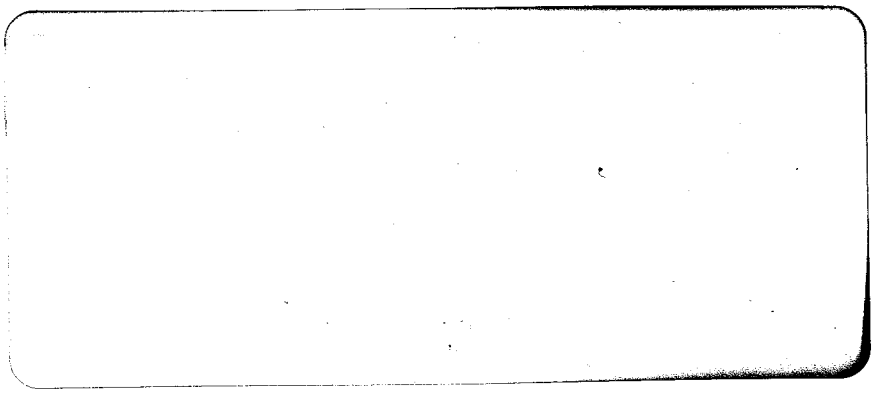


Model 7551/7552
Model 7561/7562
Digital Multimeter

SM 7550 - 01E

SM 7550 - 01E
1st Edition

WARNING

THE FOLLOWING SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID PERSONAL INJURY, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO. REFER TO SAFETY SUMMARY PRIOR TO PERFORMING ANY SERVICE.

FD No. 10055 - QSM
1st Edition : September 1992 (YG)

IMPORTANT NOTICE TO THE USER

- The customer SHOULD NOT in general carry out any disassembly, parts replacement or adjustment to this instrument. Only those procedures described in the User's Manual or Service Manual may be carried out by the customer.
- YOKOGAWA does not offer more detailed maintenance and service information on the instrument than that described in the Service Manual (this document).
- YOKOGAWA makes no warranty of any kind with regard to the accuracy or contents of this Service Manual.
- All reasonable efforts have been made to assure the accuracy of the contents of this Service Manual. However there may still be errors such as clerical errors, or omissions.
- YOKOGAWA assumes no responsibility for any errors in this Service Manual, or their consequences.
- The contents of this Service Manual is subject to change without notice.
-
- The services and maintenance for the CRT display unit are only available at YOKOGAWA Service Offices.

Note : **YOKOGAWA design policy for user maintenability and serviceability**

YOKOGAWA instruments have been designed so that the replacement of electronic parts for repair can be done on an assembly (module) basis. YOKOGAWA instruments have also been designed so that assembly-level troubleshooting and replacement of any faulty assembly can be done easily and quickly.

YOKOGAWA strongly recommends the replacement of the entire assembly if the instruments must be replaced parts or components within the assembly. The reasons for this are as follows :

(1) The instruments utilize high-performance microprocessors, large-scale CMOS gate arrays and surface-mount components to provide the state-of-art performance and functions.

(2) Component-base repair can only be performed by specially trained and qualified maintenance personnel with special tools. In addition, component base repair requires various special purpose spare parts and components, including costly parts, and required facilities where highly-accurate and expensive maintenance equipment and special tools are provided.

(3) To use YOKOGAWA instruments effectively and economically with minimum downtime, if instruments fail, we strongly recommend that parts be replaced on an assembly basis, the service life and cost of the instruments being taken into consideration.

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. **The 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.

Explanation : this marking indicates that the operator must refer to an explanation in the User's Manual in order to avoid injury or death of personnel and damage to the instrument.

High Voltage Terminal : Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 volts must be so marked). Never touch it!

Protective grounding terminal. In order to provide protection against electrical shock in case of a fault. This symbol indicates that the terminal must be connected to ground prior to operation of equipment.

WARNING

A **WARNING** sign denotes a hazards. It calls attention to procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in injury or death or personnel.

CAUTION

A **CAUTION** sign denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

WARNING

- **Power Supply**
  Ensure the source voltage matches the voltage of the power supply before turning on the instrument power.

- **Power Cord and Plug**
  To prevent an electric shock or a fire, make sure to use power supply cord and 3 pin to 2 pin adapter supplied by YOKOGAWA. Main power plug must be plugged in an outlet with protective grounding terminal only. Do not use extension cord without protective grounding wire and invalidate protection.

- **Protective Grounding**
  Make sure the protective grounding to prevent an electric shock before turning the power on. 3 pin power cable with grounding wire is used for this instrument. Please use 3 pin power outlet with protective grounding terminal.
  When using 3 pin to 2 pin adapter, make sure to connect the grounding wire of the adapter to the protective grounding wire of the power outlet.

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

- **Defect of Protective Function**
  Don't operate the instrument when protective grounding or fuse might be defective. Be careful not to operate without noticing of the defect.

- **Fuse**
  To prevent a fire, make sure to use the fuse with specified standard (current, voltage, type). Before replacing fuse, turn the power off and unplug the power cord. Don't use different fuse or short-circuit the fuse holder.

- **Do not Operate in an Explosive Atmosphere**
  Do not operate the instrument in the presence of flammable liquids or vapours. Operation of any electrical instrument in such an environment constitutes a safety hazard.

- **Do not Remove any Covers**
  There are some areas with high voltage, so don't remove the cover with putting voltage. Don't remove the cover except our service man.

- **External Connection**
  To ground securely, insert main power plug before connecting to measurement or control circuit.

CONTENTS

1. GENERAL INFORMATION 1-1
   1.1 Outline 1-1
   1.2 Configuration of the Manual 1-1
   1.3 Specifications 1-2
   1.4 Safety Precautions 1-2
   1.5 Equipment Required 1-3

2. INCOMING INSPECTION 2-1
   2.1 Outline 2-1
   2.2 Incoming Inspection Method 2-1

3. SELF DIAGNOSIS FUNCTIONS 3-1
   3.1 Outline 3-1
   3.2 Power-up Self Diagnosis Function 3-1
   3.3 Self Diagnostic Function which can be Started Manually 3-3
   3.4 EEPROM Test 3-4
   3.5 Keyboard Test 3-4
   3.6 Display Test 3-4
   3.7 Relay Output Test 3-4
   3.8 IC Memory Card Test 3-5
   3.9 EXT TRIG Test 3-5
   3.10 D/A Output Test 3-5

4. PERFORMANCE TEST 4-1
   4.1 Outline 4-1
   4.2 Test Environment 4-1
   4.3 Preparation 4-1
   4.4 Test Method 4-1
      4.4.1 DC Voltage Measurement Accuracy 4-2
      4.4.2 DC Current Measurement Accuracy 4-5
      4.4.3 Resistance Measurement Accuracy 4-8
      4.4.4 AC Voltage Measurement Accuracy 4-11
      4.4.5 AC Current Measurement Accuracy 4-14
      4.4.6 Frequency Measurement Accuracy 4-17

5. CALIBRATION 5-1
   5.1 Outline 5-1
   5.2 Calibration 5-1

6. DISASSEMBLY AND RE-ASSEMBLY 6-1

7. ADJUSTMENT 7-1

8. REPLACEABLE PARTS 8-1
8.1 Outline 8-1
8.2 How to Read the CMPL 8-1
8.3 How to Order Parts 8-1

9. PRINCIPLE OF OPERATION 9-1

10. TROUBLE-SHOOTING 10-1
10.1 Outline 10-1
10.2 Procedure 10-1
10.3 Trouble-shooting Flowchart 10-2
10.4 Error Messages 10-3

11. PREVENTIVE MAINTENANCE 11-1

12. HOW TO REQUEST REPAIR OR CALIBRATION 12-1

13. SCHEMATIC DIAGRAM 13-1

14. CUSTOMER MAINTENANCE PARTS LIST (CMPL) 14-1

1. GENERAL INFORMATION

1.1 Outline

This service manual describes service information concerning the YOKOGAWA Digital Multimeter 7551, 7552, 7561 and 7562.

This chapter gives information on how to use this manual and gives information on operation method, criteria, and equipment necessary for starting service-activities on the 7551, 7552, 7561 and 7562.

1.2 Configuration of the Manual

This manual consists of 14 chapters.

1. **General Information**
   This chapter describes the usage of this manual, specification, safety precautions, and necessary equipment.
2. **Incoming Inspection**
   This chapter describes the incoming inspection method.
3. **Self Diagnosis Functions**
   This chapter describes and explains the self diagnostic method.
4. **Performance Test**
   This chapter describes the performance test method which is necessary to confirm the basic specification and performance of the 7551, 7552, 7561 and 7562.
5. **Calibration**
   This chapter describes calibration method.
6. **Disassembly and Re-assembly Procedures**
7. **Adjustment**
8. **Replaceable Parts**
9. **Principle of Operation**
   This chapter describes the block diagrams and operation principle.
10. **Trouble-shooting**
    This chapter describes the trouble-shooting method and how to deal with repair.
11. **Preventive Maintenance**
12. **How to Request Repair or Calibration**
13. **Schematic Diagram**
14. **Customer Maintenance Parts List (CMPL)**
    This chapter describes the parts to be used for disassembly, assembly, adjustment, or purchase orders.

1.3 Specifications

For specifications, refer to Chapter 9 of the Instruction Manual.

1.4 Safety Precautions

Carefully read the safety summary at the beginning of this manual.

1.5 Equipment Required

Table 1.1 Required Equipment

Equipment	Critical Specification	Recommended
Oscilloscope	Band width 10 MHz	YOKOGAWA DL1200A
Digital Multimeter (DMM)	DC Voltage Accuracy: ±50ppm	YOKOGAWA 7562
Standard DC Voltage Generator	Accuracy : ±10 ppm for 190 mV to 1.9 V ±20 ppm for 19 V and 1000 V	DATRON 4708 FLUKE 5220A (For 20 A Caribration)
Standard DC Current Generator	Accuracy : ±100 ppm for 1.9 mA to 1.9 A ±200 ppm for 19 A	
Standard AC Voltage Generator	Accuracy : ±0.02% for 190 mVrms to 700 Vrms	
Standard AC Current Generator	Accuracy : ±0.1% for 1.9 mA to 1.9 A ±0.2% for 19 A	
Standard Resistors	Accuracy : ±20 ppm for 100 Ω to 1000 kΩ ±0.02% for 10 MΩ ±0.02% for 100 MΩ	YOKOGAWA 2781

2. INCOMING INSPECTION

2.1 Outline

This section describes the procedure for the incoming inspection for the 7551, 7552, 7561 and 7562.

2.2 Incoming Inspection Method

(1) **Products Check**

Check the contents of the main unit and accessories according to the Instruction Manual, Section 1.1.1, "Model and Specifications" and Section 1.1.2, "Accessories."

(2) **Understanding of the Operation Method and Functions**

Read chapter of the Instruction Manual carefully so that you fully understand the operation method and functions.

(3) Read and execute the self diagnostic function described in Chapter 3.

(4) Execute the performance test described in Chapter 4.

3. SELF DIAGNOSIS FUNCTIONS

3.1 Outline

This section describes the 7551, 7552, 7561 and 7562 power-up self diagnostic function and the self diagnostic function which can be started manually.

3.2 Power-up Self Diagnosis Function

(1) Read the Instruction Manual, Section 3.2, "Rear Panel."

(2) **Power Supply Connection**

After installing the multimeter, connect the power supply cord (supplied with the instrument) to the power supply connector at the rear of the instrument (see Figure 3.1). Check that the instrument power switch is in the OFF position. Connect the power plug to the power outlet. Use a power supply within the rated voltage. The rated power supply is indicated to the right of the power switch (see Figure 3.1).

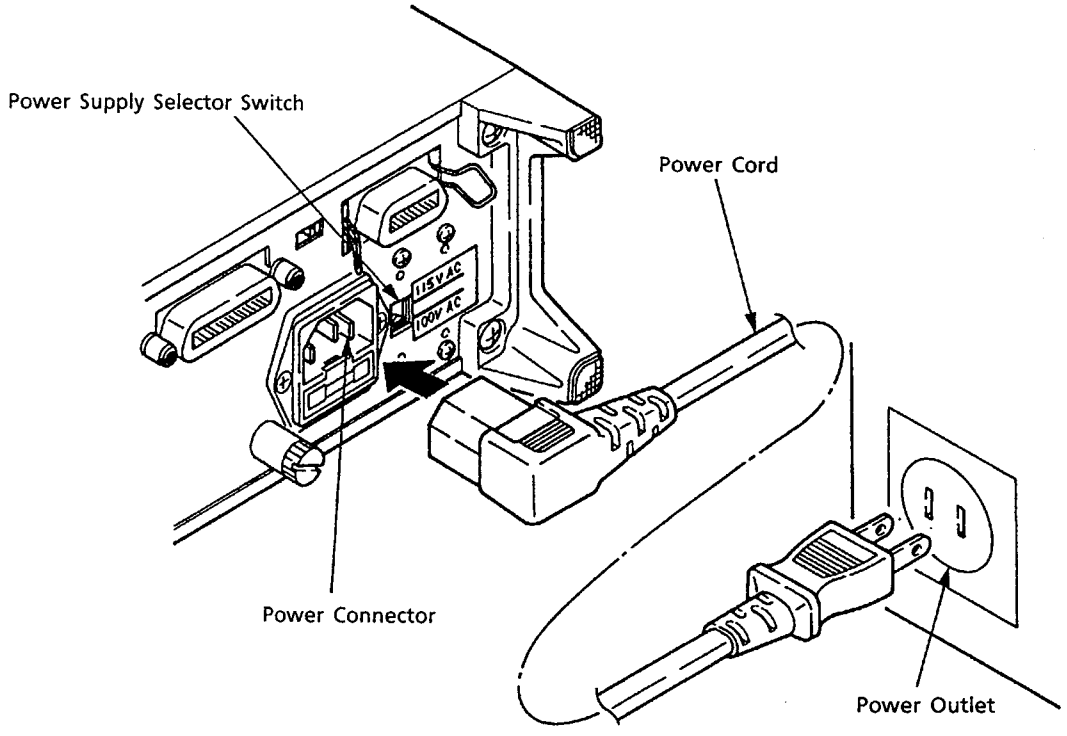


Figure 3.1 Power Supply Connection

(3) Turn ON the Power

Turn ON the power and check that the instrument is automatically tested.

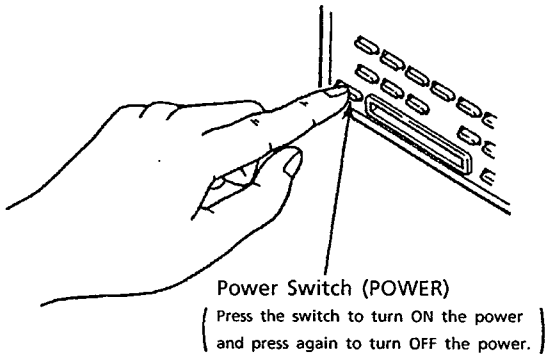
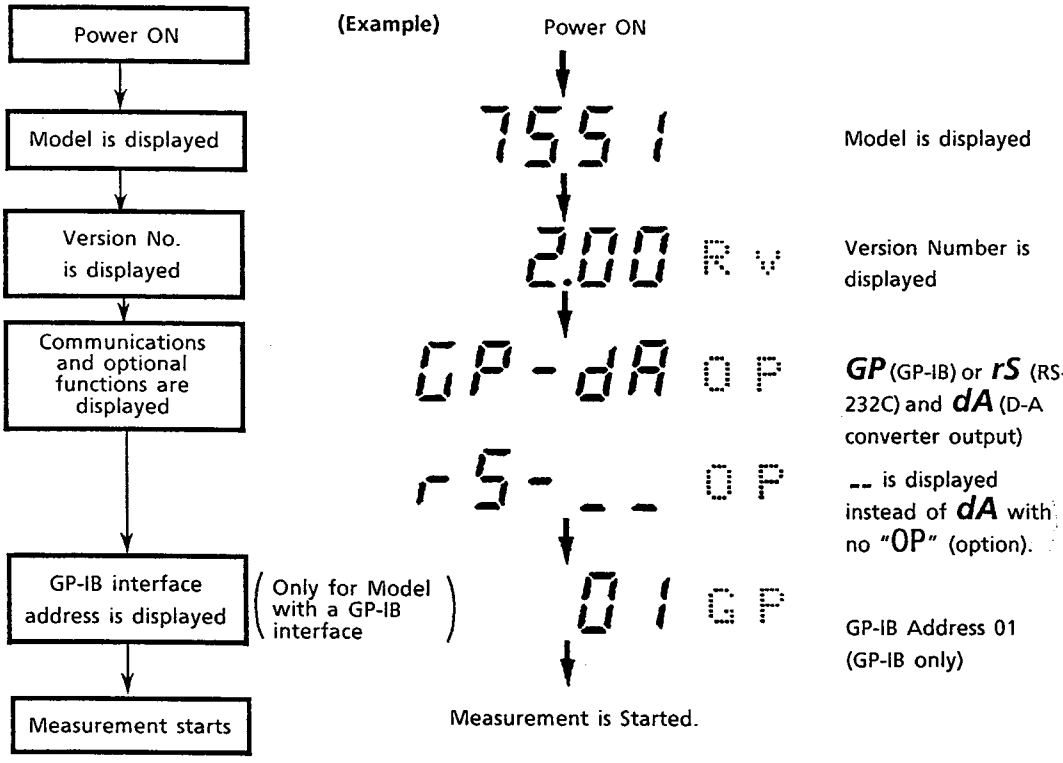


Figure 3.2 Power Switch ON

- Self test when the power is ON.
  When the power turns ON, a self-test starts automatically. Check that the following "opening" messages are displayed. If the opening messages are not displayed in the following order, a multimeter internal circuit may be defective. If so, contact your nearest YOKOGAWA agent.



NOTE

- Measuring interval (INTVL) is not lost even if the power is turned OFF. When the power is turned ON, opening messages are displayed, measurement starts and the measured data is displayed. When the INTVL is short, measured data is updated. However, if an extended INTVL is set, measured data is not updated because the next measuring interval set point has not been reached. Bear in mind that this is not an error.

3.3 Self Diagnostic Function which can be Started Manually

(1) Before turn the Power Switch ON, turn CAL/MEAS Switch CAL.
(2) Turn the Power Switch with pressing the ENTER key.
(3) Select a number from 1 to 9 using the ∧ key and press the ENTER key to execute.
(4) Press the SHIFT key twice, then it have entered "Test Mode."

Outline of test contents is described in the following table.

No.	Test Name	Test Contents
1	EEPROM test	ROM contents are written and then read for collation. Also, one's complement of ROM contents is written and then read for collation.
2	Keyboard test	This confirms that key pressing lights the corresponding LEDs. Thus normal key operation is tested.
3	Display test	Test to confirm that the display and all LEDs operate normally.
4	Relay output test	END (COMPLETE), HIGH, LOW, and PASS outputs are simultaneously turned ON/OFF at intervals of 1 sec.
5	IC memory card test	55H and AAH are written onto the IC memory card byte by byte and then read for collation.
6	EXT TRIG test	This confirms that inputting the EXT TRIG signal blinks the SAMPLE LED.
7, 8, 9	D/A output test	0 V, +900 mV, and +100 mV are output from the D/A output (option).

3.4 EEPROM Test

(1) Press the SHIFT key twice to set the instrument to test mode.
(2) Select TEST No. 1 using the RANGE key and press the ENTER key.
If "END" is displayed after several seconds, EEPROM is normal.
If "ERROR" is displayed, it is possible that EEPROM is faulty.

3.5 Keyboard Test

(1) Press the SHIFT key twice to set the instrument to test mode.
(2) Select TEST No. 2 using the RANGE key and press the ENTER key.
Key pressing lights the corresponding LEDs.
For keys having LEDs right above them, those LEDs light.
For other keys, the following LEDs light:
the ∨ key ... AUTO
the ∧ key ... SINGLE
the MODE key ... N. RDGS
the TRIG key ... RMT
the ENTER key ... PROG
(3) After pressing all the keys, press the ENTER key to terminate the test.
"END" is displayed on the display.
The keyboard is normal if all the corresponding LEDs light.
Otherwise, the panel assembly, main board assembly, or wiring is considered faulty.

3.6 Display Test

(1) Press the SHIFT key twice to set the instrument to test mode.
(2) Select TEST No. 3 using the RANGE key and press the ENTER key.
First, the entire display and all the LEDs on the panel light.
Then, the LEDs light one by one. For the 7×5 dot display area, dots light row by row from top to bottom in sequence; next dots light column by column from left to right in sequence. If all the dots and LEDs light, the display and LEDs are normal.
Otherwise, the panel assembly, main board assembly, or wiring is considered faulty.

3.7 Relay Output Test

(1) Press the SHIFT key twice to set the instrument to test mode.
(2) Select TEST No. 4 using the RANGE key and press the ENTER key.
TTL level signal is simultaneously output from A-D END (pin No. 2), HIGH (pin No. 4), PASS (pin No. 5), and LOW (pin No. 6) of the remote control I/O signal connector. At this time, the signal is alternately output for 1 sec at high level and low level.
(3) Observe the signal using the oscilloscope.
(4) Press the ENTER key to terminate the test.
If output is improper, main board assembly or wiring is considered faulty.

3.8 IC Memory Card Test

(1) Insert the formatted IC memory card in the IC memory card slot.
(2) Press the SHIFT key twice to set the instrument to test mode.
(3) Select TEST No. 5 using the RANGE key and press the ENTER key.
Write 55H and AAH into the IC memory card and then read them for collation.
If the test terminates normally, "END" is displayed.
If "ERROR" is displayed or the test does not terminate, main board assembly or wiring is considered faulty.

3.9 EXT TRIG Test

(1) Press the SHIFT key twice to set the instrument to test mode.
(2) Select TEST No. 6 using the RANGE key and press the ENTER key.
(3) Input a TTL signal of approx. 10 Hz to EXT TRIG (pin No. 1) of the remote control I/O signal connector and confirm that SAMPLE LED blinks.
(4) Press the ENTER key to terminate the test.

3.10 D/A Output Test

(1) Connect another digital multimeter to D-A OUT (pin No. 8) of the remote control I/O signal connector and set the instrument to the voltage range.
(2) Press the SHIFT key twice to set the instrument to test mode.
(3) Select TEST No. 7 using the RANGE key and press the ENTER key.
If the connected digital multimeter reads 0 V, D/A output is normal.
(4) Press the SHIFT key twice to set the instrument to test mode.
(5) Select TEST No. 8 using the RANGE key and press the ENTER key.
If the connected digital multimeter reads +900 mV, D/A output is normal.
(6) Press the SHIFT key twice to set the instrument to test mode.
(7) Select TEST No. 9 using the RANGE key and press the ENTER key.
If the connected digital multimeter reads +100 mV, D/A output is normal.

4. PERFORMANCE TEST

4.1 Outline

This section describes the checking method for the basic performance of the 7551, 7552, 7561 and 7562.

4.2 Test Environment

The environmental conditions for the performance test are as follows:

(1) Ambient temperature and humidity: 23 ±5°C, 45 to 75% R.H.
(2) Supply voltage : 100 V AC ±5% 50/60 Hz
115 V AC ±5% 50/60 Hz
200 V AC ±5% 50/60 Hz
230 V AC ±5% 50/60 Hz

4.3 Preparation

Perform the following before starting the performance test.

(1) Turn power ON and confirm that the power-up self diagnostic function (see Section 3.2) terminates normally.
(2) Warm up the recorder for at least 60 minutes.

4.4 Test Method

The performance test will be described in the order of specification, tolerance, necessary equipment, wiring method, and test procedure.

WARNING

To change any wiring with power ON is dangerous to the human body, and any apparatuses may be damaged. Be sure to turn the power switches of all the connected apparatuses OFF before changing any wiring.

4.4.1 DC Voltage Measurement Accuracy

Specifications

- 7551 and 7552 (Integral Time 100 ms)

Range	Accuracy One Year, 23±5°C
200 mV	±(0.011% of Reading + 8 Digits)
2000 mV	±(0.008% of Reading + 3 Digits)
20 V	±(0.02% of Reading + 4 Digits)
200 V	±(0.019% of Reading + 3 Digits)
1000 V	±(0.021% of Reading + 3 Digits)

- Using Auto Zero ON and Null function
- When the integral time is 20/16.7 ms, add 2 to the digit value at 100 ms.

- 7561 and 7562 (Integral Time 500 ms)

Range	Accuracy One Year, 23±5°C
200 mV	±(0.007% of Reading + 40 Digits)
2000 mV	±(0.005% of Reading + 15 Digits)
20 V	±(0.006% of Reading + 15 Digits)
200 V	±(0.015% of Reading + 15 Digits)
1000 V	±(0.016% of Reading + 20 Digits)

- Using Auto Zero ON and Null function
- When the Integral Time is 200 ms, add 2 to the digit value at 500 ms.

Equipment required

Equipment	Critical Specification	Recommended
Standard DC Voltage Generator	DC V Accuracy : ±10 ppm for 190 mV to 1.9 V DC V Accuracy : ±20 ppm for 19 V and 1000 V	DATRON 4708

Tolerance

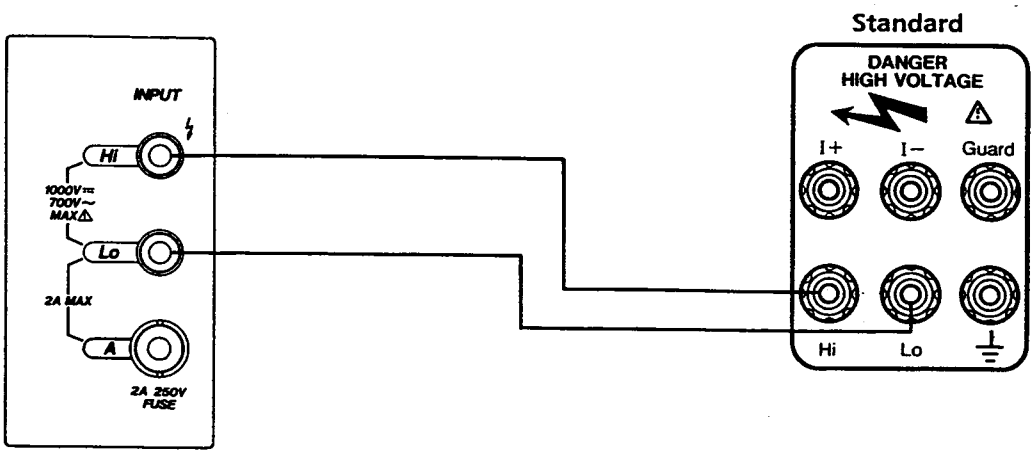
7551 and 7552 (Integral Time 100 ms)

Range	Input Voltage	Accuracy One Year, 23±5°C
200 mV	190.000 mV	±(0.011% of Reading + 8 Digits)
2000 mV	1900.00 mV	±(0.008% of Reading + 3 Digits)
20 V	19.0000 V	±(0.02% of Reading + 4 Digits)
200 V	190.000 V	±(0.019% of Reading + 3 Digits)
1000 V	1000.00 V	±(0.021% of Reading + 3 Digits)

7561 and 7562 (Integral Time 200 ms)

Range	Input Voltage	Accuracy One Year, 23±5°C
200 mV	190.0000 mV	±(0.007% of Reading + 42 Digits)
2000 mV	1900.000 mV	±(0.005% of Reading + 17 Digits)
20 V	19.00000 V	±(0.006% of Reading + 17 Digits)
200 V	190.0000 V	±(0.015% of Reading + 17 Digits)
1000 V	1000.000 V	±(0.016% of Reading + 22 Digits)

Connection diagram



Procedure

(1) Connect a standard voltage generator to the 7551/7552/7561/7562 (Hereafter to be referred to DMM.).
(2) With standard voltage generator output set to 0 V, set DMM to the range to be inspected and perform null adjustment (NULL SET) with AUTO ZERO ON.
(3) Set DMM Integral Time to 100 or 200 ms.
(4) Generate the Input Voltage listed in the table in "Tolerance" from the standard voltage generator and confirm that DMM reading is within the range given in the "Specification" column of the table.

Note: Each time the measurement range is changed, perform (2).

4.4.2 DC Current Measurement Accuracy

Specifications

- 7551 and 7552 (Integral Time 100 ms)

Range	One Year, 23±5°C
2 mA	±(0.07% of Reading + 100 Digits)
20 mA	±(0.07% of Reading + 20 Digits)
200 mA	±(0.07% of Reading + 20 Digits)
2000 mA	±(0.15% of Reading + 40 Digits)
20 A (7552 Only)	±(0.4% of Reading + 200 Digits)

- Auto Zero : ON
- When the Integral Time is 20/16.7 ms, add 20 to the value of digits for 100 ms.
- Temperature Coefficient : ± (1/10 of measuring accuracy) / °C
- Permissible Current : Model 7551; 2 A (2 A fuse incorporated)
  Model 7552; 2 to 2000 mA range ... 2 A (2 A fuse incorporated)
  20 A range ... 2 A (no fuse)

  * Integral Time of 16.7 ms implies 16.666 ... ms.

- 7561 and 7562 (Integral Time 500 ms)

Range	One Year, 23±5°C
2 mA	±(0.05% of Reading + 100 Digits)
20 mA	±(0.05% of Reading + 20 Digits)
200 mA	±(0.05% of Reading + 20 Digits)
2000 mA	±(0.1% of Reading + 40 Digits)

- Auto Zero : ON
- When the Integral Time is 200, 100, 20/16.7 ms, add 20 to the value of digits for 500 ms.
- Temperature Coefficient : ± (1/10 of measuring accuracy) / °C
- Permissible Current : 2 A (2 A fuse incorporated)

  * Integral Time of 16.7 ms implies 16.666 · · · ms.

Equipment required

Equipment	Critical Specification	Recommended
Standard DC Current Generator	DC Current Accuracy : ±100 ppm for 1.9 mA to 1.9 A DC Current Accuracy : ±200 ppm for 19 A	DATRON 4708 FLUKE 5220A (for 20 A Range)

Tolerance

7551 and 7552 (Integral Time 100 ms)

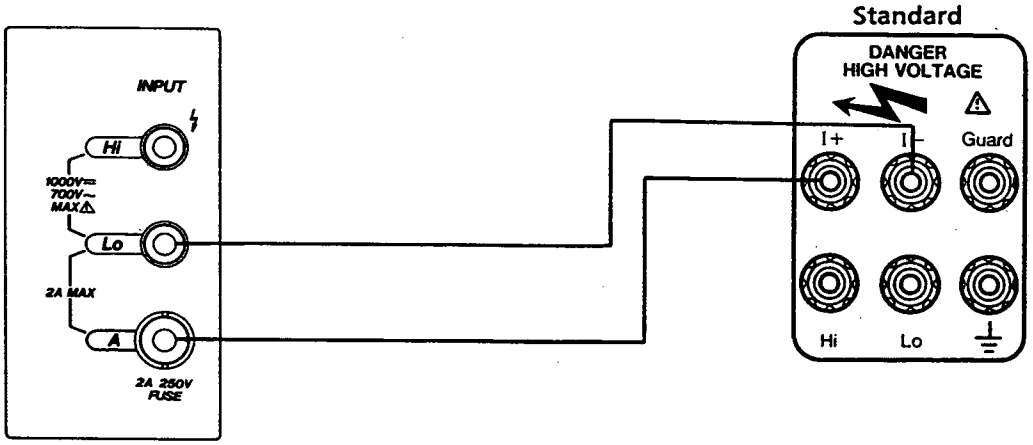
Range	Input Current	Accuracy
2 mA	1.90000 mA	±(0.07% of Reading + 100 Digits)
20 mA	19.0000 mA	±(0.07% of Reading + 20 Digits)
200 mA	190.000 mA	±(0.07% of Reading + 20 Digits)
2000 mA	1900.00 mA	±(0.15% of Reading + 40 Digits)
(Note) 20 A	19.0000 A	±(0.4% of Reading + 200 Digits)

(Note): For Model 7552 only. Use meter 20A terminal for this current test.

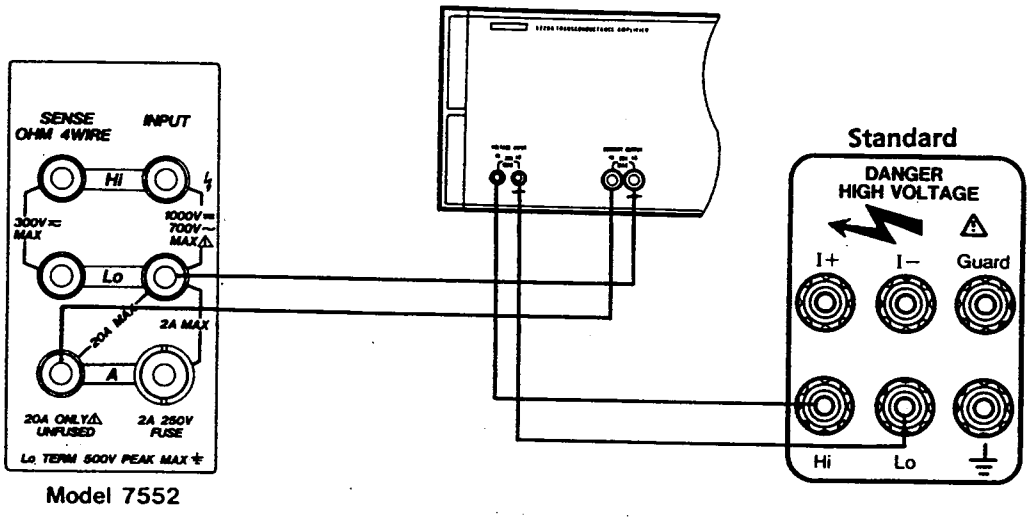
7561 and 7562 (Integral Time 100 ms)

Range	Input Current	Accuracy
2 mA	1.90000 mA	±(0.05% of Reading + 120 Digits)
20 mA	19.0000 mA	±(0.05% of Reading + 40 Digits)
200 mA	190.000 mA	±(0.05% of Reading + 40 Digits)
2000 mA	1900.00 mA	±(0.1% of Reading + 60 Digits)

Connection diagram



- For 20A (for the 7552)



Procedure

(1) Connect a standard current generator to the 7551/7552/7561/7562 (Hereafter to be referred to DMM.).
(2) With standard current generator output set to 0 A, set DMM to the range to be inspected and perform null adjustment (NULL SET) with AUTO ZERO ON.
(3) Set DMM Integral Time to 100 ms.
(4) Generate the Input Current listed in the table in "Tolerance" from the standard current generator and confirm that DMM reading is within the range given in the "Specification" column of the table.

Note: Each time the measurement range is changed, perform (2).

4.4.3 Resistance Measurement Accuracy

Specifications

- 7551 (2 Wire System) and 7552 (4 Wire System) (Integral Time 100 ms)

Range	One Year, 23±5°C
200 Ω	±(0.018% of Reading + 7 Digits)
2000 Ω	±(0.015% of Reading + 6 Digits)
20 kΩ	±(0.015% of Reading + 5 Digits)
200 kΩ	±(0.016% of Reading + 5 Digits)
2000 kΩ	±(0.05% of Reading + 20 Digits)
20 MΩ	±(0.25% of Reading + 30 Digits)
200 MΩ	±(2% of Reading + 200 Digits)

- Model 7551 is supplied only with 2-wire type.
- Using Auto Zero ON and Null function
- When the Integral Time is 20/16.7 ms, add 2 to the digit value at 100 ms.
- Accuracy for ranges 20 MΩ and 200 MΩ is not specified if the Integral Time is 2.5 ms.
- The effect of leadwires is not included.

- 7561 (4 Wire System) and 7562 (4 Wire System) (Integral Time 500 ms)

Range	One Year, 23±5°C
200 Ω	±(0.014% of Reading + 80 Digits)
2000 Ω	±(0.012% of Reading + 35 Digits)
20 kΩ	±(0.012% of Reading + 30 Digits)
200 kΩ	±(0.013% of Reading + 30 Digits)
2000 kΩ	±(0.05% of Reading + 150 Digits)
20 MΩ	±(0.2% of Reading + 30 Digits)
200 MΩ	±(2% of Reading + 200 Digits)

- Using Auto Zero ON and Null function
- When the Integral Time is 200 ms, add 2 to the digit value at 500 ms.
- Accuracy for ranges 20 MΩ and 200 MΩ is not specified if the Integral Time is 1.2 or 2.5 ms (for the Integral Time is more than 400 ms).
- The effect of leadwires is not included.

Equipment required

Equipment	Critical Specification	Recommended
Standard Resistor	Accuracy : ±20 ppm for 100 Ω to 1000 Ω ±0.02% for 10 MΩ ±0.02% for 100 MΩ	YOKOGAWA 2781

Tolerance

7551 with Four-wire resistance measurement (Auto Zero ON, Null ON, and Integral Time 100 ms.)

Range	Input Resistance	Accuracy
200 Ω	100.000 Ω	±(0.018% of Reading + 7 Digits)
2000 Ω	1000.00 Ω	±(0.015% of Reading + 6 Digits)
20 kΩ	10.0000 kΩ	±(0.015% of Reading + 5 Digits)
200 kΩ	100.000 kΩ	±(0.016% of Reading + 5 Digits)
2000 kΩ	1000.00 kΩ	±(0.05% of Reading + 20 Digits)
20 MΩ	10.0000 MΩ	±(0.25% of Reading + 30 Digits)
200 MΩ	100.000 MΩ	±(2% of Reading + 200 Digits)

7552 with Two-wire resistance measurement (Auto Zero ON, Null ON, and Integral Time 100 ms.)

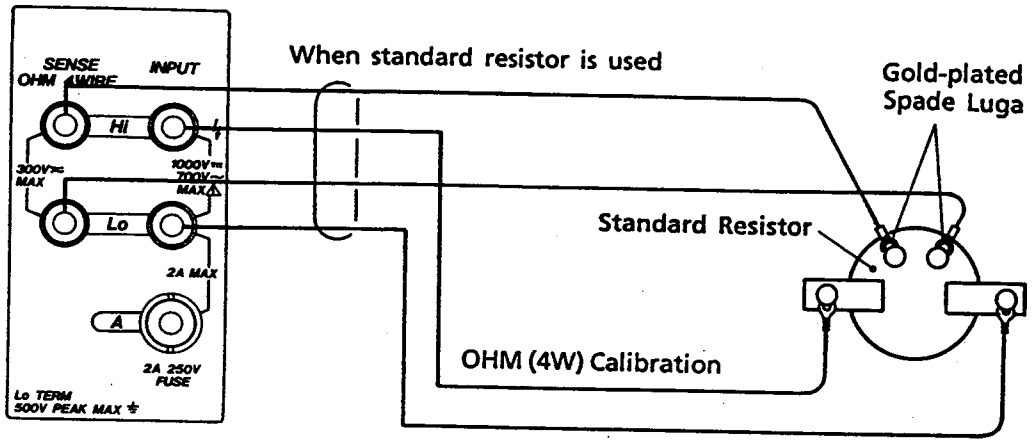
Range	Input Resistance	Accuracy
200 Ω	100.000 Ω	±(0.018% of Reading + 7 Digits)
2000 Ω	1000.00 Ω	±(0.015% of Reading + 6 Digits)
20 kΩ	10.0000 kΩ	±(0.015% of Reading + 5 Digits)
200 kΩ	100.000 kΩ	±(0.016% of Reading + 5 Digits)
2000 kΩ	1000.00 kΩ	±(0.05% of Reading + 20 Digits)
20 MΩ	10.0000 MΩ	±(0.25% of Reading + 30 Digits)
200 MΩ	100.000 MΩ	±(2% of Reading + 200 Digits)

7561 and 7562 with Four-wire resistance measurement (Auto Zero ON, Null ON, and Integral Time 200 ms.)

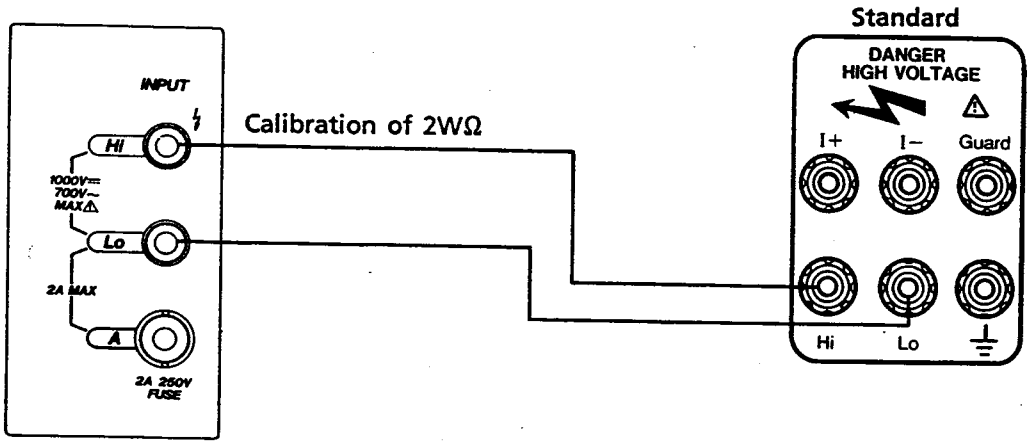
Range	Input Resistance	Accuracy
200 Ω	100.0000 Ω	±(0.014% of Reading + 82 Digits)
2000 Ω	1000.000 Ω	±(0.012 of Reading + 37 Digits)
20 kΩ	10.00000 kΩ	±(0.012 of Reading + 32 Digits)
200 kΩ	100.0000 kΩ	±(0.013 of Reading + 32 Digits)
2000 kΩ	1000.000 kΩ	±(0.05 of Reading + 152 Digits)
20 MΩ	10.0000 MΩ	±(0.2% of Reading + 32 Digits)
200 MΩ	100.000 MΩ	±(2% of Reading + 202 Digits)

Connection diagram

For Four-wire method



For Two-wire method (for the 7552)



Procedure

(1) Set the 7551/7552/7561/7562 (Hereafter to be refered to DMM) to the range to be inspected and perform null adjustment (NULL SET) with resistance input shorted.
(2) Set AUTO ZERO to ON.
(3) Set DMM Integral Time to 100 or 200 ms.
(4) Set the standard resistance to the Input Resistance listed in the table in "Tolerance" and measure the resistance to confirm that DMM reading is within the range given in the "Specification" column of the table.

Note: Each time the measurement range is changed, perform (1).

4.4.4 AC Voltage Measurement Accuracy

Specification

- 7551 and 7552 (Integral Time 100 ms): ± (% of Reading + Digits), One Year, 23 ±5°C

Range	20Hz to 30Hz	30Hz to 45Hz	45Hz to 10kHz	10kHz to 20kHz	20kHz to 50kHz	50kHz to 100kHz
200mV	0.9 + 200	0.5 + 200	0.4 + 200	0.5 + 300	0.8 + 500	2 + 500
2000mV	0.8 + 100	0.4 + 100	0.2 + 100	0.4 + 200	0.6 + 500	2 + 500
20V	0.8 + 100	0.4 + 100	0.2 + 100	0.4 + 200	0.6 + 500	2 + 500
200V	1.0 + 100	0.4 + 100	0.3 + 100	0.4 + 200	0.8 + 500	3 + 500
700V	1.0 + 100	0.4 + 100	0.4 + 100	0.6 + 300		

- Auto Zero : ON
- When the Integral Time is 20/16.7 ms, add 20 to the digit value at 100ms.
- AC Coupling : Average rectifying method (RMS calibrated) (Model 7551)
  True RMS value method (Model 7552)
- Input is defined as 5 to 100% of range, sinusoidal
- Response Time : 400 ms or less (Until ± 0.2% of the final value is reached)
- Crest Factor : 3 (Model 7552 only)
  (at full scale; 2 at full scale for 700 V range)

* Integral Time of 16.7ms implies 16.666 ... ms.

- 7562 only (Integral Time 500 ms): ± (% of Reading + Digits), One Year, 23 ±5°C

Range	20Hz to 30Hz	30Hz to 45Hz	45Hz to 10kHz	10kHz to 20kHz	20kHz to 50kHz	50kHz to 100kHz
200mV	0.9 + 200	0.5 + 200	0.3 + 200	0.3 + 300	0.7 + 500	2 + 500
2000mV	0.8 + 100	0.4 + 100	0.15 + 100	0.3 + 200	0.5 + 500	2 + 500
20V	0.8 + 100	0.4 + 100	0.15 + 100	0.3 + 200	0.5 + 500	2 + 500
200V	1.0 + 100	0.4 + 100	0.3 + 100	0.3 + 200	0.7 + 500	3 + 500
700V	1.0 + 100	0.4 + 100	0.3 + 100	0.3 + 300		

- Auto Zero : ON
- When the Integral Time is 200, 100, 20/16.7 ms, add 20 to the digit value at 500ms.
- AC Coupling : True RMS value method
- Input is defined as 5 to 100% of range, sinusoidal
- Response Time : 400 ms or less (Until ± 0.2% of the final value is reached)
- Crest Factor : 3 (at full scale; 2 at full scale for 700 V range)

* Integral Time of 16.7ms implies 16.666 ... ms.

Equipment required

Equipment	Critical Specification	Recommended
Standard AC Voltage Generator	Accuracy : ±0.02% for 190 mVrms to 700 Vrms	DATRON 4708

Tolerance

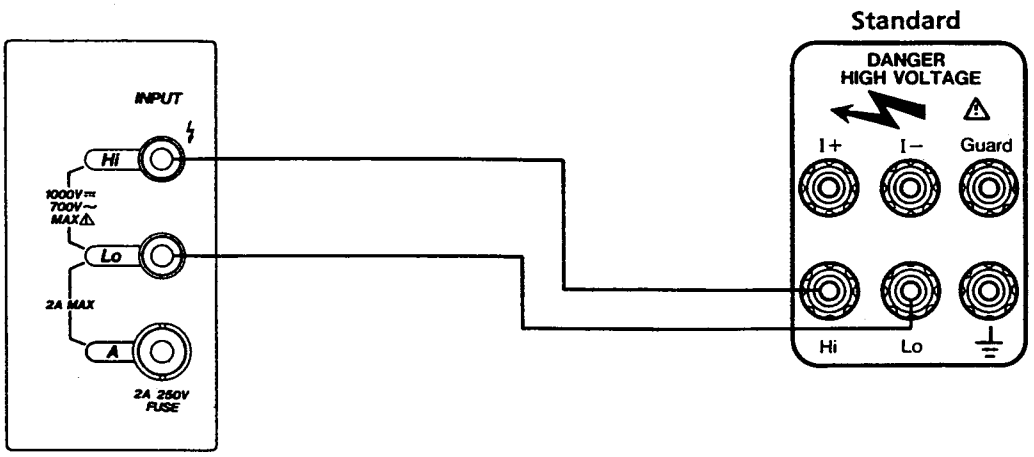
7551 and 7552 (Auto Zero ON, Null OFF, and Integral Time 100 ms)

Range	Input Voltage	Frequency				
		20 Hz	60 Hz	2 kHz	20 kHz	100 kHz
200 mV	190.000 mV	———	———	±(0.4% of Reading + 200 Digits)	±(0.5% of Reading + 300 Digits)	±(2% of Reading + 500 Digits)
2000 mV	1900.00 mV	±(0.8% of Reading + 100 Digits)	±(0.2% of Reading + 100 Digits)	±(0.2% of Reading + 100 Digits)	±(0.4% of Reading + 200 Digits)	±(2% of Reading + 500 Digits)
20 V	19.0000 V	———	———	±(0.2% of Reading + 100 Digits)	±(0.4% of Reading + 200 Digits)	±(2% of Reading + 500 Digits)
200 V	190.000 V	———	———	±(0.3% of Reading + 100 Digits)	±(0.4% of Reading + 200 Digits)	±(3% of Reading + 500 Digits)
700 V	690.00 V	———	———	±(0.4% of Reading + 100 Digits)	±(0.6% of Reading + 300 Digits)	———

7562 only (Auto Zero ON, Null OFF, and Integral Time 100 ms)

Range	Input Voltage	Frequency				
		20 Hz	60 Hz	2 kHz	20 kHz	100 kHz
200 mV	190.000 mV	———	———	±(0.3% of Reading + 220 Digits)	±(0.3% of Reading + 320 Digits)	±(2% of Reading + 520 Digits)
2000 mV	1900.00 mV	±(0.8% of Reading + 120 Digits)	±(0.15% of Reading + 120 Digits)	±(0.15% of Reading + 120 Digits)	±(0.3% of Reading + 220 Digits)	±(2% of Reading + 520 Digits)
20 V	19.0000 V	———	———	±(0.15% of Reading + 120 Digits)	±(0.3% of Reading + 220 Digits)	±(2% of Reading + 520 Digits)
200 V	190.000 V	———	———	±(0.3% of Reading + 120 Digits)	±(0.3% of Reading + 220 Digits)	±(3% of Reading + 520 Digits)
700 V	690.00 V	———	———	±(0.3% of Reading + 120 Digits)	±(0.3% of Reading + 320 Digits)	———

Connection diagram



Procedure

(1) Connect a standard voltage generator to the 7551/7552/7562 (Hereafter to be referred to DMM.).
(2) With standard voltage generator output set to 0 V, set DMM to the range to be inspected.
(3) Set AUTO ZERO to ON. Null adjustment is not performed (NULL OFF).
(4) Set DMM Integral Time to 100 ms.
(5) Generate the Input Voltage listed in the table in "Tolerance" from the standard voltage generator and confirm that DMM reading is within the range given in the "Specification" column of the table.

Note: Each time the measurement range is changed, perform (2).

4.4.5 AC Current Measurement Accuracy

Specification

7551 and 7552 (Integral Time 100 ms): ± (% of Reading + Digits), One Year, 23 ± 5°C

Range	20Hz to 30Hz	30Hz to 45Hz	45Hz to 2kHz	2kHz to 5kHz
2mA	1.5 + 350	0.8 + 250	0.5 + 300	0.8 + 300
20mA	1.3 + 300	0.8 + 200	0.5 + 200	0.8 + 200
200mA	1.3 + 300	0.8 + 200	0.5 + 200	0.8 + 200
2000mA	1.5 + 300	1.5 + 200	1.0 + 200	1.5 + 200
20A (Model 7552 only)	2 + 300	2 + 200	1.2 + 300	———

- Auto Zero : ON
- When the Integral Time is 20/16.7 ms, add 20 to the digits value at 100 ms.
- AC Coupling : Average rectifying method (RMS calibrated) (Model 7551)
  True RMS value method (Model 7552)
- Input is defined as 5 to 100% of ranges, sinusoidal
- Response Time : 400 ms or less (Until ± 0.2% of the final value is reached)
- Crest Factor : 3 (For Model 7552 only)
- Permissible Current : Model 7551; 2 A (2 A fuse incorporated)
  Model 7552; 2 to 2000 mA range ... 2 A (2 A fuse incorporated)
  20 A range ..... 20 A (no fuse)

* Integral Time of 16.7 ms implies 16.666 ... ms.

7562 only (Integral Time 500 ms): ± (% of Reading + Digits), One Year, 23 ± 5°C

Range	20Hz to 30Hz	30Hz to 45Hz	45Hz to 2kHz	2kHz to 5kHz
2mA	1.4 + 350	0.8 + 250	0.5 + 250	0.8 + 300
20mA	1.2 + 300	0.8 + 200	0.5 + 200	0.8 + 200
200mA	1.2 + 300	0.8 + 200	0.5 + 200	0.8 + 200
2000mA	1.5 + 300	1.5 + 200	1.0 + 200	1.5 + 200

- Auto Zero : ON
- When the Integral Time is 200, 100, 20/16.7 ms, add 20 to the digits value at 500 ms.
- AC Coupling : True RMS value method
- Input is defined as 5 to 100% of ranges, sinusoidal
- Response Time : 400 ms or less (Until ± 0.2% of the final value is reached)
- Crest Factor : 3
- Permissible Current : 2 A (2 A fuse incorporated)

* Integral Time of 16.7 ms implies 16.666 ... ms.

Equipment required

Equipment	Critical Specification	Recommended
Standard AC Current Generator	Accuracy : ±0.1% for 1.9 mA to 1.9 A ±0.2% for 19 A	DATRON 4708

Tolerance

7551 and 7552 (Auto Zero ON, Null OFF, and Integral Time 100 ms)

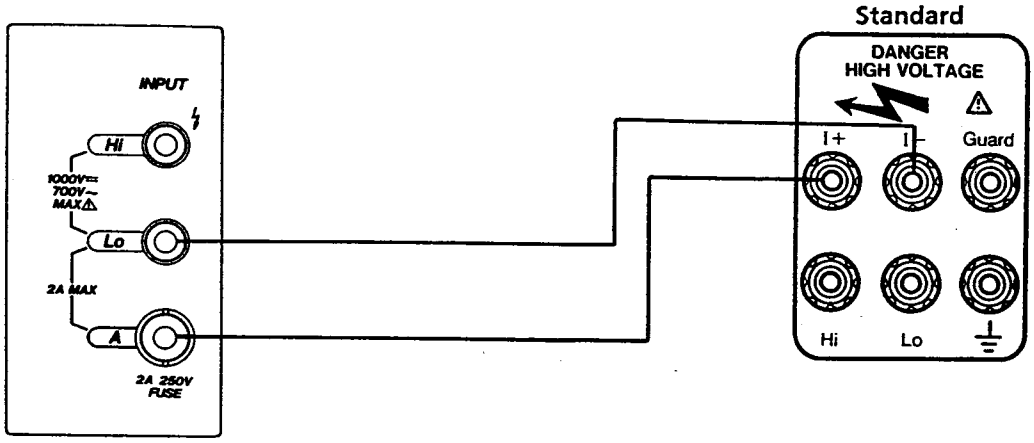
Range	Input Voltage	Frequency			
		20 Hz	60 Hz	2 kHz	5 kHz
2 mA	1.90000 mA	———	———	±(0.5% of Reading + 300 Digits)	———
20 mA	19.0000 mA	———	———	±(0.5% of Reading + 200 Digits)	———
200 mA	190.000 mA	±(1.3% of Reading + 300 Digits)	±(0.5% of Reading + 200 Digits)	±(0.5% of Reading + 200 Digits)	±(0.8% of Reading + 200 Digits)
2000 mA	1900.00 mA	———	———	±(1.0% of Reading + 200 Digits)	———
(Note) 20 A	19.0000 A	———	———	±(1.2% of Reading + 300 Digits)	———

(Note): For Model 7552 only. Use 20 A terminal for this current test.

7562 only (Auto Zero ON, Null OFF, and Integral Time 100 ms)

Range	Input Voltage	Frequency			
		20 Hz	60 Hz	2 kHz	5 kHz
2 mA	1.90000 mA	———	———	±(0.5% of Reading + 270 Digits)	———
20 mA	19.0000 mA	———	———	±(0.5% of Reading + 220 Digits)	———
200 mA	190.000 mA	±(1.2% of Reading + 320 Digits)	±(0.5% of Reading + 220 Digits)	±(0.5% of Reading + 220 Digits)	±(0.8% of Reading + 220 Digits)
2000 mA	1900.00 mA	———	———	±(1.0% of Reading + 220 Digits)	———

Connection diagram



Procedure

(1) Connect a standard current generator to the 7551/7552/7562 (Hereafter to be referred to DMM.).
(2) With standard current generator output set to 0 V, set DMM to the range to be inspected.
(3) Set AUTO ZERO to ON. Null adjustment is not performed (NULL OFF).
(4) Set DMM Integral Time to 100 ms.
(5) Generate the Input Current listed in the table in "Tolerance" from the standard current generator and confirm that DMM reading is within the range given in the "Specification" column of the table.

Note: Each time the measurement range is changed, perform (2).

4.4.6 Frequency Measurement Accuracy

Specification

7552 only

Range	Frequency Range and Indication
2000 Hz	180.00 to 1999.99 Hz

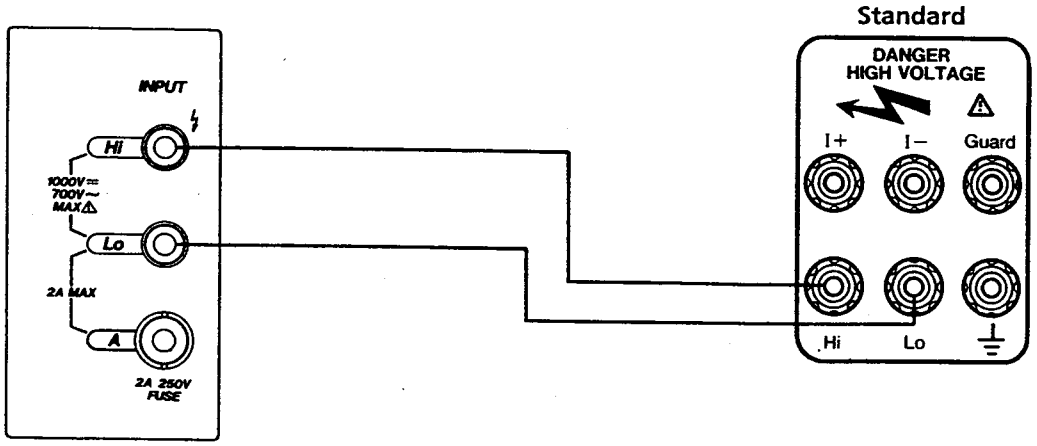
- Input Sensitivity : 5% p-p of V/A RANGE

Equipment required

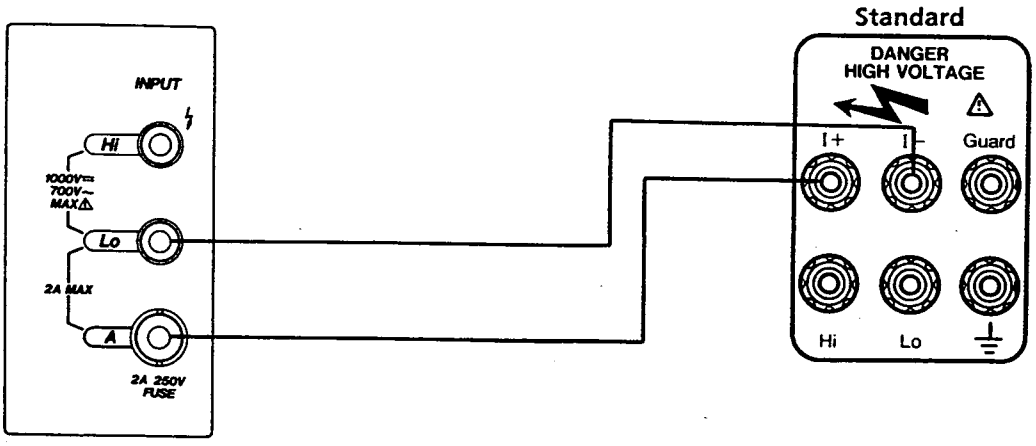
Equipment	Critical Specification	Recommended
Standard AC Voltage and Current Generator	Accuracy : ±100 ppm	DATRON 4708

Connection diagram

For AC Voltage



For AC Current



Procedure

(a) AC Voltage Mode

In AC Voltage measurement mode, set the meter range to 2000 mV and press AC V key (FCTN key). The meter is now ready for frequency measurement. Set the frequency measurement range to 2000 Hz and apply the input voltage of 1900 mV AC with frequency 1000.00 Hz. Check that the meter accuracy is as shown in table below:

AC V Range	Input Voltage	Input Frequency	Frequency Range	Accuracy
2000 mV	1900 mV	1000.00 Hz	2000 Hz	±100 ppm

(b) AC Current Mode

In AC Current measurement mode, set the meter range to 200 mA and press AC A key (FCTN key). The meter is now ready for frequency measurement. Set the frequency measurement range to 2000 Hz and apply the input current of 190 mA with frequency 1000.00 Hz. Check that the meter accuracy is as shown in table below:

AC A Range	Input Current	Input Frequency	Frequency Range	Accuracy
200 mA	190 mA	1000.00 Hz	2000 Hz	±100 ppm

5. CALIBRATION

5.1 Outline

This section describes changing the value which is set at the factory before shipment on the basis of traceability.

5.2 Calibration

For calibration, refer to Section 8.2 of the Instruction Manual.

6. DISASSEMBLY AND RE-ASSEMBLY

Since there are areas of high voltage and strong current inside this instrument, users must not attempt to disassemble and repair the instrument. If a problem persists after you have checked the instrument according to CHAPTER 10, "TROUBLE-SHOOTING" and repair is required, refer to CHAPTER 12, "HOW TO REQUEST REPAIR OR CALIBRATION" and contact YOKOGAWA.

7. ADJUSTMENT

When conducting performance test described in CHAPTER 5, "PERFORMANCE TEST", if the instrument performance does not meet the specifications, proceed to CHAPTER 6, "CALIBRATION." Users must not attempt any adjustments not described in CHAPTER 6.

If problem persists after you have checked the instrument according to CHAPTER 10, "TROUBLE-SHOOTING" and adjustment or repair is required, refer to CHAPTER 12, "HOW TO REQUEST REPAIR OR CALIBRATION" and contact YOKOGAWA.

8. REPLACEABLE PARTS

8.1 Outline

This section describes how to read the customer maintenance parts list (CMPL).

8.2 How to Read the CMPL

An assembly is an exchangeable unit for repair. YOKOGAWA apparatuses are designed from the standpoint of easy maintenance on the basis of assembly exchange. Therefore, when any parts are to be exchanged, it is recommended to exchange the corresponding assembly.

Parts which can be supplied by YOKOGAWA are listed in the CMPL in Chapter 14, They induce electrical and mechanical parts on the basis of assembly exchange. Parts which are smaller than an assembly cannot be supplied.

The contents of the CMPL are as follows:

- Item No.
- YOKOGAWA part No.
- Usage frequency
- Description

8.3 How to Order Parts

When ordering parts from the CMPL, inform your distributor of the YOKOGAWA part number and the number of parts to be required.

9. PRINCIPLE OF OPERATION

Please read Instruction Manual Section 2.2, "Block Diagram."

10. TROUBLE-SHOOTING

10.1 Outline

This section describes how to find causes for defects and how to find a defective assembly using the trouble-shooting flowchart starting from a faulty phenomenon.

10.2 Procedure

The analytical procedure when a trouble occurs is as follows:

(1) **Trouble Check**
Check first what kind of trouble it is and whether there is a possibility of recurrence.

(2) **Check whether it is caused by mishandling.**
Check whether the decision coincides with the error message (refer to Section 10.3 of the Instruction Manual).

(3) **Execution of Self Diagnosis**
Execute the self diagnosis (see Chapter 3) when power is turned ON to detect trouble items.

(4) Try to find the cause of the trouble according to the trouble-shooting flowchart (Section 10.3).

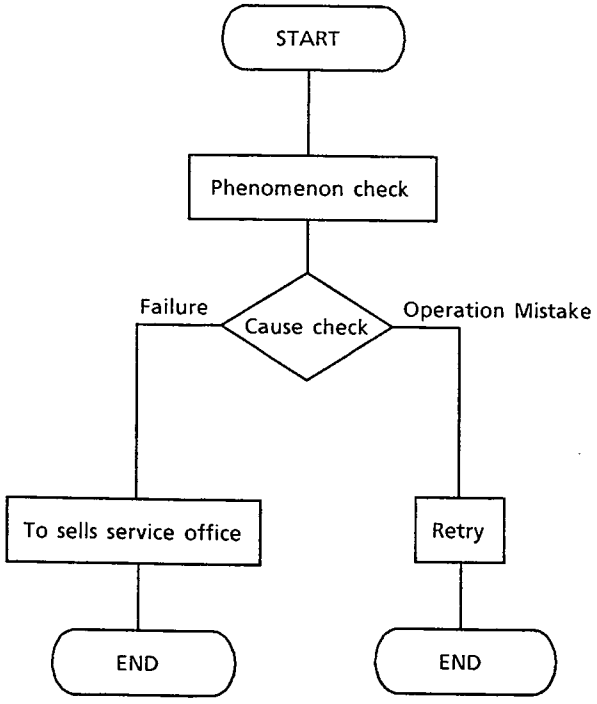
WARNING

Take the following precautions. Otherwise, the operator may be exposed to danger.

(1) The operator can not remove the cover.
(2) Any operations which are not described in this manual should not be performed by the user for safety.

10.3 Trouble-shooting Flowchart

This flowchart consists of general service operations when a fault occurs. The chart is not always suitable for various faults. However, it is recommended to perform operations according to the flowchart.



Self diagnosis (Chapter 3) for checking causes from various angles including visual check, function check, and the operation principle and trouble-shooting (Chapter 10)

Please read Instruction Manual.

10.4 Error Messages

Error No.	Error Message	Probable Cause and What to Do	Operation Mistake	Contact YOKOGAWA
02	IC memory card error.	IC memory card is faulty. Or IC memory card was removed while recalling memory.	○	
03	A-D converter error.	A-D converter is faulty.		○
04	EEPROM write error.	Calibrated data-rite error.(EEPROM broken)		○
11	Communications command error.	Illegal command Invalidly set data or program file in IC memory card.	○	
12	Parameter entry error.	Parameter out of range. Auto range is selected in 20 A range set.	○	
21	Calibration error.	Calibrated data out of range. Enter data correctly.	○	
22	EEPROM error.	EEPROM contents (calibrated data) broken. Recalibrate data. (Note)	○	
23	Self-test error.	Self-test error when Power ON.		○
24	EEPROM	Set data in EEPROM broken. Clear EEPROM (set datra only).	○	○
31	IC memory card not initialized.	Execute memory card formatting with "PROG" key.	○	
32	No file on IC memory card.	No file (data not written).	○	
33	File capacity overflow.	NS values exceed memory capacity.	○	
34	No IC memory card.	IC memory card not inserted correctly.	○	
35	IC memory card cannot be initialized.	Card cannot be formatted. (Card failure)		○
36	No data to be recalled.	Attempt to remove card. Or attempt to set STORE key OFF before storing data. Illegal initialization method (illegal recall head No. position).	○	
37	IC memory card battery error.	Battery backup error (no battery in IC memory card).		○
38	IC memory card program memory area is small. Or no program.	Attempt to enter program into a file that is full. Or attempt to execute a program that doesn't exist.		○
39	Not a DMM file.	A different memory card is accessed. A file with invalid data is accessed, for example : • While data is stored, IC card removed and recalled. • While a program is generated, IC card removed and used for executing a program.	○	

NOTE

If EEPROM (storing calibrated data) is lost, ERROR 22 is displayed and all operations stop. If ERROR 22 is displayed, perform the following:

■ **When calibration is performed by users:**

(1) Turn OFF the meter power.
(2) Set "CAL-MEAS" switch to "CAL" position.
(3) Turn ON the power. ERROR 22 comes up and then disappears about 2 to 3 seconds later. All calibration data are reset.
(4) Now the meter is in calibration mode. See Instruction Manual Chapter 8, "MAINTENANCE AND CALIBRATION" to calibrate the meter.
(5) After the calibration, turn OFF the power. Set the "CAL-MEAS" switch to "MEAS" position.
(6) If the meter cannot be calibrated, contact your nearest YOKOGAWA agent.
(7) If the Steps (1) through (5) are not performed by the user, contact your nearest YOKOGAWA agent.

■ **When calibration is requested to YOKOGAWA:**

See Chapter 12, "How to Request Repair or Calibration."

11. PREVENTIVE MAINTENANCE

A part of prevention and maintenance is described in Section 8.1 of the Instruction Manual. Please refer to it.

12. HOW TO REQUEST REPAIR OR CALIBRATION

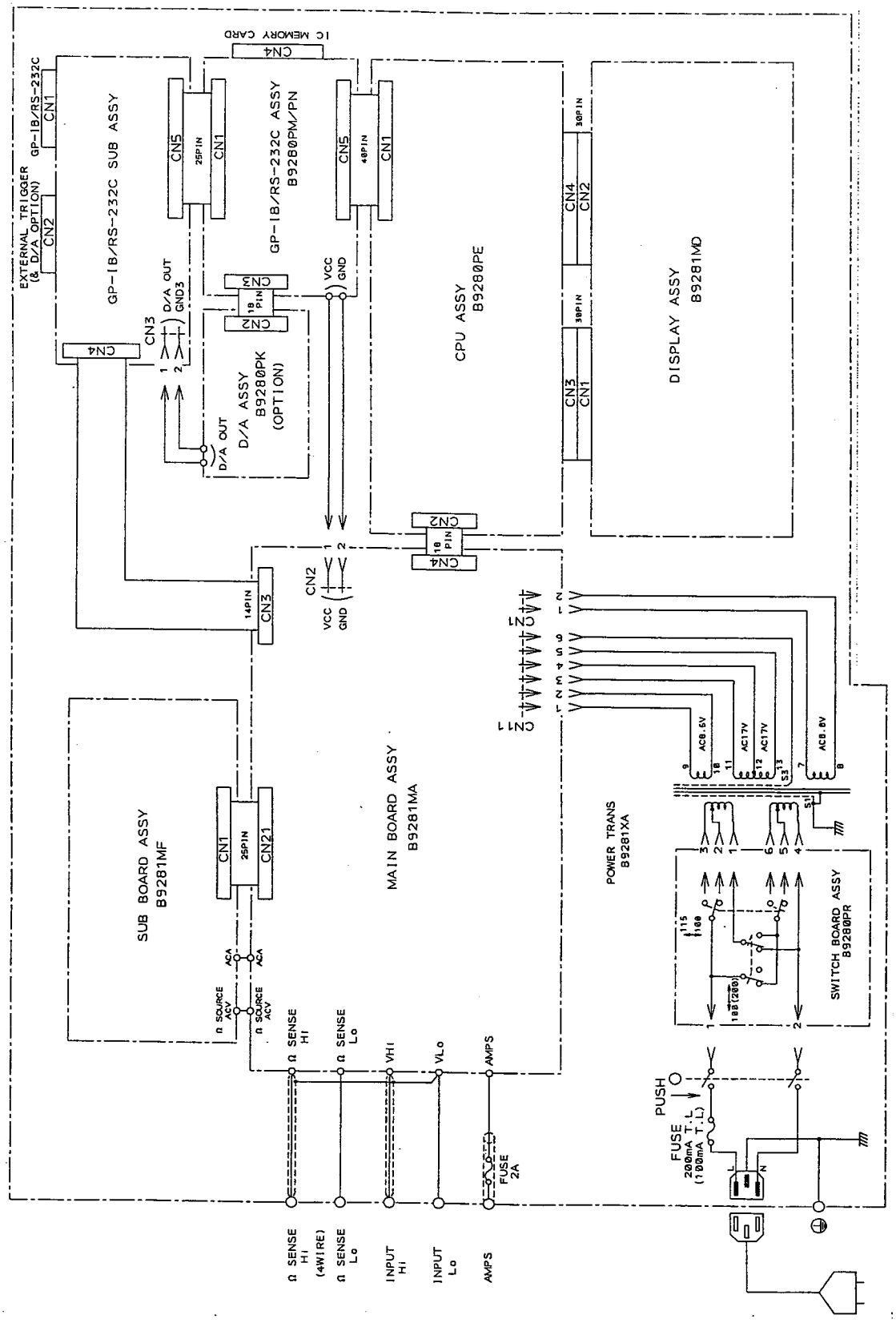
How to request repair or calibration for the 7551, 7552, 7561 and 7562 under the following conditions:

After having read Chapter 10, "TROUBLE-SHOOTING", and the trouble has not been solved yet, please apply for repair as follows: clearly write the information listed below and send it to the YOKOGAWA sales/service office or agency.

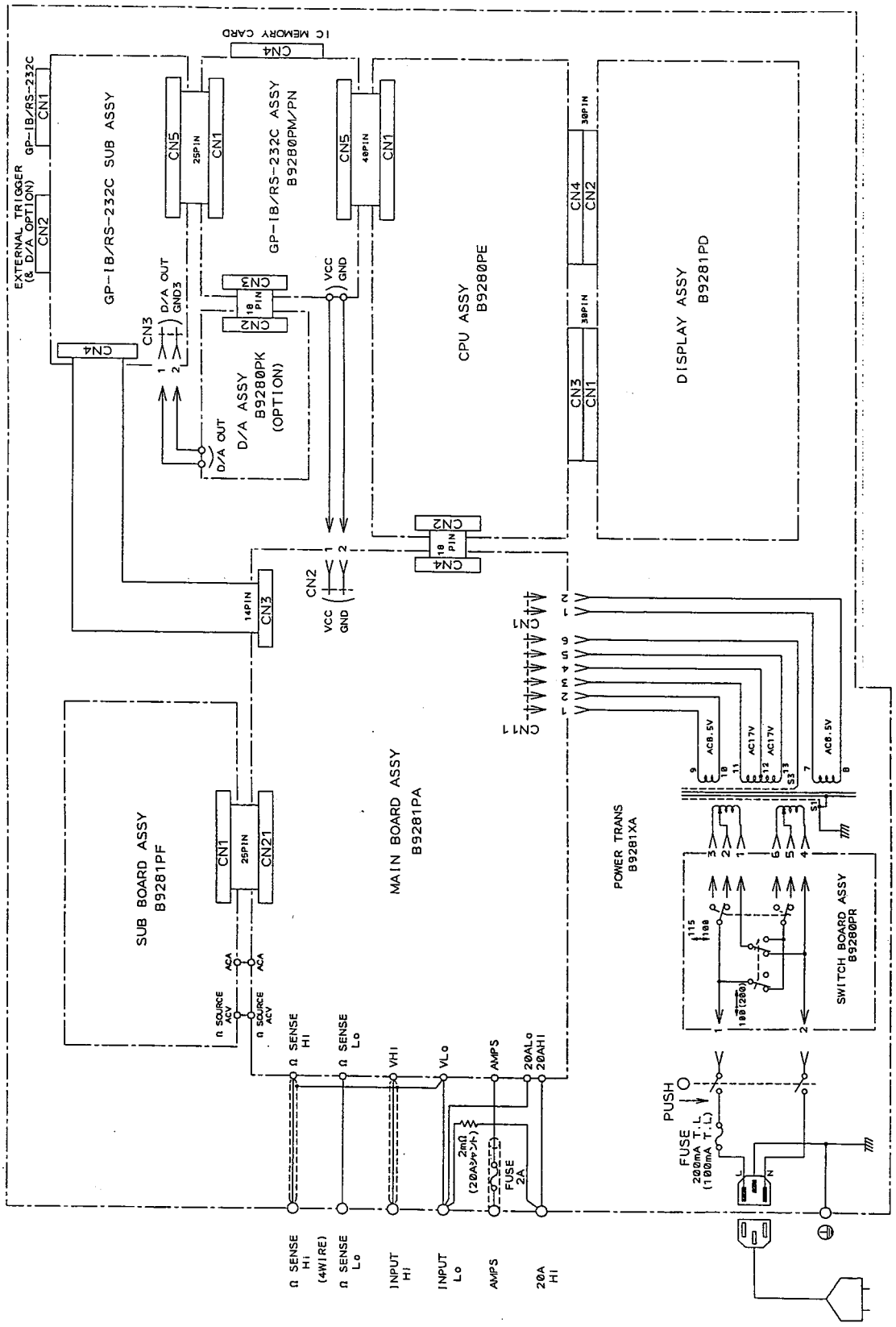
Request calibration in the same way as repair.

- Address
- Name of person in charge and telephone number
- Type code and Serial No.
- Reason for repair
- Level of repair

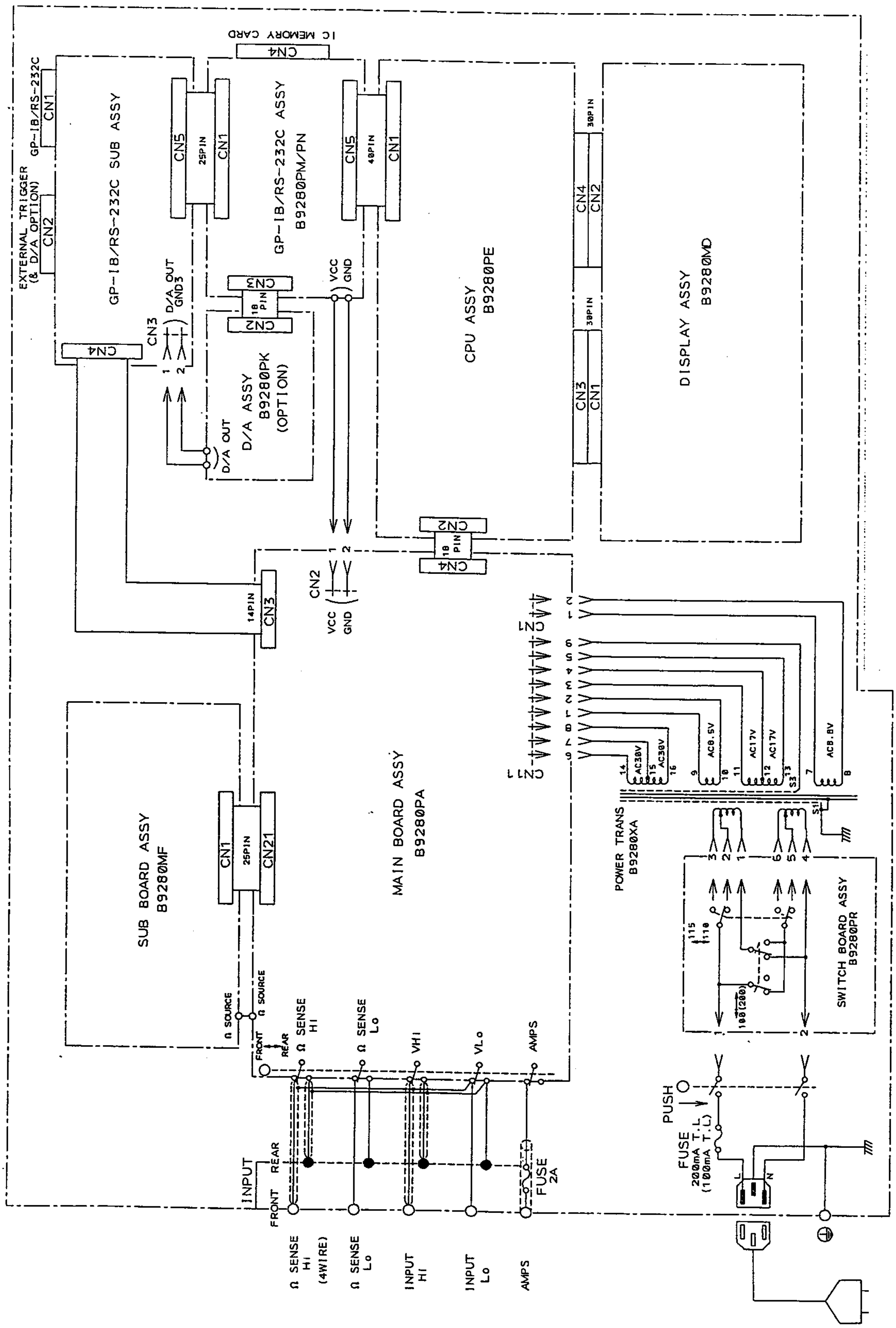
13. SCHEMATIC DIAGRAM



Model 7551

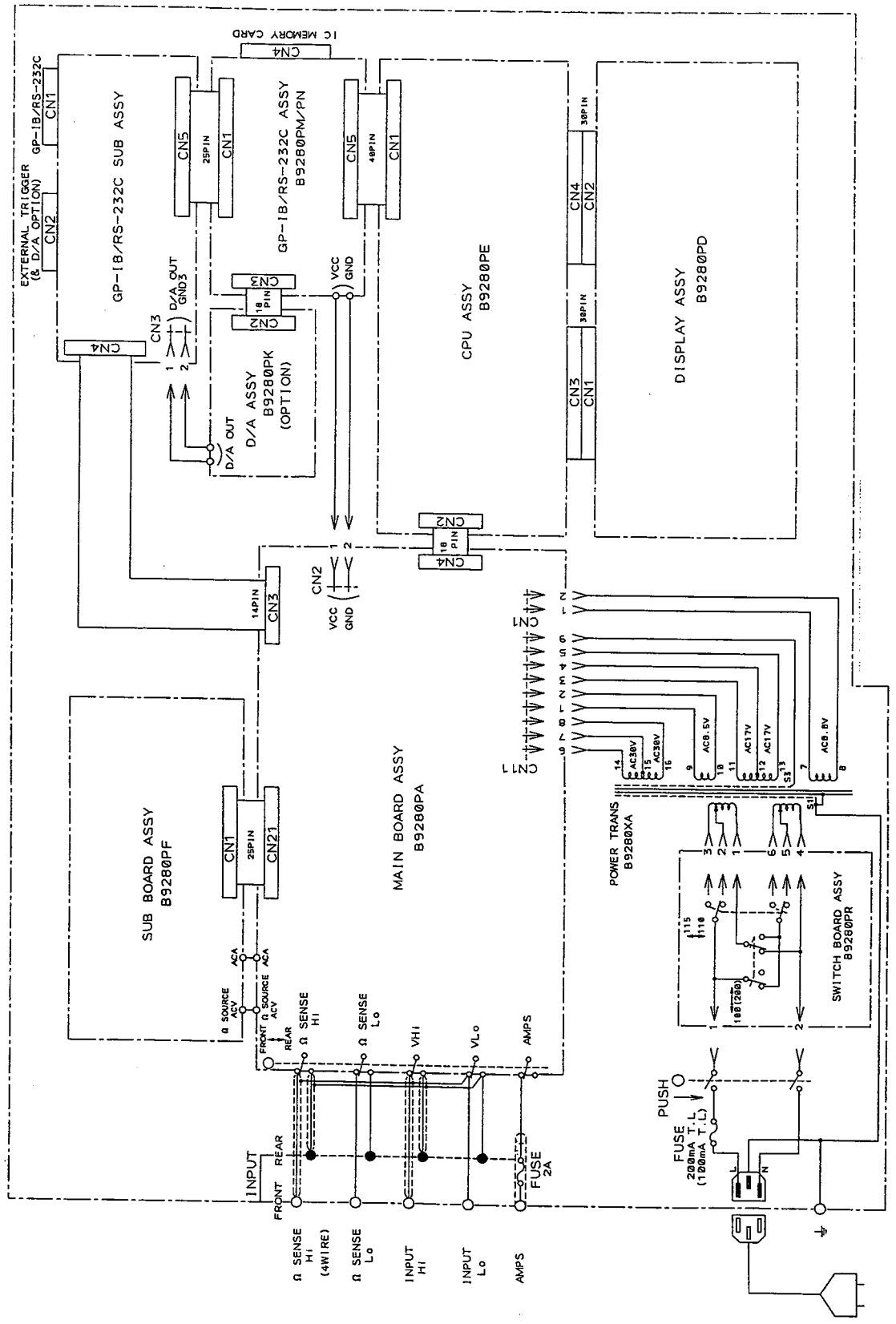

EXTERNAL TRIGGER (& D/A OPTION)
GP-IB/RS-232C CN1
CN2
GP-IB/RS-232C SUB ASSY
CN4
CN3
D/A OUT GND3
D/A OUT
D/A ASSY B9280PK (OPTION)
IC MEMORY CARD
CN4
CN5 25PIN CN1
GP-IB/RS-232C ASSY B9280PM/PN
CN5 40PIN CN1
VCC GND
CN3 18 PIN CN2
CPU ASSY B9280PE
CN4 CN2
CN3 CN1
DISPLAY ASSY B9281PD
CN2 18 PIN CN4
CN2 VCC GND
14PIN CN3
CN11
AC8.5V
AC17V
AC17V
AC8.5V
SUB BOARD ASSY B9281PF
CN1 25PIN CN21
MAIN BOARD ASSY B9281PA
POWER TRANS B9281XA
SWITCH BOARD ASSY B9280PR
ACA
ACV
Ω SOURCE
Ω SENSE HI
Ω SENSE Lo
VHI
VLo
AMPS
20ALo
20AHI
2mΩ (20A)
FUSE 2A
PUSH
FUSE 200mA T.L (100mA T.L)
Ω SENSE HI (4WIRE)
Ω SENSE Lo
INPUT HI
INPUT Lo
AMPS
20A HI

Model 7552



GP-IB/RS-232C SUB ASSY
GP-IB/RS-232C ASSY
B9280PM/PN
CPU ASSY
B9280PE
DISPLAY ASSY
B9280MD
D/A ASSY
B9280PK
(OPTION)
MAIN BOARD ASSY
B9280PA
SUB BOARD ASSY
B9280MF
POWER TRANS
B9280XA
SWITCH BOARD ASSY
B9280PR
IC MEMORY CARD
EXTERNAL TRIGGER
(& D/A OPTION)
GP-IB/RS-232C
D/A OUT
GND3
VCC
GND
25PIN
48PIN
30PIN
18PIN
14PIN
CN1
CN2
CN3
CN4
CN5
CN11
CN21
AC30V
AC8.5V
AC17V
FRONT
REAR
INPUT
FUSE
2A
PUSH
FUSE
200mA T.L
(100mA T.L)
Ω SOURCE
Ω SENSE
Hi
Lo
VHI
VLo
AMPS
Ω SENSE Hi (4WIRE)
Ω SENSE Lo
INPUT Hi
INPUT Lo

Model 7561


GP-IB/RS-232C SUB ASSY
GP-IB/RS-232C ASSY B9280PM/PN
CPU ASSY B9280PE
DISPLAY ASSY B9280PD
D/A ASSY B9280PK (OPTION)
SUB BOARD ASSY B9280PF
MAIN BOARD ASSY B9280PA
POWER TRANS B9280XA
SWITCH BOARD ASSY B9280PR
IC MEMORY CARD
EXTERNAL TRIGGER (& D/A OPTION)
GP-IB/RS-232C
D/A OUT
VCC
GND
INPUT
FRONT
REAR
FUSE 2A
FUSE 200mA T.L (100mA T.L)
PUSH
Ω SENSE Hi (4WIRE)
Ω SENSE Lo
INPUT Hi
INPUT Lo
AMPS

Model 7562

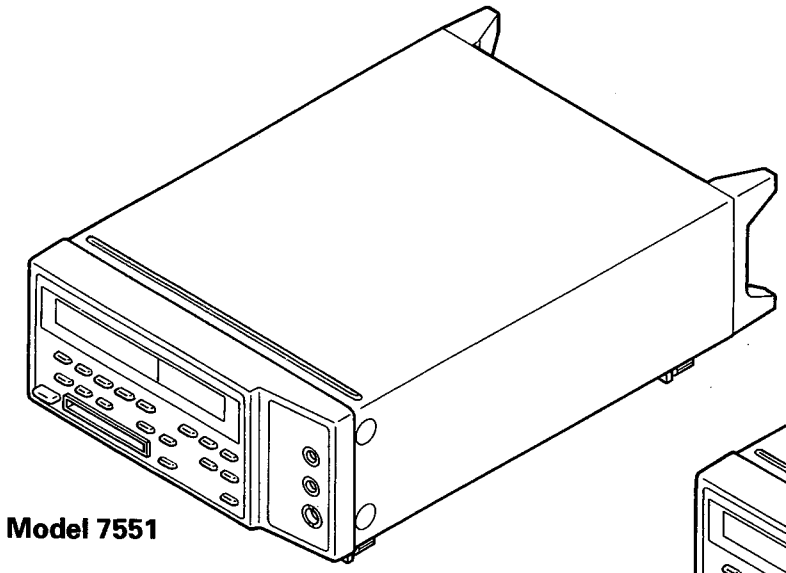
14. CUSTOMER MAINTENANCE PARTS LIST (CMPL)

This section describes the customer maintenance parts list (CMPL).

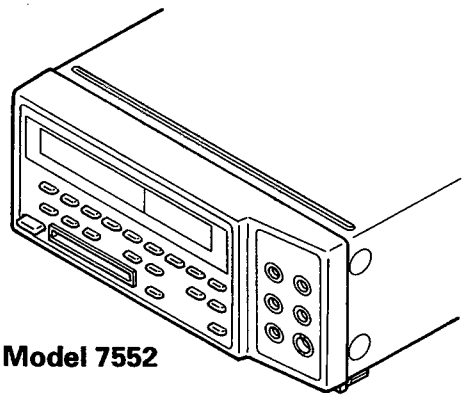
Customer Maintenance Parts List

Model 7551
Model 7552
Model 7561
Model 7562
Digital Multi Meters

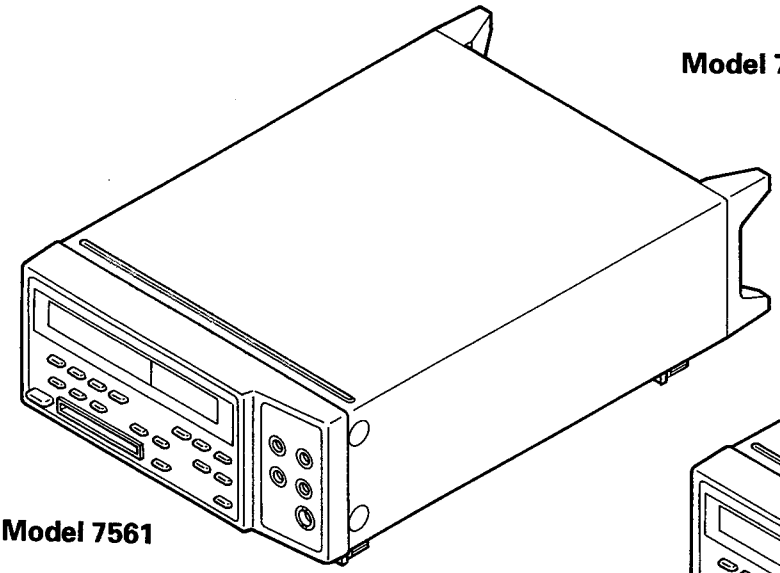
7500 Series



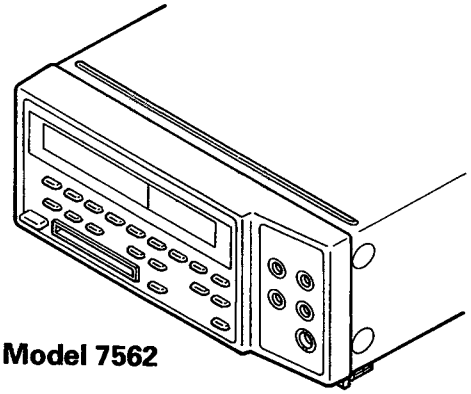
Model 7551



Model 7552



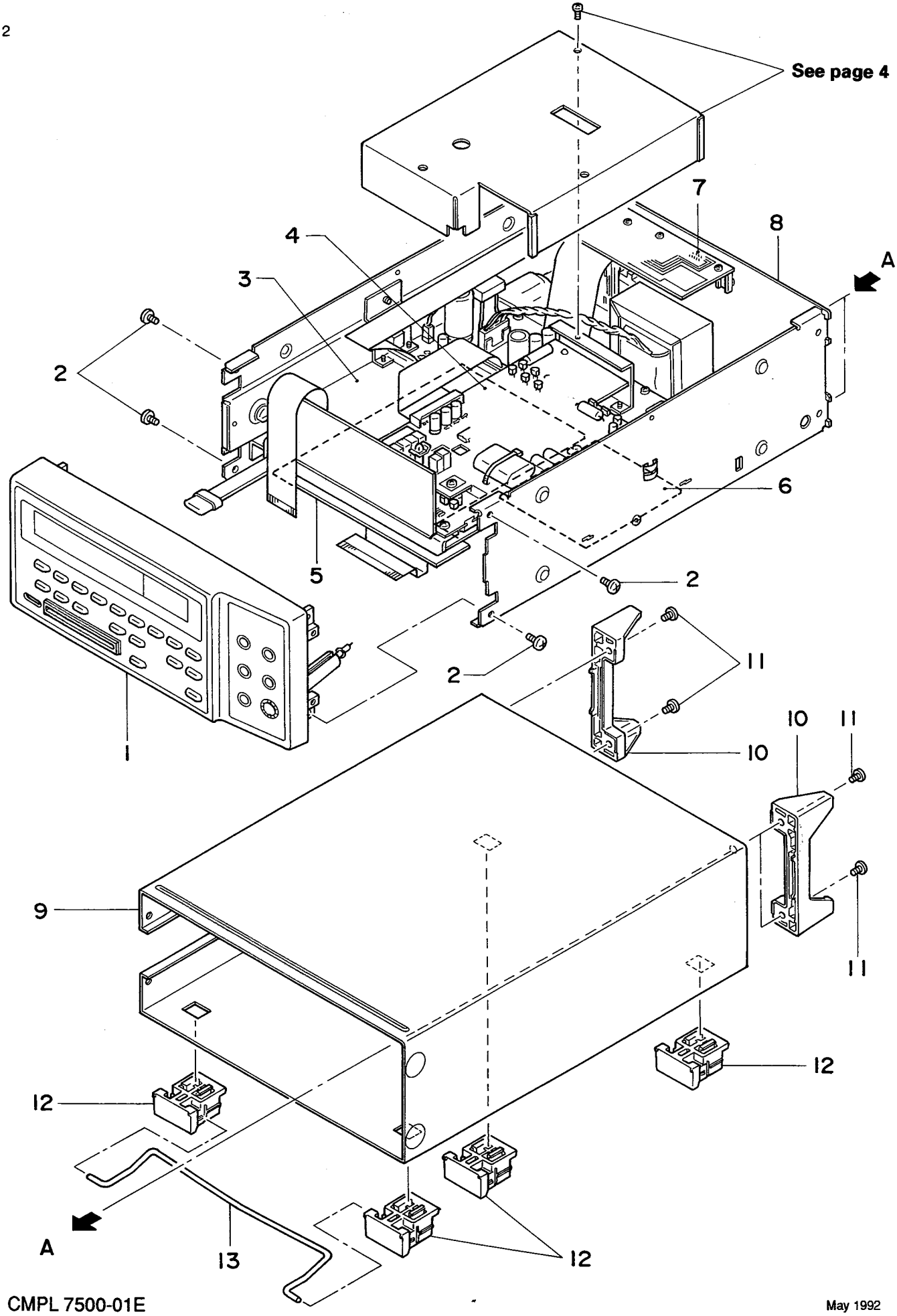
Model 7561



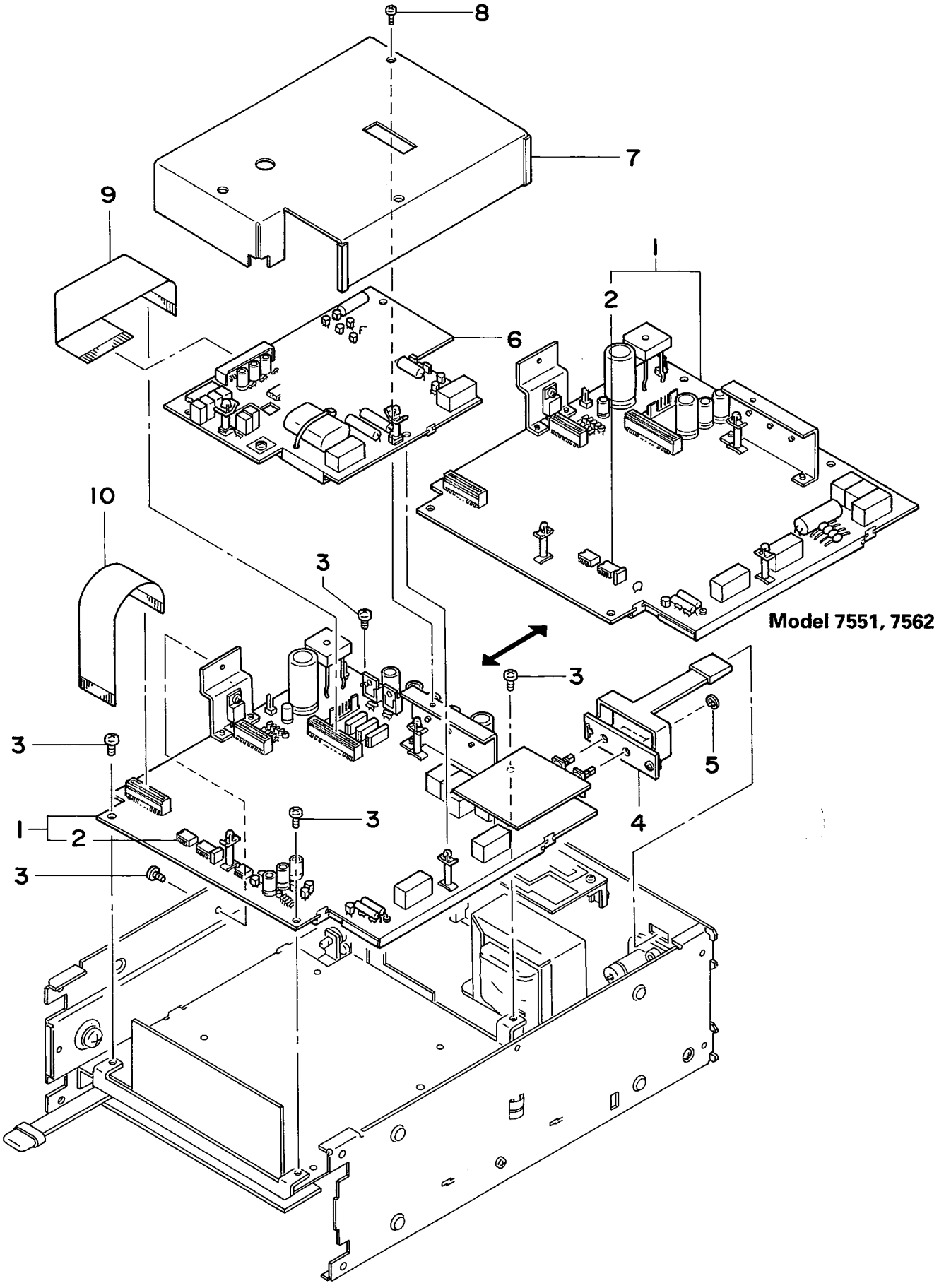
Model 7562

YOKOGAWA ◆
Yokogawa Electric Corporation

CMPL 7500-01E

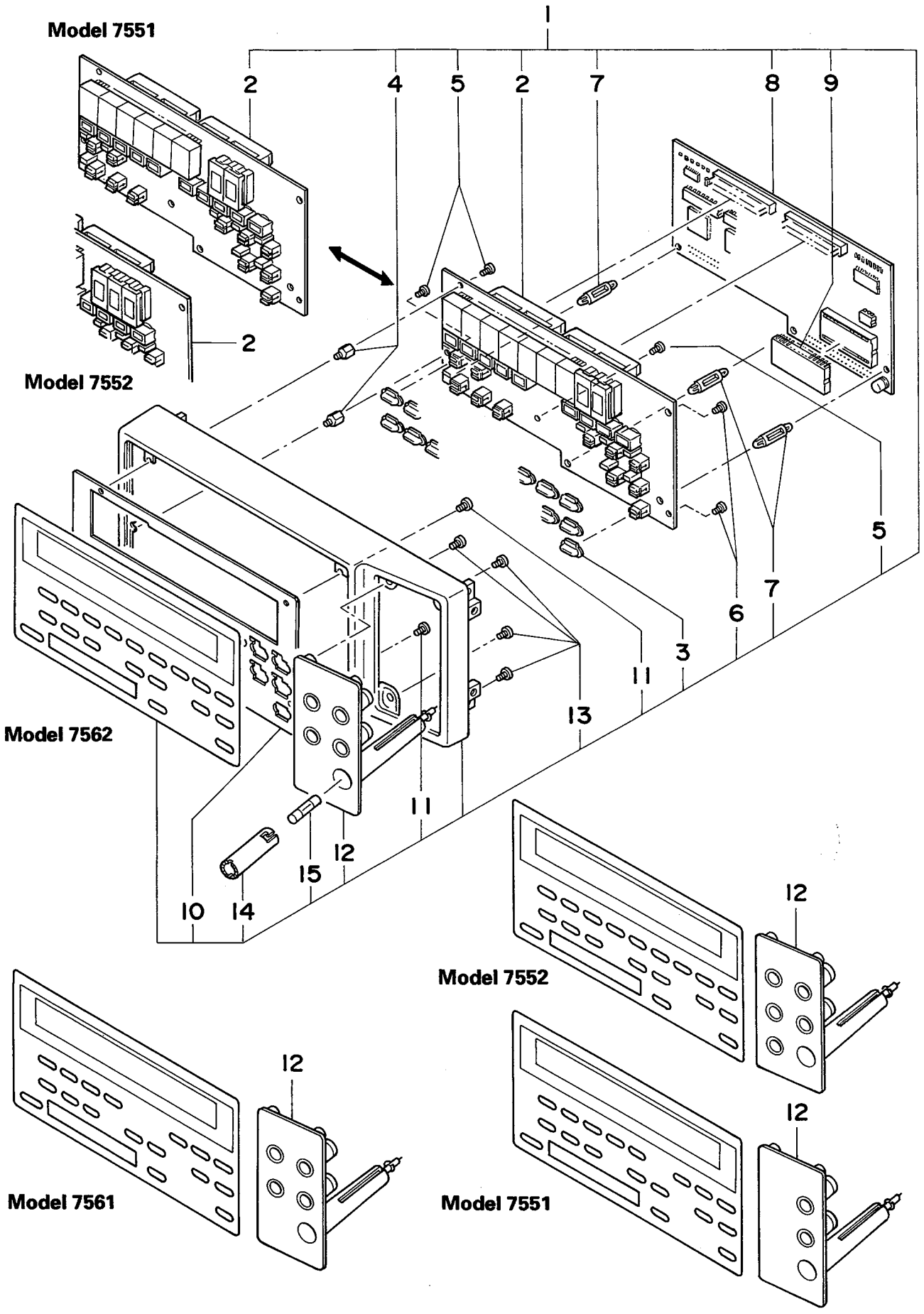

See page 4
A
7
8
4
3
2
6
5
2
2
11
1
10
11
10
9
11
12
12
A
13
12

Item	Part No.	Model	Qty 7551	Qty 7552	Qty 7561	Qty 7562	Description
1	—		1	1	1	1	Panel Assembly (see page 6)
2	Y9406LB		4	4	4	4	B.H. Screw, M4 × 6
3	B9281MA		1				Main Board Assembly (see page 4)
	B9281PA			1			Main Board Assembly (see page 4)
	B9280PA				1	1	Main Board Assembly (see page 4)
4	B9281MB		1				Sub Board Assembly (see page 4)
	B9281PB			1			Sub Board Assembly (see page 4)
	B9280MB				1		Sub Board Assembly (see page 4)
	B9280PB					1	Sub Board Assembly (see page 4)
5	B9280PH		1	1	1	1	GP-IB Assembly (GP-IB) (see page 10)
	B9280PJ		1	1	1	1	RS232C Assembly (RS-232-C) (see page 10)
6	B9280PK		1	1	1	1	D/A Assembly (option) (see page 10)
7	B9280PM		1	1	1	1	GP-IB Sub Assembly (GP-IB) (see page 8)
	B9280PN		1	1	1	1	RS232C Sub Assembly (RS-232-C) (see page 8)
8	—		1	1	1	1	Power Assembly (see page 8)
9	—		1	1	1	1	Cover
10	—		2	2	2	2	Bracket
11	Y9406LB		4	4	4	4	B.H. Screw, M4 × 6
12	B9280CG		4	4	4	4	Foot
13	—		1	1	1	1	Support

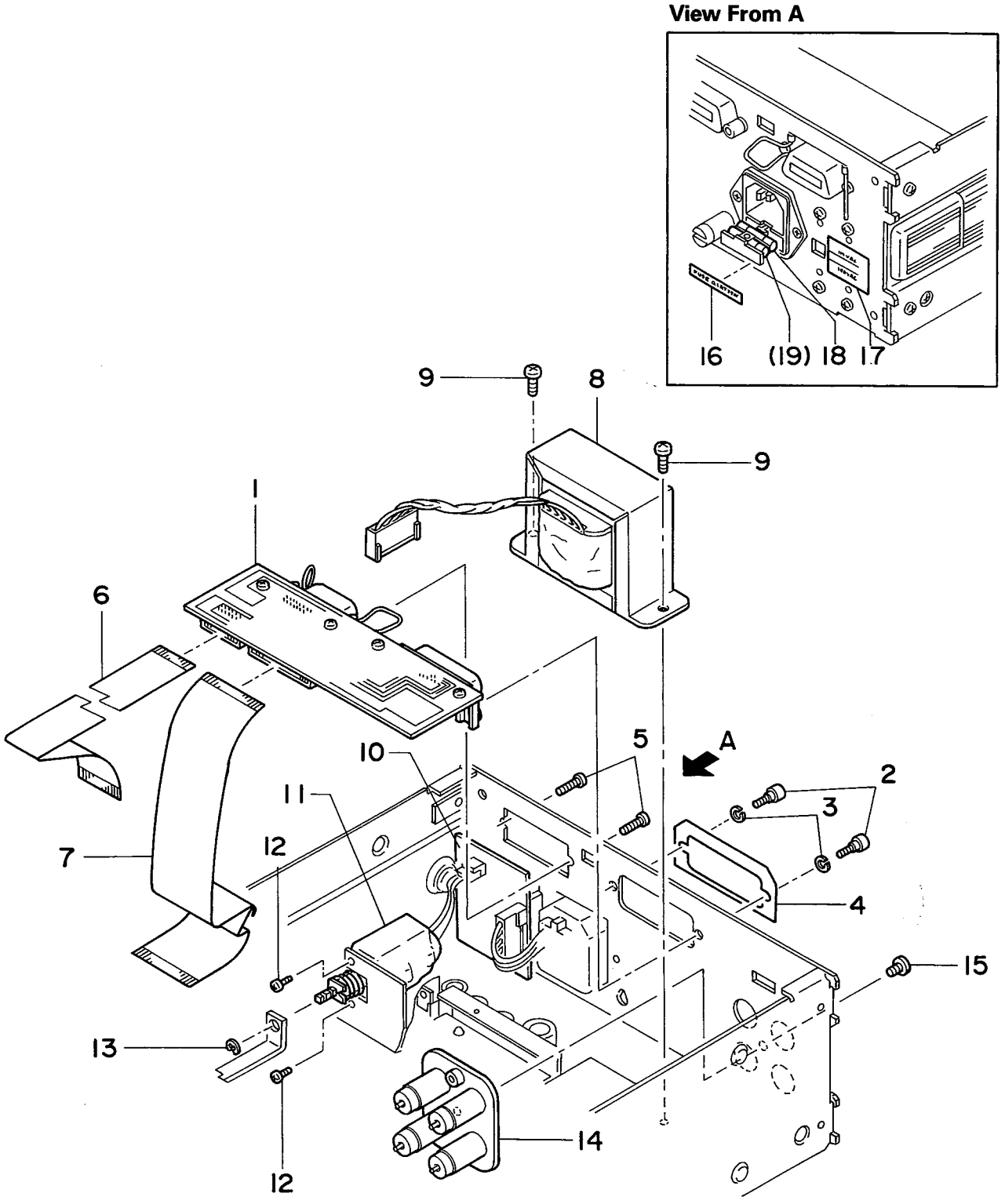


Model 7551, 7562

Item	Part No.	Model	Qty 7551	Qty 7552	Qty 7561	Qty 7562	Description
1	B9281MA		1				Main Board Assembly
	B9281PA			1			Main Board Assembly
	B9280PA				1	1	Main Board Assembly
2	B9281TA		1	1			IC : Vref
	B9280TA				1	1	IC : Vref
3	Y9305LB		5	5	5	5	B.H. Screw, M3 × 5
4	—				1	1	Bracket Assembly
5	Y9250ET				1	1	E-Ring
6	B9281MB		1				Sub Board Assembly
	B9281PB			1			Sub Board Assembly
	B9280MB				1		Sub Board Assembly
	B9280PB					1	Sub Board Assembly
7	—		1	1	1	1	Cover Assembly
8	Y9305LB		1	1	1	1	B.H. Screw, M3 × 5
9	B9280TW		1	1	1	1	Cable Assembly (main board assembly ↔ sub board assembly)
10	B9280TX		1	1	1	1	Cable Assembly (main board assembly ↔ CPU board assembly)

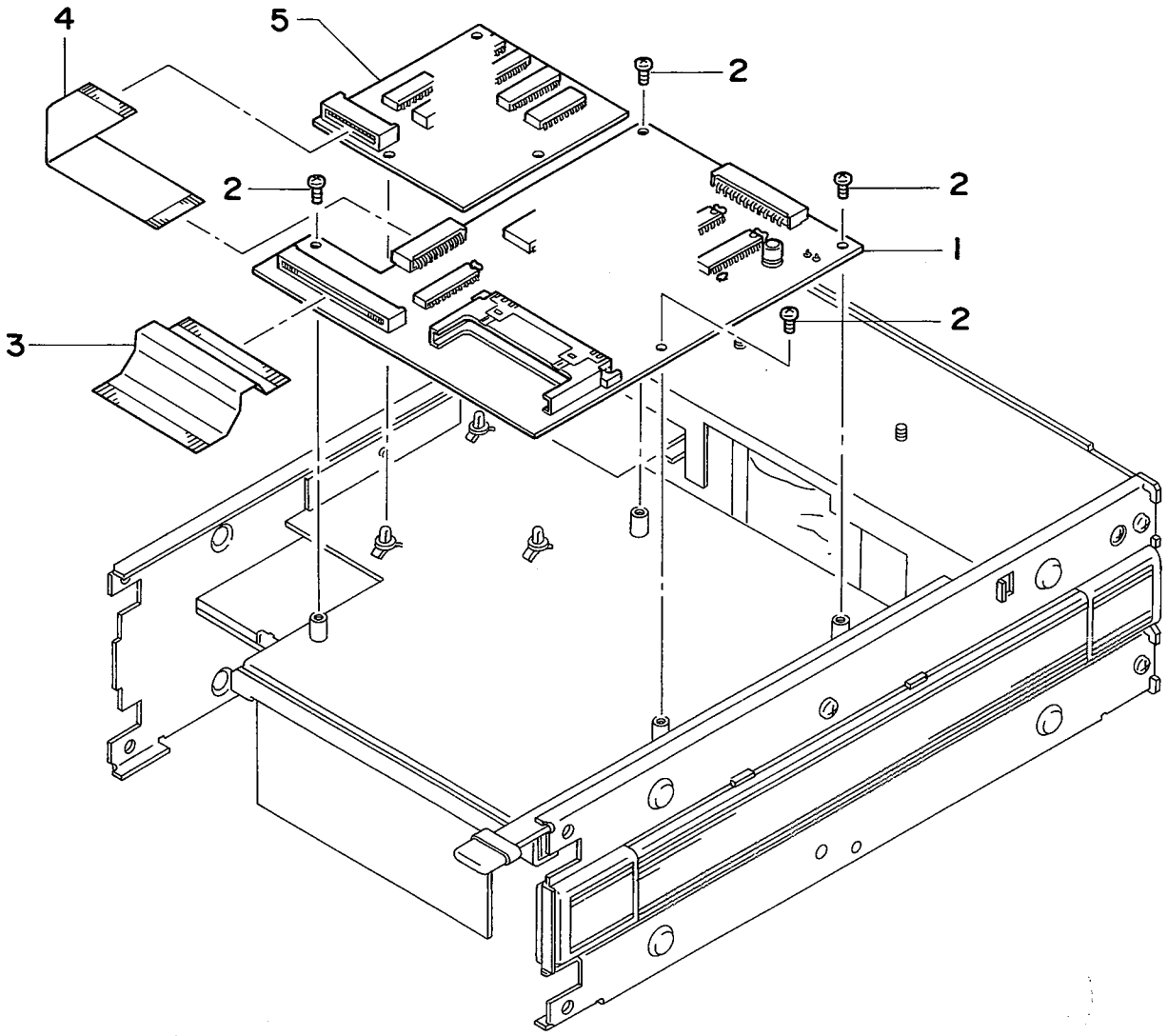

Model 7551
Model 7552
Model 7562
Model 7561
Model 7552
Model 7551
1
2
4
5
2
7
8
9
2
5
6
7
3
11
13
11
12
15
10
14
12
12

Item	Part No.	Model	Qty 7551	7552	7561	7562	Description
1	—		1	1	1	1	Panel Assembly
2	B9281MD		1				Display Assembly
	B9281PD			1			Display Assembly
	B9280MD				1		Display Assembly
	B9280PD					1	Display Assembly
3	B9280DW		17	18	16	18	Knob
4	B9280DY		2	2	2	2	Rod
5	Y9305LB		3	3	3	3	B.H. Screw, M3 × 5
6	Y9305TS		2	2	2	2	B.H. Screw, M3 × 5
7	B9280GA		3	3	3	3	Stud
8	B9280PE		1	1	1	1	CPU Assembly
9	B9281NA		1				ROM Assembly
	B9281WA			1			ROM Assembly
	B9280NA				1		ROM Assembly
	B9280WA					1	ROM Assembly
10	B9280DD		1	1	1	1	Plate Assembly
11	Y9304LB		2	2	2	2	B.H. Screw, M3 × 4
12	B9281JF		1				Terminal Assembly
	B9281DF			1			Terminal Assembly
	B9280DK				1	1	Terminal Assembly
13	Y9308TS		4	4	4	4	B.H. Screw, M3 × 8
14	B9280BT		1	1	1	1	Terminal Assembly
15	A1092EF		1	1	1	1	Fuse (2A) (for input)


View From A
16
(19)
18
17
9
8
9
1
6
10
5
A
2
3
11
12
7
4
15
13
14
12

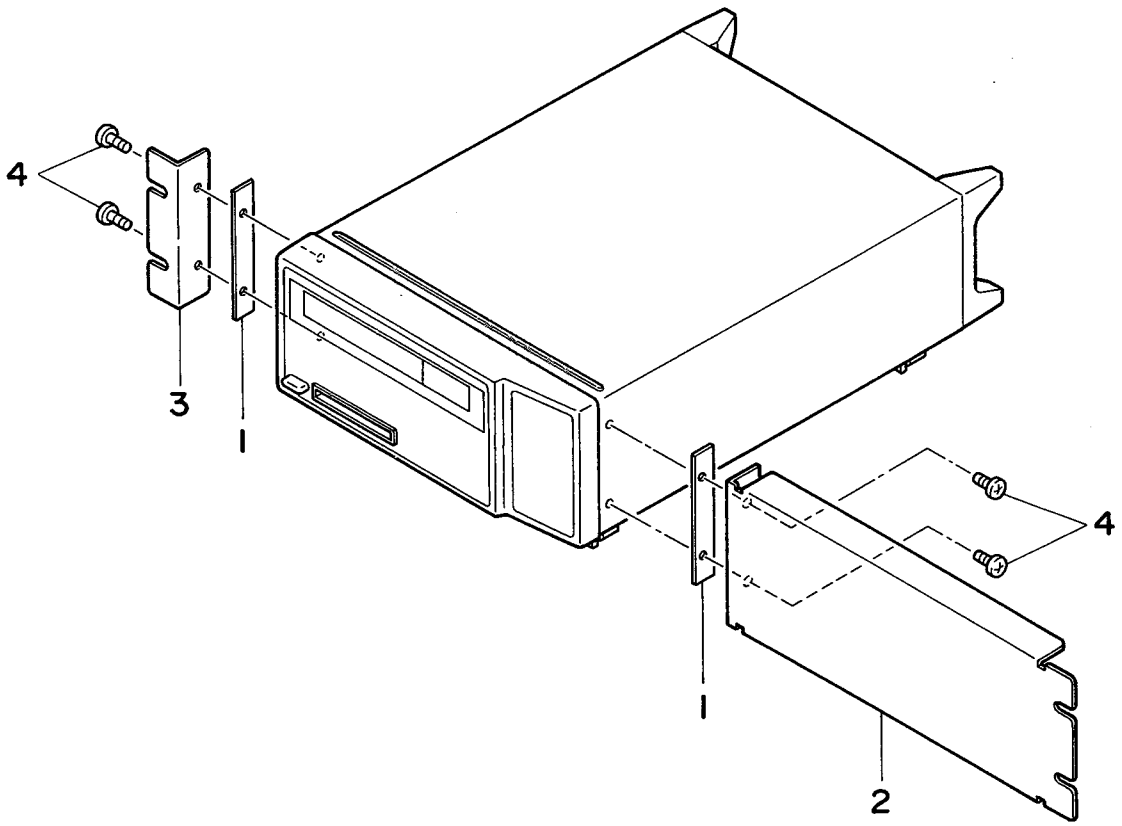
Item	Part No.	Model	Qty 7551	7552	7561	7562	Description
1	B9280PM		1	1	1	1	GP-IB Sub Assembly (for GP-IB)
	B9280PN		1	1	1	1	RS232C Sub Assembly }
2	B9280CT		2	2	2	2	Rod } (for RS-232-C)
3	—		2	2	2	2	Washer } (for RS-232-C)
4	B9280CW		1	1	1	1	Plate } (for RS-232-C)
5	Y9310JB		2	2	2	2	Pan.H. Screw, M3 × 10
6	B9280TY		1	1	1	1	Cable Assembly (GP-IB, RS232C sub assembly ↔ GP-IB, RS232C assembly)
7	B9585BG		1	1	1	1	Cable Assembly (GP-IB, RS232C sub assembly ↔ main board assembly)
8	B9281XA		1	1			Transformer
	B9280XA				1	1	Transformer
9	Y9405LB		2	2	2	2	B.H. Screw, M4 × 5
10	B9280PR		1	1	1	1	Switch Board Assembly
11	A9235SP		1	1	1	1	Switch
12	Y9305LB		2	2	2	2	B.H. Screw, M3 × 5
13	Y9250ET		1	1	1	1	E-Ring
14	B9280EF				1	1	Terminal Assembly
15	Y9408TS				1	1	B.H. Screw, M4 × 8
16	B9280CX		1	1	1	1	Label (200V series)
17	B9280CY		1	1	1	1	Label (100V series) } (select either one)
	B9280CZ		1	1	1	1	Label (200V series) } (select either one)
18	A1343EF		1	1	1	1	Fuse (100V series, 200mA time-lag) } (select either one)
	A1341EF		1	1	1	1	Fuse (200V series, 100mA time-lag) } (select either one)
(19)	A1343EF		1	1	1	1	Fuse (100V series, 200mA time-lag) } (select either one) (accessory)
	A1341EF		1	1	1	1	Fuse (200V series, 100mA time-lag) } (select either one) (accessory)

Inverted View



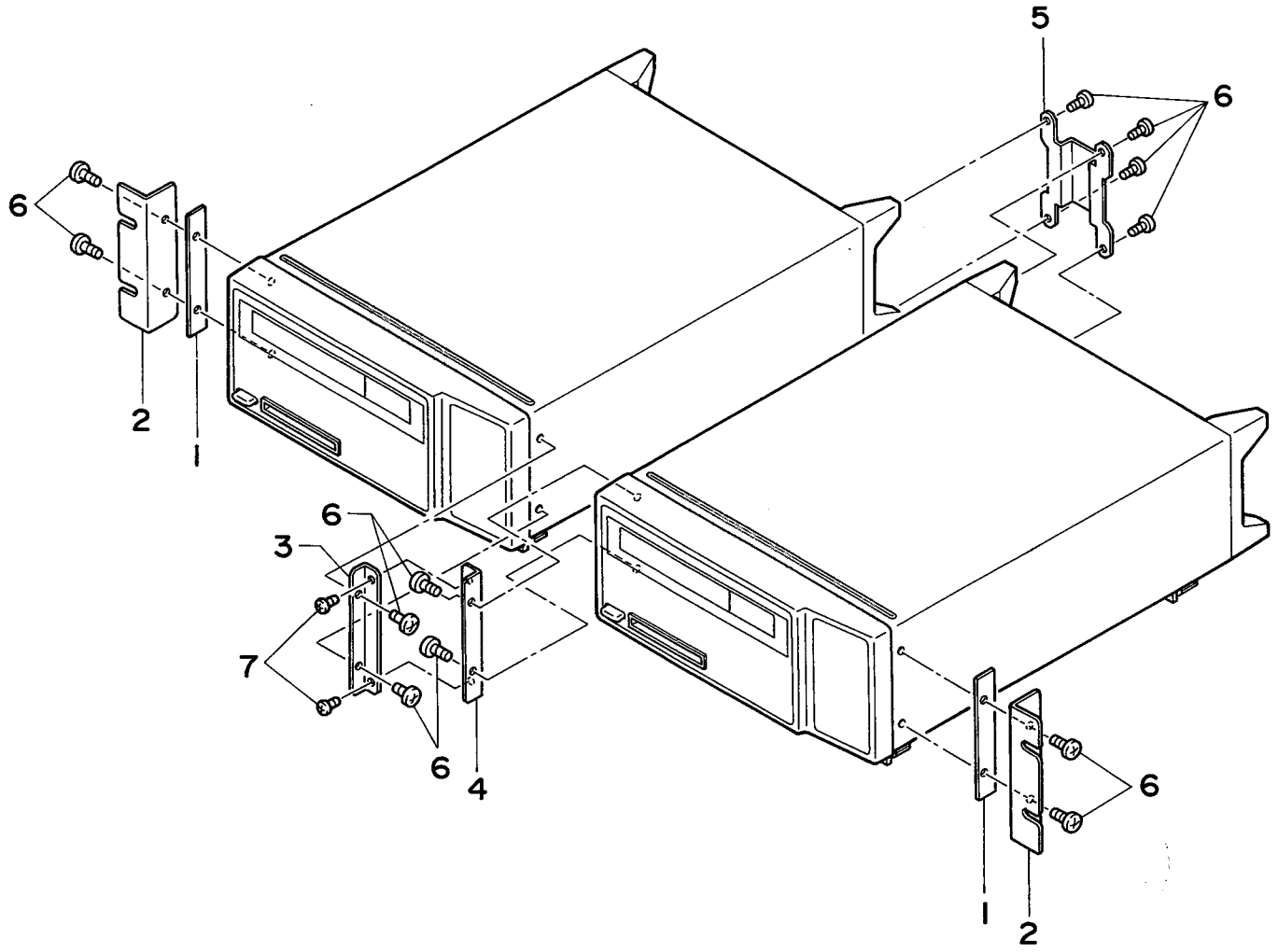
Item	Part No.	Model	Qty 7551	Qty 7552	Qty 7561	Qty 7562	Description
1	B9280PH		1	1	1	1	GP-IB Assembly (for GP-IB)
	B9280PJ		1	1	1	1	RS232C Assembly (for RS-232-C)
2	Y9305LB		4	4	4	4	B.H. Screw, M3 × 5
3	B9280TU		1	1	1	1	Cable Assembly (GP-IB, RS232C sub assembly ↔ CPU assembly)
4	B9280TX		1	1	1	1	Cable Assembly (GP-IB, RS232C assembly ↔ D/A assembly)
5	B9280PK		1	1	1	1	D/A Assembly (option)

Single Rack Mounting



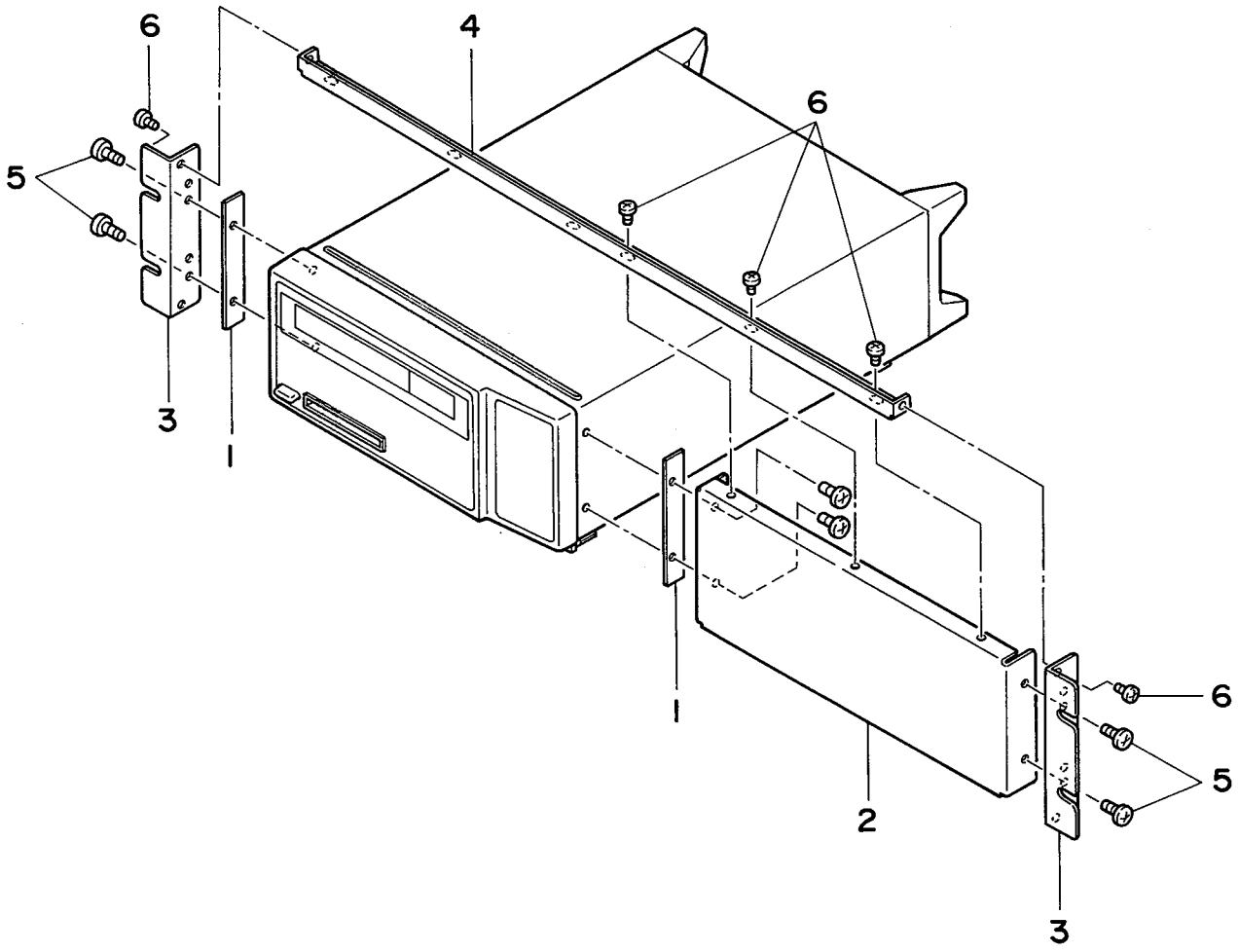
Code	Item	Part No.	Qty.	Description	Standard (for conformance)
7515-01	1	B9280KF	2	Plate	EIA
	2	B9280KH	1	Bracket	
	3	B9280KG	1	Bracket	
	4	Y9410LB	4	B.H. Screw M4 × 10	

Dual Rack Mounting



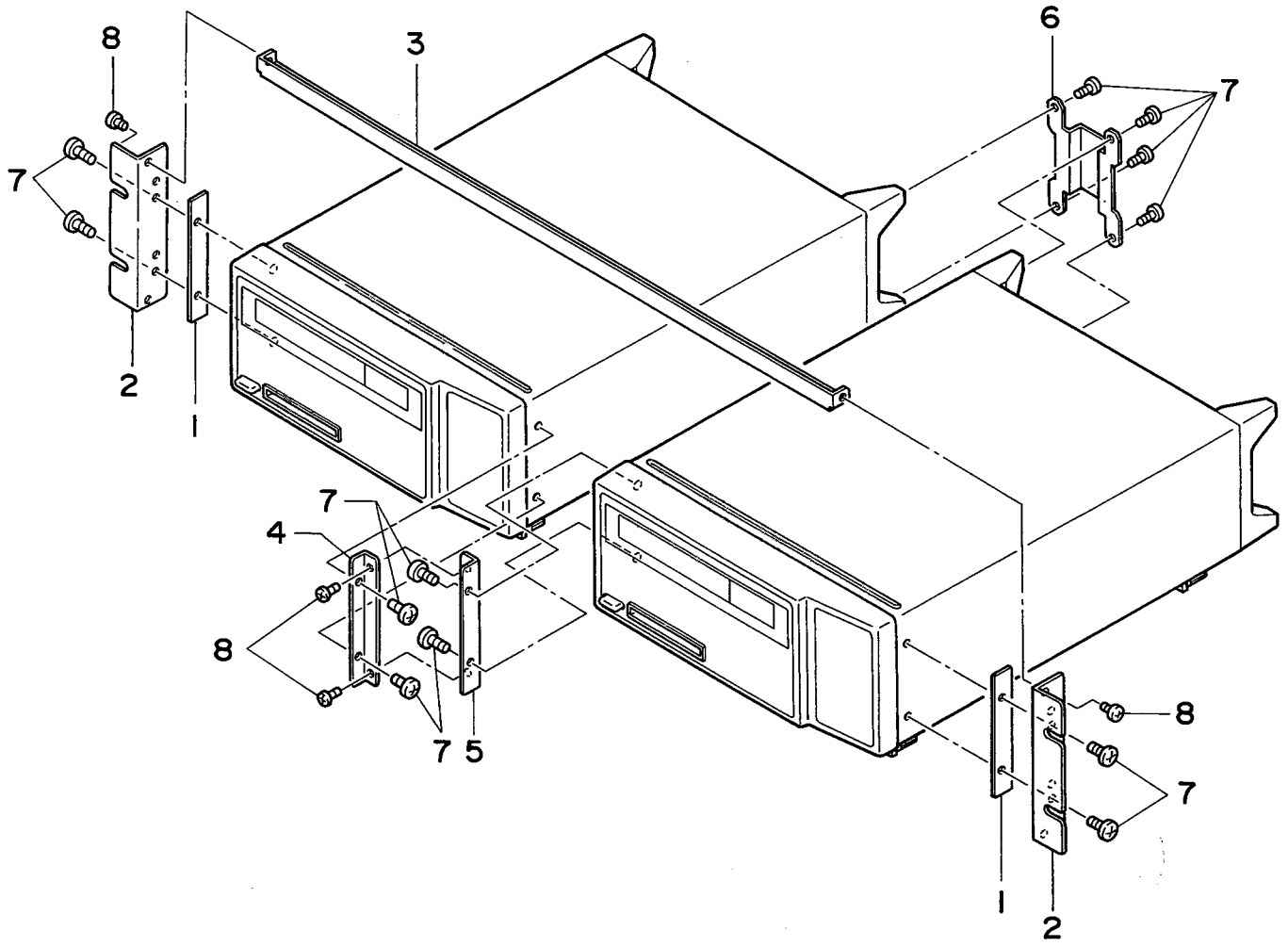
Code	Item	Part No.	Qty.	Description	Standard (for conformance)
7515-02	1	B9280KF	2	Plate	EIA
	2	B9280KG	2	Bracket	
	3	B9280KJ	1	Bracket	
	4	B9280KK	1	Bracket	
	5	B9280KL	1	Bracket	
	6	Y9410LB	12	B.H. Screw M4 × 10	
	7	Y9305LB	2	B.H. Screw m3 × 5	

Single Rack Mounting



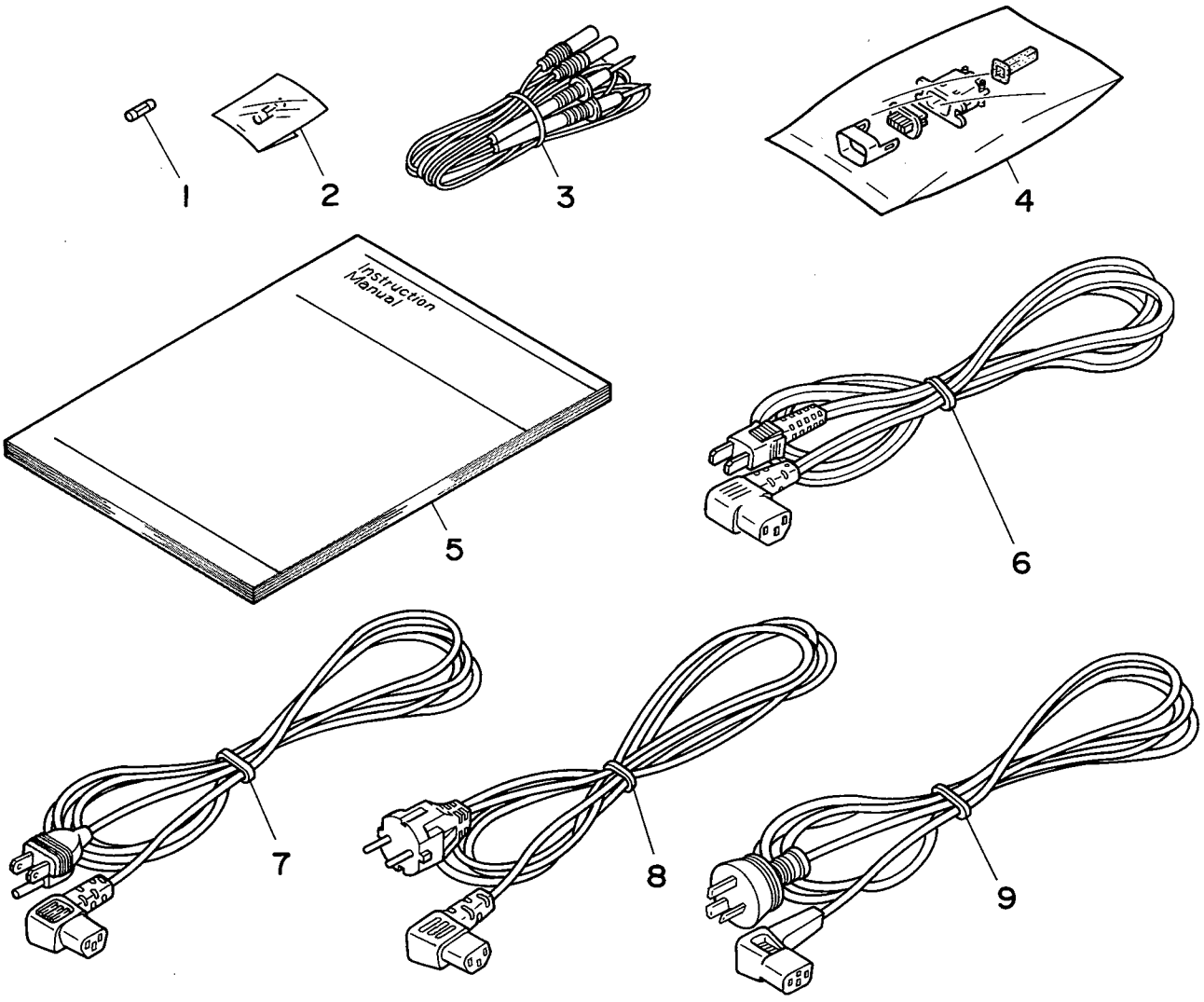
Code	Item	Part No.	Qty.	Description	Standard (for conformance)
7515-03	1	B9280KF	2	Plate	JIS
	2	B9280KP	1	Bracket	
	3	B9280KM	2	Bracket	
	4	B9280KO	1	Cover	
	5	Y9410LB	4	B.H. Screw M4 × 10	
	6	Y9305LB	5	B.H. Screw m3 × 5	

Dual Rack Mounting



Code	Item	Part No.	Qty.	Description	Standard (for conformance)
7515-04	1	B9280KF	2	Plate	JIS
	2	B9280KM	2	Bracket	
	3	B9280KO	1	Cover	
	4	B9280KJ	1	Bracket	
	5	B9280KK	1	Bracket	
	6	B9280KL	1	Bracket	
	7	Y9410LB	12	B.H. Screw M4 × 10	
	8	Y9305LB	2	B.H. Screw m3 × 5	

Standard Accessories



Item	Part No.	Model	Qty 7551	7552	7561	7562	Description	
1	A1343EF		1	1	1	1	Fuse (100V series, 200mA time-lag)	*(select)
	A1341EF		1	1	1	1	Fuse (200V series, 100mA time-lag)	
2	A1092EF		1	1	1	1	Fuse (2A) (for input)	
3	B9260TD		1	1	1	1	Measuring Lead	
4	A1003JD		1	1	1	1	Remote Connector	
5	—		1	1	1	1	Instruction Manual	
6	A1007WD		1	1	1	1	Power Supply Cord (other than below)	(select either one)
7	A1006WD		1	1	1	1	Power Supply Cord (UL standard)	
8	A1009WD		1	1	1	1	Power Supply Cord (VDE standard)	
9	A1024WD		1	1	1	1	Power Supply Cord (SAA standard)	
10	A1023WD		1	1	1	1	Power Supply Cord (BS standard)	

Note
*: Located in the fuse holder (see page 8 item 19)