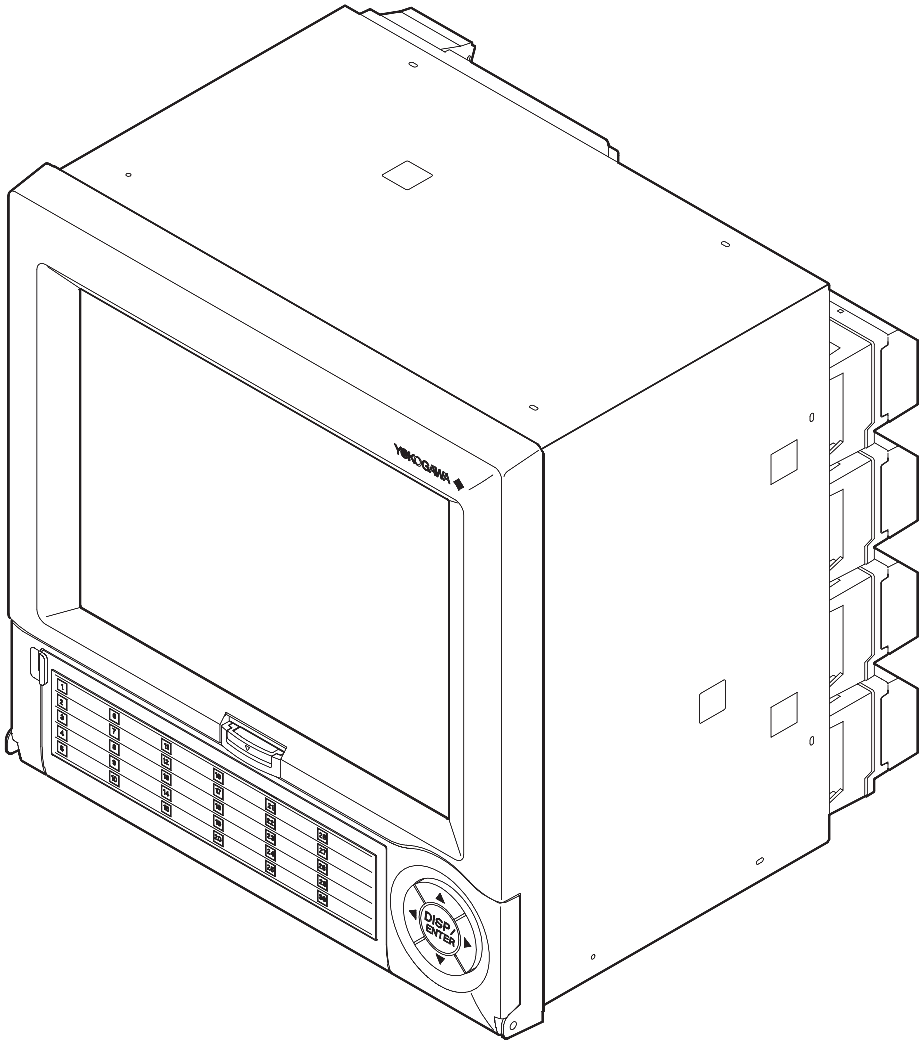


	Item	Part No.	Qty	Description	
◎	1	A1006WD	1	Power Supply Code (UL.CSA standard) *1.*2	(select)
◎	2	A1253JZ	1	3P-2P Adapter *1	(select)
◎	3	A1009WD	1	Power Supply Code (VDE standard) *3	(select)
◎	4	A1023WD	1	Power Supply Code (BS standard) *4	(select)
◎	5	A1024WD	1	Power Supply Code (SAA standard) *5	(select)
◎	6	A1064WD	1	Power Supply Code (GB standard) *6	(select)
◎	7	A1347EF	1	Fuse (not /P1)	(select)
		A1352EF	1	Fuse (/P1)	(select)
	8	-	1	Manuals	
		B9968MZ	1	CD-ROM for Manuals	
◎	9	A1179MN	1	Magnetic Part (/CF1)	
◎	10	B9900BX	2	Bracket Assembly (not /H5□)	
◎	11	E9655FX	5	B.H.Screw,M4x6 (±)	
◎	12	A1053MP	1	Mag Memory :Zip 100MB disk (DX1□□ -2)	(select)
		A1056MP	1	Mag Memory :Zip 250MB disk (DX1□□ -5)	(select)
◎	13	B9968NL	1	CF32MB+CF Adapter (DX1□□ -3)	
◎	14	B9991JW	1	DAQSTD SOFT CD-ROM (DX1□□-□-1,2)	(select)
		B9991KL	1	DAQSTD CD-Chinese (DX1□□-□-3)	(select)

Note :
- *1 DX1□□-□-□- /H5M
- *2 DX1□□-□-□- /H5D
- *3 DX1□□-□-□- /H5F
- *4 DX1□□-□-□- /H5J
- *5 DX1□□-□-□- /H5R
- *6 DX1□□-□-□- /H5H

◎ CMPL Parts

7.3 DX200 Customer Maintenance Parts List

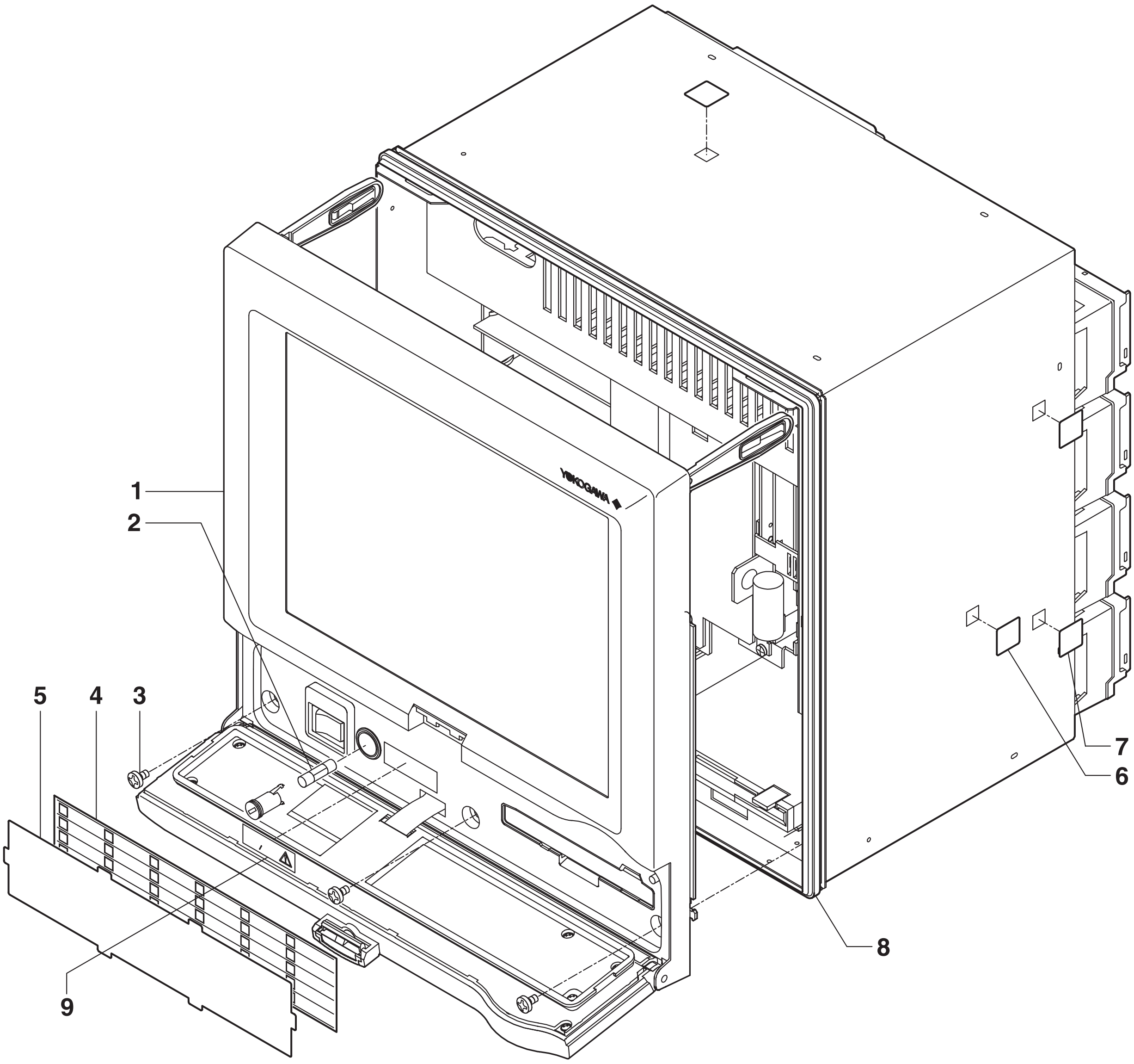


Note:
- **Parts marked with a ◎symbol are Customer Maintenance Parts (CMP).**
- **The contents of this CMPL are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions.**

YOKOGAWA
Yokogawa Electric Corporation

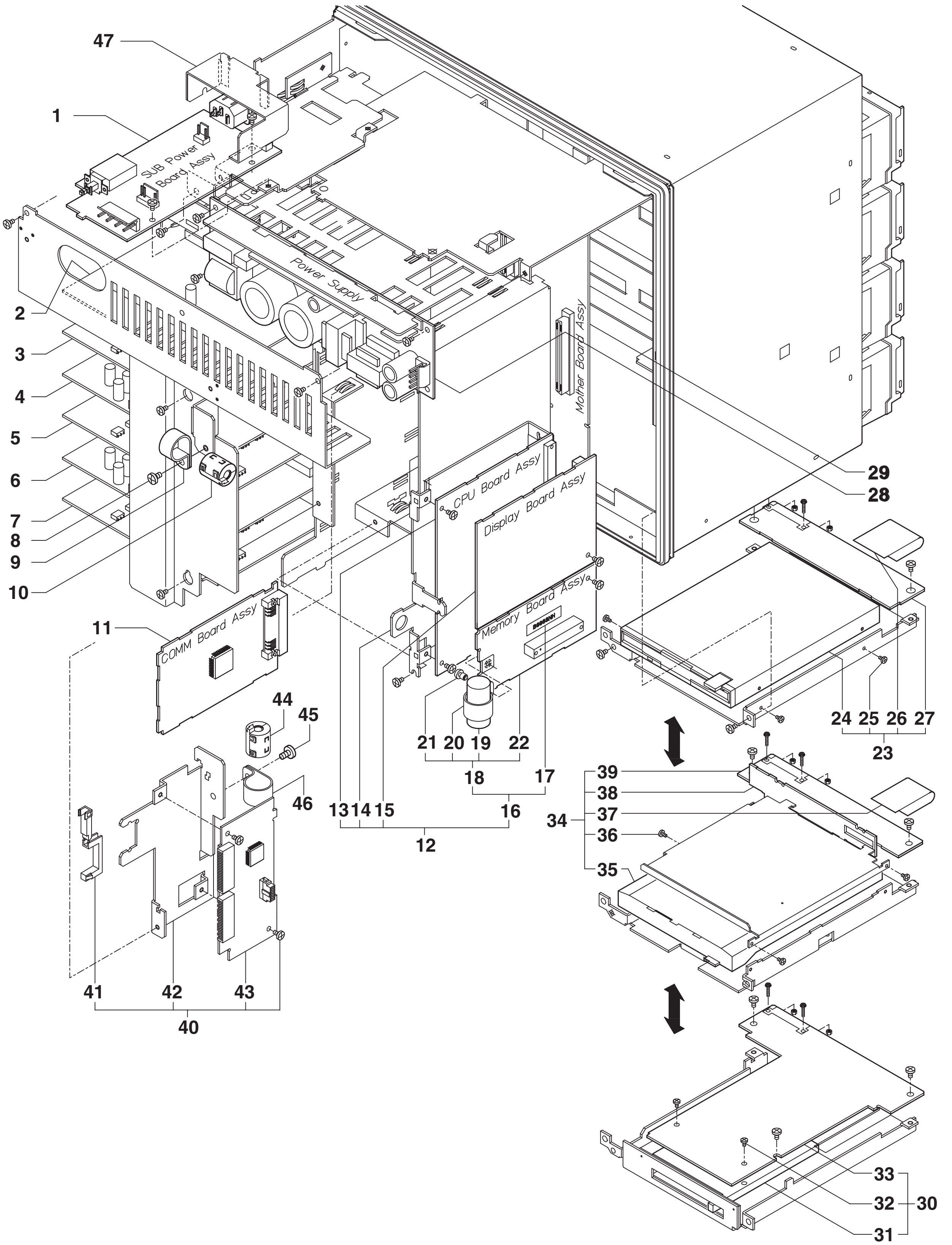
CMPL DX200-01E

Complete Set



Item	Part No.	Qty	Description	
1	B9968BA	1	Bezel Assembly (*2)	(select)(see page 5)
	B9968BE	1	Bezel Assembly (*1)	
2	A1423EF	1	Fuse (not /P1)	(select)
	A1463EF	1	Fuse (/P1)	
3	Y9412LB	3	B.H.Screw,M4x12	
4	B9968AN	1	Tag Plate (DX210,220,230)	(select)
	B9968AP	1	Tag Plate (DX204,204C,208,208C)	
5	B9968AM	1	Tag Cover	
6	B9968AT	4	Sheet (not /H5□)	
7	B9968AK	4	Sheet (not /H5□)	
8	B9968AX	1	Packing	
9	B9968AD	1	Name Plate (not /P1)	(select)
	B9968HL	1	Name Plate (/P1)	

Note:
*1 DX2□- □-1
*2 DX2□- □-2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SUB Power Board Assy
Power Supply
Mother Board Assy
CPU Board Assy
Display Board Assy
Memory Board Assy
COMM Board Assy
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24 25 26 27
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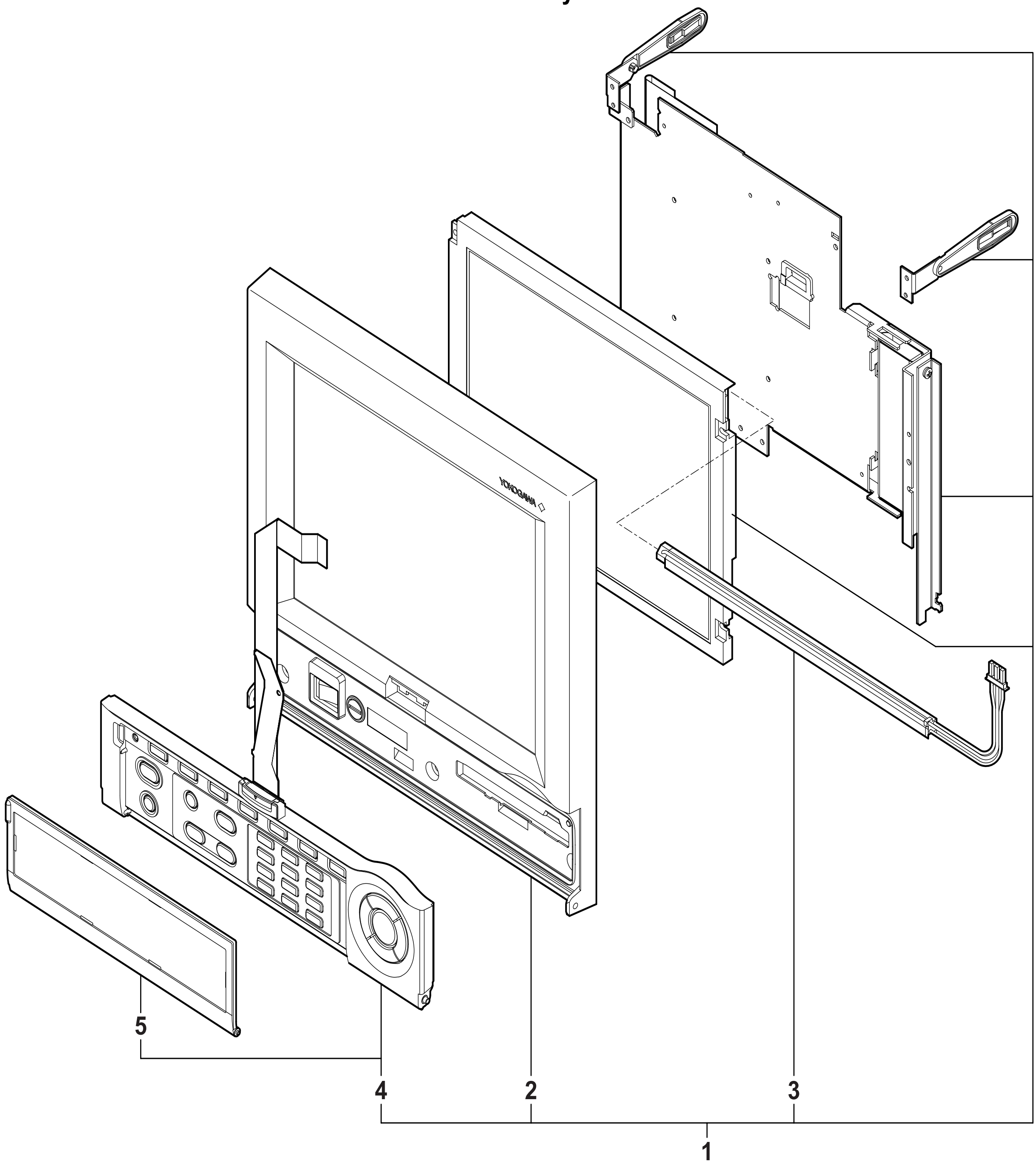
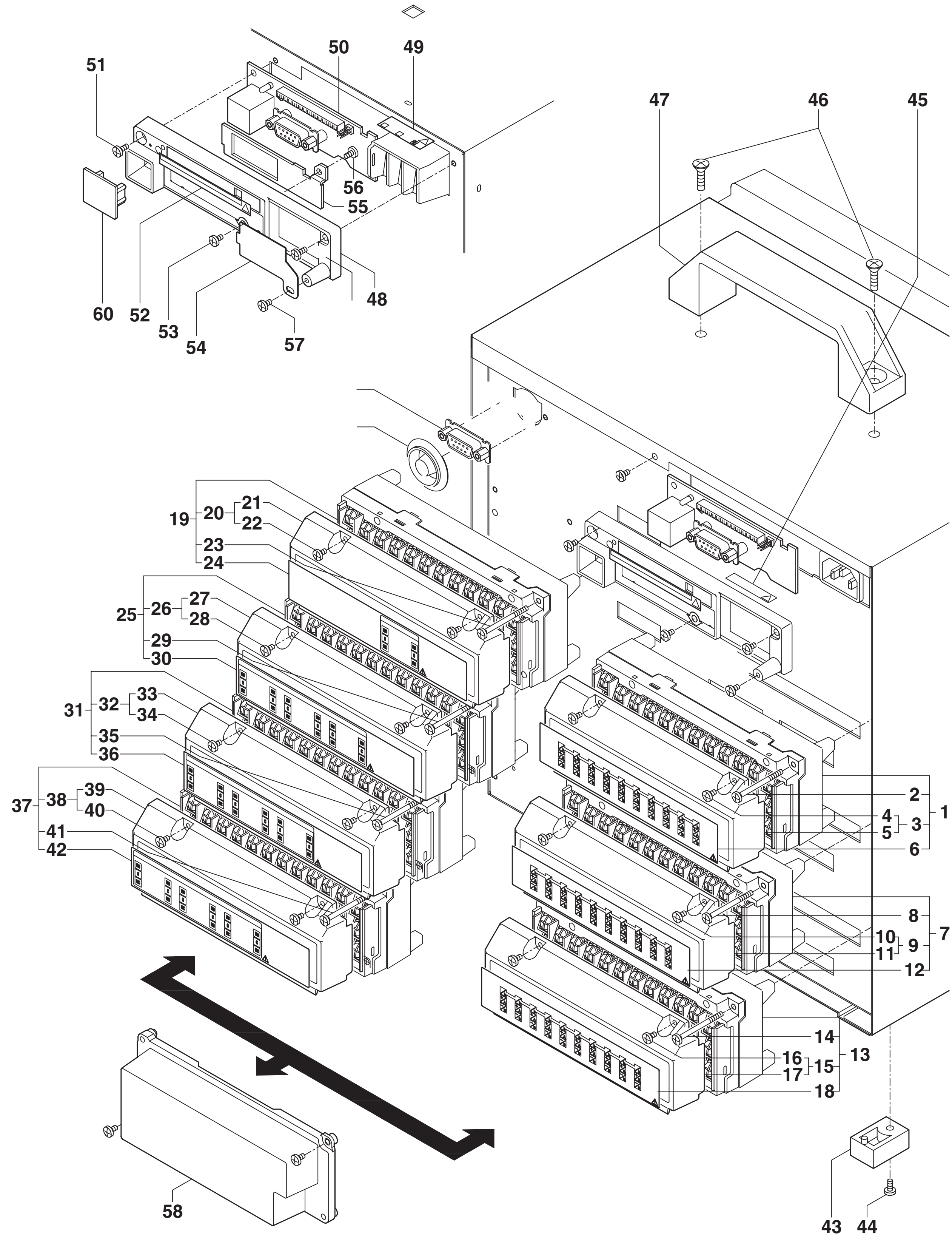
Item	Part No.	Qty	Description	
1	B9968SL	1	S-Sub Power Board Assembly (not /H5□ ,/P1)	
	B9968TL	1	I-Sub Power Board Assembly (/H5□ and not /P1)	(select)
	B9968TK	1	S24-Sub Power Board Assembly (/P1)	
2	B9968QC	1	Fast 2AD(PT) Assembly (DX204,204C,208,208C)(not /N1)	
	B9968QA	1	Slow AD(PT) Assembly (DX210,220,230)(not /N1)	
				(select)
	B9968QF	1	Fast 2AD(CU) Assembly (DX204,204C,208,208C)(/N1)	
	B9968QD	1	Slow AD(CU) Assembly (DX210,220,230)(/N1)	
3	B9968SB	1	4ch Scanner Assembly (DX204,204C,208,208C)	
	B9968SD	1	10ch Scanner Assembly (DX210,220,230)(not /N1/N2)	(select)
	B9968TY	1	10ch ISO Scanner Assembly (DX210,220,230)(/N1or/N2)	
4	B9968QC	1	Fast 2AD(PT) Assembly (DX208,208C)(not /N1)	
	B9968QA	1	Slow AD(PT) Assembly (DX220,230)(not /N1)	
	B9968QF	1	Fast 2AD(CU) Assembly (DX208,208C)(/N1)	(select)
	B9968QD	1	Slow AD(CU) Assembly (DX220,230)(/N1)	
5	B9968SB	1	4ch Scanner Assembly (DX208,208C)	
				(select)
	B9968SD	1	10ch Scanner Assembly (DX220,230)(not /N1/N2)	
	B9968TY	1	10ch ISO Scanner Assembly (DX220,230)(/N1or/N2)	
6	B9968QA	1	Slow AD(PT) Assembly (DX230)(not /N1)	(select)
	B9968QD	1	Slow AD(CU) Assembly (DX230)(/N1)	
7	B9968SD	1	10ch Scanner Assembly (DX230)(not /N1/N2)	
				(select)
	B9968TY	1	10ch ISO Scanner Assembly (DX230)(/N1or/N2)	
8	Y9414LB	1	B.H.Screw,M4x14	
9	B9968EL	1	Clamp	
10	A1193MN	1	Magnetic Parts	
11	B9968TQ	1	Comm Board Assembly (/C2)	
	B9968TP	1	Comm Board Assembly (/C3)	(select)
	B9968SQ	1	Comm Board Assembly (not /C2,/C3,/CF1)	
	B9968TW	1	Comm Board Assembly (/CF1)	
12	B9968CW	1	CPU Board Assembly (DX2□□-□-□-1,2)	
	B9968AQ	1	CPU Board Assembly (DX2□□-□-□-3)	(select)
	B9959FD	1	CPU Board Assembly (DX2□□C)	
13	B9968SG	1	CPU Board Assembly	
14	B9968CX	1	CPU Bracket	
15	B8700RK-01	1	Display Board Assembly	
16	B9968NG	1	Memory Board Assembly (DX2□□-□-□-3)	
	B9968NH	1	Memory Board Assembly (DX2□□-□-□-1,2)	(select)
	B9959HD	1	Memory Board Assembly (DX2□□C)	
17	B9968AL	1	Name Plate (DX2□□-□-□-1,2)	
	B9968HF	1	Name Plate (DX2□□-□-□-3)	(select)
	B9959GD	1	Name Plate (DX2□□C)	
18	-	1	Memory Board & Battery Assembly	
19	B9900BR	1	Battery Assembly	
20	A9069KY	1	Clamp	
21	B9968EM	1	Rivet	
22	-	1	Memory Board Assembly	
23	B9968HG	1	FDD Drive Assembly(DX2□-1)	
24	A1161UN	1	Memory System	
25	B8703BZ	3	Screw	
26	B9968MP	1	FDD FFC	
27	B9968SW	1	FDD Board Assembly	
28	A1484UP	1	Power Supply (not /P1)	(select)
	B9968SZ	1	DC24 Power Assembly (/P1)	
29	B9968SP	1	Mother Board Assembly (not /H5□)	
	B9968RP	1	Mother Board Assembly (/H5 □)	(select)
30	B9968GL	1	ATA Drive Assembly(DX2□-3)	
31	A1492JS	1	Socket	
32	Y9208LB	2	Screw	
33	B9968SV	1	PC-Card Board Assembly	
34	B9968GD	1	Zip Drive Assembly (DX2□-2)	(select)
	B9968HH	1	Zip Drive Assembly (DX2□-5)	

Item	Part No.	Qty	Description	
35	A1150UN	1	Memory System (DX2□-2)	(select)
	A1178UN	1	Memory System (DX2□-5)	
36	Y9203LB	3	Screw (DX2□-2)	(select)
	Y9203LB	6	Screw (DX2□-5)	
37	B9968MB	1	IDE FFC	
				(select)
38	B9968SU	1	Zip Conn Board Assembly (DX2□-2)	
	B9967SU	1	Zip Conn Board Assembly (DX2□-5)	
39	B9968ST	1	IDE Board Assembly	
40	B9968HQ	1	VGA Board Assembly (/D5)	
41	B9968GS	1	Clamp	
42	B9968HR	1	Bracket	
43	B9968UX-04	1	VGA Board Assembly	
44	A1193MN	1	Magnetic Parts (/D5)	
45	Y9414LB	1	B.H.Screw,M4x14 (/D5)	
46	B9968EL	1	Clamp (/D5)	
47	B9967CR	1	Bracket (/H5□)	(select)
	B9967CQ	1	Inlet Cover (not/H5□)	

Bezel Assembly



Item	Part No.	Qty	Description	
1	B9968BA	1	Bezel Assembly (for English)	(select)
	B9968BE	1	Bezel Assembly (for Japanese)	
2	B9968BB	1	Sub Bezel Assembly	
3	B9968PA	1	Back Light Unit (NEC)	(select)
	A1048VZ	1	Back Light Unit (KYOCERA)	
4	B9968BR	1	Key Case Assembly (for English)	(select)
	B9968BV	1	Key Case Assembly (for Japanese)	
5	B9968BW	1	Front Plate	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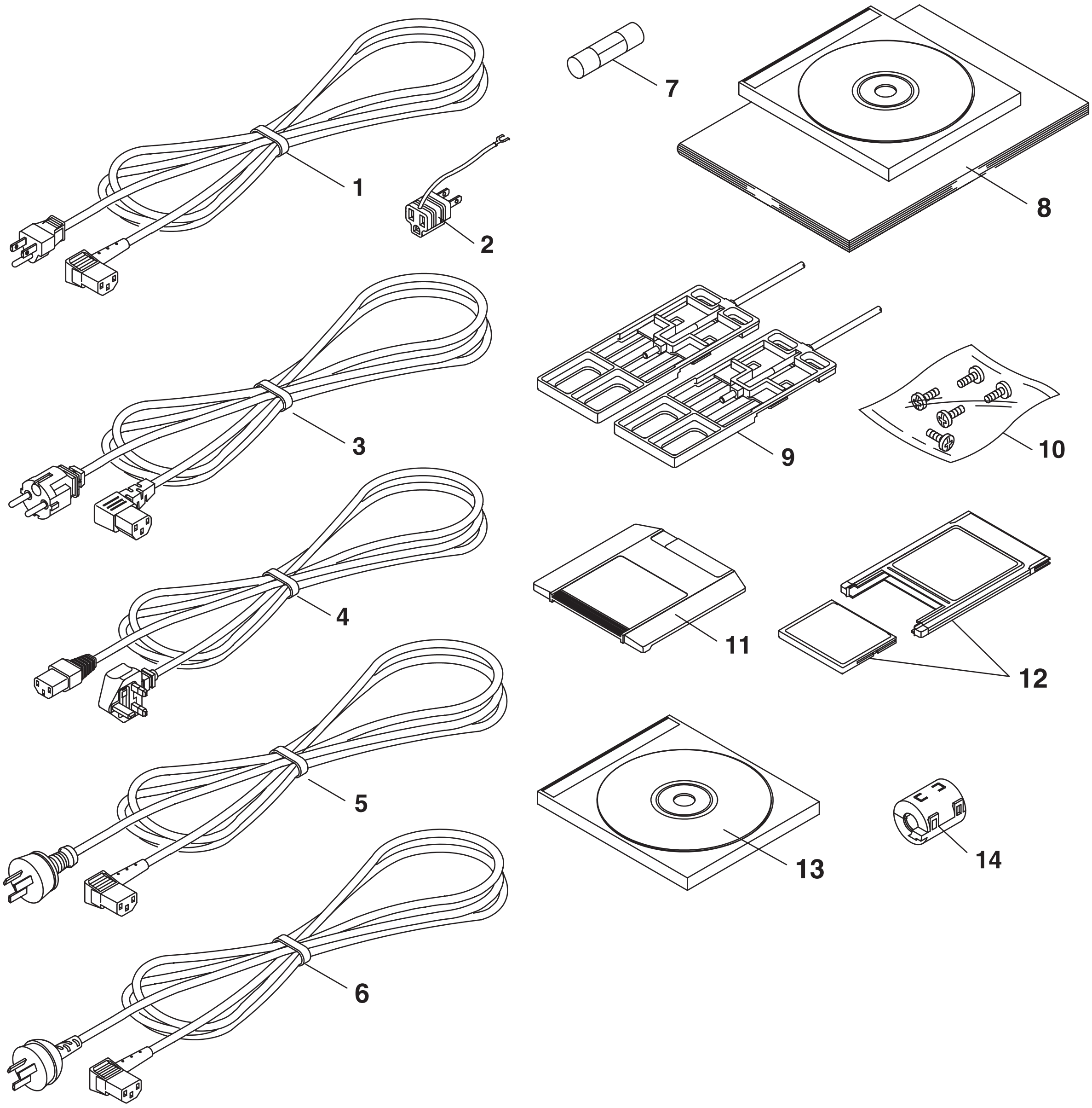
Item	Part No.	Qty	Description	
1	B9968LE	1	Input Terminal Assembly (DX210,220,230)(not /H2/N1/N2)	
	B9968LN	1	Input Terminal Assembly (DX210,220,230)(/N1/N2 and not /H2)	
	B9968JB	1	Input Terminal Assembly (DX210,220,230)(/H2 and not /N1/N2)	
	B9968JC	1	Input Terminal Assembly (DX210,220,230)(/H2 and /N1/N2)	(select)
	B9968LJ	1	Input Terminal Assembly (DX204,204C,208,208C)(not /H2)	
	B9968LT	1	Input Terminal Assembly (DX204,204C,208,208C)(/H2)	
2	B9968DJ	2	Screw	
3	B9968DF	1	Cover Assembly	
4	B9900SG	2	Screw	
5	B9968DG	1	Cover	
6	B9968EP	1	Name Plate (DX210,220,230)(not /H2/N1/N2)	
	B9968FS	1	Name Plate (DX210,220,230)(/N1/N2 and not /H2)	
	B9968JQ	1	Name Plate (DX210,220,230)(/H2 and not /N1/N2)	
	B9968JR	1	Name Plate (DX210,220,230)(/H2 and /N1/N2)	(select)
	B9968FV	1	Name Plate (DX204,204C,208,208C)(not /H2)	
	B9968JJ	1	Name Plate (DX204,204C,208,208C)(/H2)	
7	B9968LF	1	Input Terminal Assembly (DX220,230)(not /H2/N1/N2)	
	B9968LP	1	Input Terminal Assembly (DX220,230)(/N1/N2 and not /H2)	
	B9968JD	1	Input Terminal Assembly (DX220,230)(/H2 and not /N1/N2)	
	B9968JE	1	Input Terminal Assembly (DX220,230)(/H2 and /N1/N2)	(select)
	B9968LK	1	Input Terminal Assembly (DX208,208C)(not /H2)	
	B9968JA	1	Input Terminal Assembly (DX208,208C)(/H2)	
58	B9968DN	1	Conn Cover Assembly (DX210,204,204C)	
8	B9968DJ	2	Screw	
9	B9968DF	1	Cover Assembly	
10	B9900SG	2	Screw	
11	B9968DG	1	Cover	
12	B9968EQ	1	Name Plate (DX220,230)(not /H2/N1/N2)	
	B9968FT	1	Name Plate (DX220,230)(/N1/N2 and not /H2)	
	B9968JS	1	Name Plate (DX220,230)(/H2 and not /N1/N2)	(select)
	B9968JT	1	Name Plate (DX220,230)(/H2 and /N1/N2)	
	B9968FW	1	Name Plate (DX208,208C)(not /H2)	(select)
	B9968JK	1	Name Plate (DX208,208C)(/H2)	
13	B9968LG	1	Input Terminal Assembly (DX230)(not /H2/N1/N2)	
	B9968LQ	1	Input Terminal Assembly (DX230)(/N1/N2 and not /H2)	
	B9968JF	1	Input Terminal Assembly (DX230)(/H2 and not /N1/N2)	
	B9968JG	1	Input Terminal Assembly (DX230)(/H2 and /N1/N2))	
58	B9968DN	1	Conn Cover Assembly (DX204,204C,208,208C,210,220)	
14	B9968DJ	2	Screw	
15	B9968DF	1	Cover Assembly	
16	B9900SG	2	Screw	
17	B9968DG	1	Cover	
18	B9968ER	1	Name Plate (DX230)(not /H2/N1/N2)	
	B9968FU	1	Name Plate (DX230)(/N1/N2 and not /H2)	(select)
	B9968JU	1	Name Plate (DX230)(/H2 and not /N1/N2)	
	B9968JV	1	Name Plate (DX230)(/H2 and /N1/N2)	
19	B9968KA	1	Option Terminal Assembly*1	
	B9968KB	1	Option Terminal Assembly*12,*24	
	B9968KC	1	Option Terminal Assembly*2	
	B9968KD	1	Option Terminal Assembly*13,*25	
	B9968KE	1	Option Terminal Assembly*3,*4,*5	
	B9968KJ	1	Option Terminal Assembly*14,*15,*16	
	B9968KK	1	Option Terminal Assembly*11	(select)
	B9968KL	1	Option Terminal Assembly*7	
	B9968KM	1	Option Terminal Assembly*18,*26	
	B9968KN	1	Option Terminal Assembly*8	
	B9968KP	1	Option Terminal Assembly*19,*27	
	B9968KQ	1	Option Terminal Assembly*6,*9,*10	
	B9968KR	1	Option Terminal Assembly*17,*20,*21	
58	B9968DN	1	Conn Cover Assembly	
20	B9968DF	1	Cover Assembly	
21	B9968DG	1	Cover	
22	B9900SG	2	Screw	
23	B9968DJ	2	Screw	
24	B9968EW	1	Name Plate*1	
	B9968EX	1	Name Plate*12,*24	
	B9968EY	1	Name Plate*2	
	B9968EZ	1	Name Plate*13,*25	
	B9968FA	1	Name Plate*3,*4,*5	
	B9968FE	1	Name Plate*14,*15,*16	
	B9968FF	1	Name Plate*11	(select)
	B9968FH	1	Name Plate*7	
	B9968FJ	1	Name Plate*18,*26	
	B9968FK	1	Name Plate*8	
	B9968FL	1	Name Plate*19,*27	
	B9968FM	1	Name Plate*6,*9,*10	
	B9968FN	1	Name Plate*17,*20,*21	

Model Code	Suffix Code (options)				
DX2□□-□-□	/A1				*1
	/A2				*2
	/A3				*3
	/A4				*4
	/A5				*5
		/F1			*6
	/A1	/F1			*7
	/A2	/F1			*8
	/A3	/F1			*9
	/A4	/F1			*10
			/R1		*11
	/A1		/R1		*12
	/A2		/R1		*13
	/A3		/R1		*14
	/A4		/R1		*15
	/A5		/R1		*16
		/F1	/R1		*17
	/A1	/F1	/R1		*18
	/A2	/F1	/R1		*19
	/A3	/F1	/R1		*20
	/A4	/F1	/R1		*21
				/TPS4	*22
				/TPS8	*23
	/AR1				*24
	/AR2				*25
	/AR1	/F1			*26
	/AR2	/F1			*27

Item	Part No.	Qty	Description	
25	B9968KF	1	Option Terminal Assembly*4,*5,*9,*10	(select)
58	B9968DN	1	Conn Cover Assembly	
26	B9968DF	1	Cover Assembly	
27	B9968DG	1	Cover	
28	B9900SG	2	Screw	
29	B9968DJ	2	Screw	
30	B9968FB	1	Name Plate*4,*5,*9,*10	
31	B9968KG	1	Option Terminal Assembly *5,*10	
	B9968KW	1	Option Terminal Assembly *23	(select)
58	B9968DN	1	Conn Cover Assembly	
32	B9968DF	1	Cover Assembly	
33	B9968DG	1	Cover	
34	B9900SG	2	Screw	
35	B9968DJ	2	Screw	
36	B9968FC	1	Name Plate *5,*10	(select)
	B9968FP	1	Name Plate *23	
37	B9968KH	1	Option Terminal Assembly *5	
	B9968KW	1	Option Terminal Assembly *22,*23	(select)
58	B9968DN	1	Conn Cover Assembly	
38	B9968DF	1	Cover Assembly	
39	B9968DG	1	Cover	
40	B9900SG	2	Screw	
41	B9968DJ	2	Screw	
42	B9968FD	1	Name Plate *5	(select)
	B9968FP	1	Name Plate *22,*23	
43	B9961BS	4	Foot (/H5□)	
44	Y9306LS	4	B.H.Screw,M3x6 (/H5□)	
45	B9968AF	1	Name Plate (/H5□ and not /P1)	
46	Y9412ES	2	F.H.Screw,M4x12 (/H5□)	
47	B9961BQ	1	Handle (/H5□)	
48	B9968EE	1	Terminal	
49	B9968AE	1	Name Plate (not /H5□ /P1)	(select)
	B9968HM	1	Name Plate (/P1)	
50	B9968RJ	1	COMM Term Board Assembly (/C2)	(select)
	B9968RK	1	COMM Term Board Assembly (/C3,/CF1)	
	B9968RG	1	COMM Term Board Assembly (not /C2, /C3,/CF1)	
51	Y9308LB	2	B.H.Screw,M3x8	
52	B9968AG	1	Name Plate (/C2)	
	B9968AH	1	Name Plate (/C3)	(select)
	B9968AJ	1	Sheet (not /C2,/C3,/CF1)	
	B9968AS	1	Sheet (/CF1)	
53	Y9305LB	1	B.H.Screw,M3x5	
54	B9968EG	1	Power Plate (not /H5□)	
55	B9968EH	1	Blind Bracket (not /C2,/C3,/CF1)	(select)
	B9968EJ	1	RS-232 Bracket (/C2)	
56	Y9305TS	1	Tapping Screw (not /C3,/CF1)	
57	Y9308LB	1	B.H.Screw,M3x8	
59	B9968HE	1	Name Plate (/H5□ and not /P1)	
60	A1447JZ	1	Modular Cover	
61	B9968MN	1	VGA Cable (/D5)	
62	B9968EK	1	Cap (not /D5)	

7.4 DX200 Standard Accessories

Standard Accessories



	Item	Part No.	Qty	Description	
◎	1	A1006WD	1	Power Supply Code (UL.CSA standard) *1.*2	(select)
◎	2	A1253JZ	1	3P-2P Adapter *1	(select)
◎	3	A1009WD	1	Power Supply Code (VDE standard) *3	(select)
◎	4	A1023WD	1	Power Supply Code (BS standard) *4	(select)
◎	5	A1024WD	1	Power Supply Code (SAA standard) *5	(select)
◎	6	A1064WD	1	Power Supply Code (GB standard) *6	(select)
◎	7	A1423EF	1	Fuse (not /P1)	(select)
		A1463EF	1	Fuse (/P1)	(select)
	8	-	1	Manuals	
		B9968MZ	1	CD-ROM for Manuals	
◎	9	B9900BX	2	Bracket Assembly (not /H5□)	
◎	10	E9655FX	5	B.H.Screw,M4x6(±)	
◎	11	A1053MP	1	Mag Memory :Zip 100MB disk (DX2□□-2)	(select)
		A1056MP	1	Mag Memory :Zip 250MB disk (DX2□□-5)	(select)
◎	12	B9968NL	1	CF32MB+CF Adapter (DX2□□-3)	
◎	13	B9991JW	1	DAQSTD SOFT CD-ROM (DX2□□-□-1,2)	(select)
		B9991KL	1	DAQSTD SOFT CD-ROM (DX2□□-□-3)	(select)
◎	14	A1179MN	1	Magnetic Part (/CF1)	

Note:
*1 DX2▭-/H5M
*2 DX2▭-/H5D
*3 DX2▭-/H5F
*4 DX2▭-/H5J
*5 DX2▭-/H5R
*6 DX2▭-/H5H

◎ CMPL parts