# UA-779

## MAINTENANCE MANUAL

## DIGITAL BLOOD PRESSURE MONITOR

A&D Company, Limited

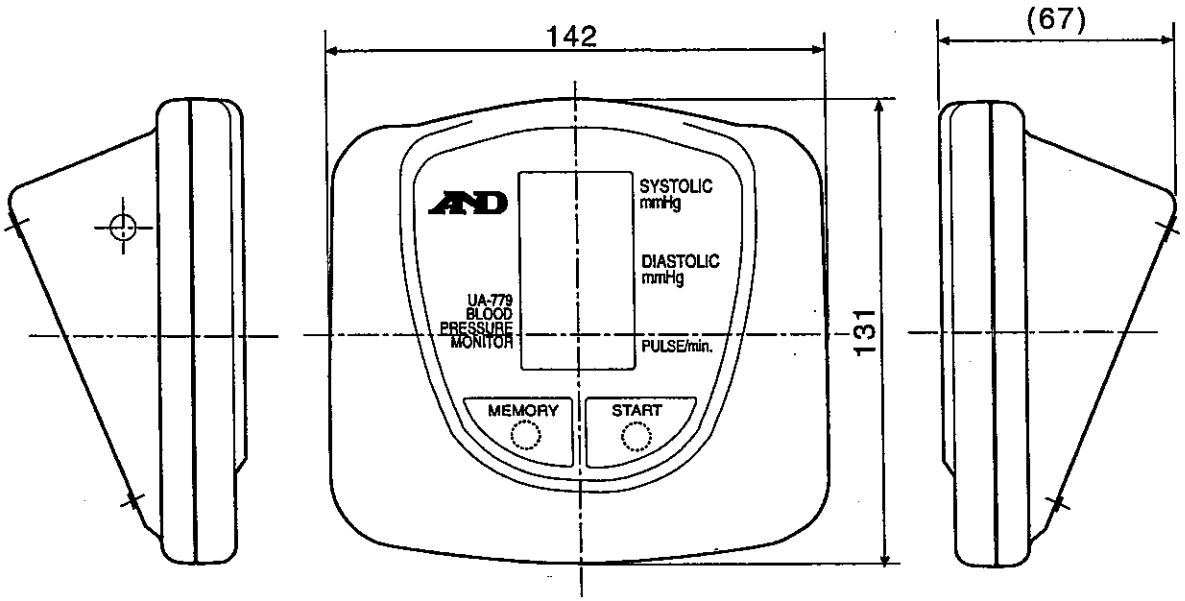
WM:PD4000049

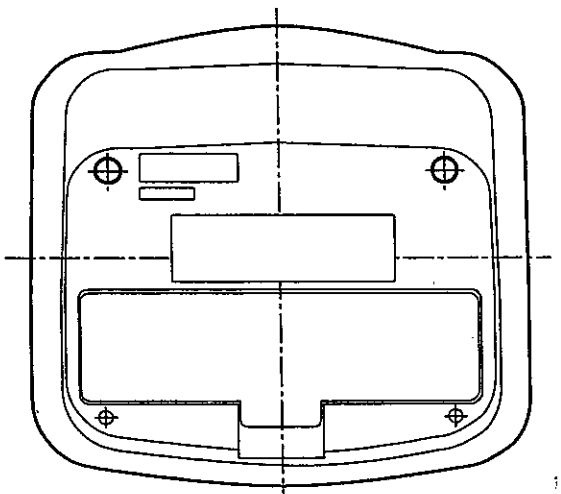
# CONTENTS

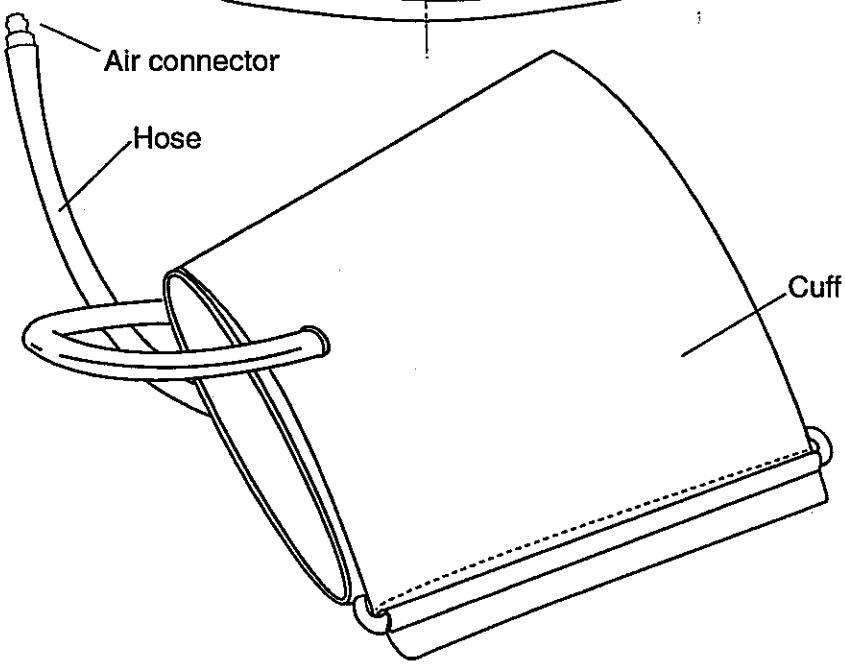
# 1. SPECIFICATIONS

| | | |
|---|---|---|
| 1) | Measurement Method | Oscillometric |
| 2) | Measurement Range | 20~280 mmHg (Blood Pressure) 40~200 P/min. (Pulse) |
| 3) | Accuracy | ±3 mmHg or 2% of measured value (Blood Pressure) ±5% (Pulse) |
| 4) | Cuff Inflation | Micropump |
| 5) | Cuff deflation | Automatic constant-air-release valve |
| 6) | Rapid Exhaust | Automatic by internal air-release valve |
| 7) | Pulse Wave Detection | Manschettor |
| 8) | Power source | 6VDC, 4 x 1.5V "AA" OR "LR06" batteries |
| 9) | Battery life | Approx. 4 months usage of 1 measurement. per day |
| 10) | Weight | Approx. 320 grams. |
| 11) | Dimensions | 145 (W) x 130(D) x 56(H) mm |
| 12) | Operating environment | +10~40° C. at less than 85% R.H. |
| 13) | Storage environment | -20~+70. at less than 95% R.H. |
| 14) | Display | Liquid crystal. |

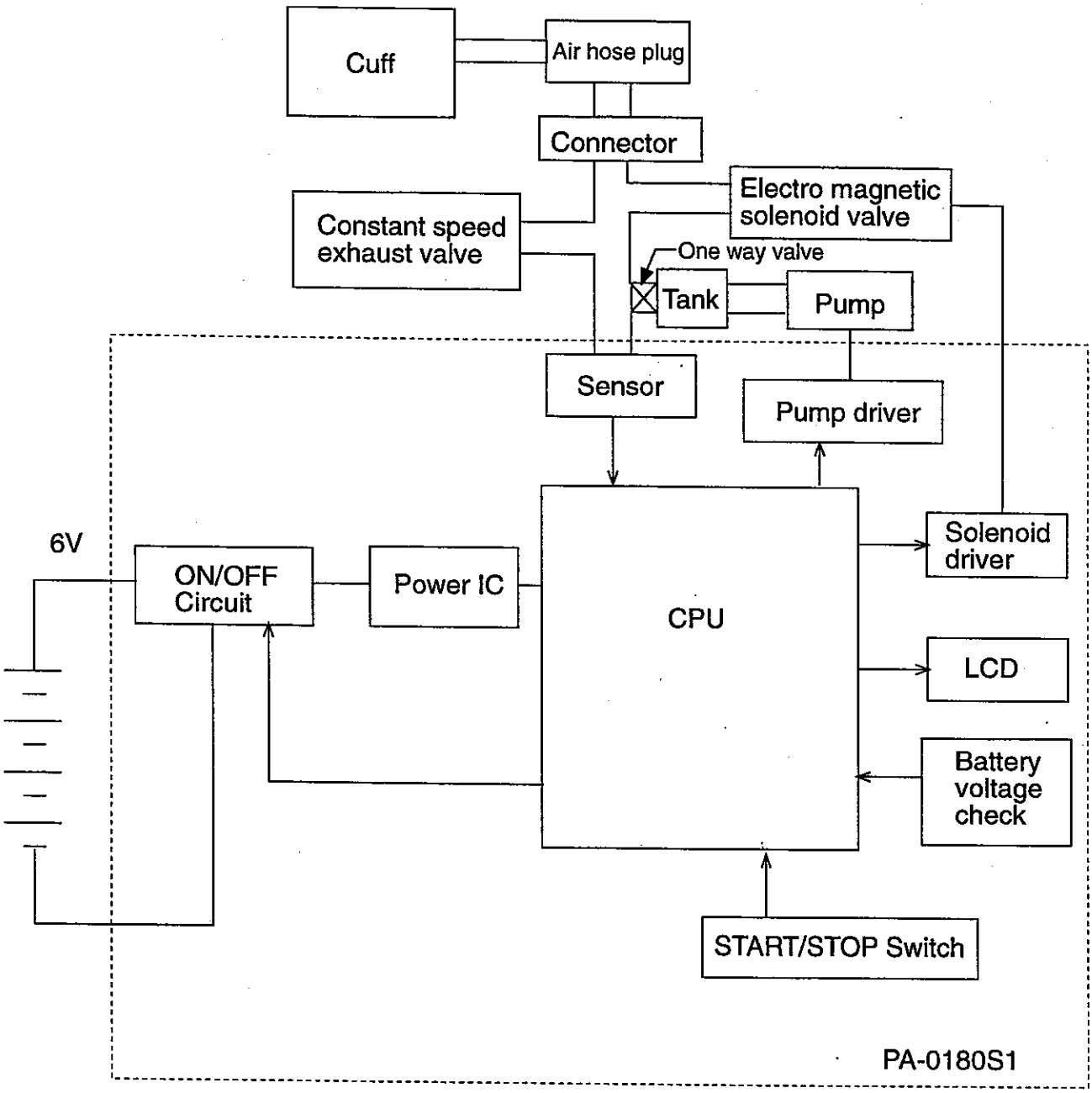
# 2. OUTLINE DRAWING





# 3. BLOCK DIAGRAM



# 4. TROUBLESHOOTING

This section describes the symptoms, possible causes and solutions to fix THE UNIT.
In the case of "can not measure" or "too much error", check that the measurement method is correct.
Pressure accuracy should be checked after repairing. See "Check Sequence" Performance check chart.
Check the symptoms against the flow chart shown below and find the corresponding number circled on the right side of the chart. Then proceed to the troubleshooting table.

## <Check Sequence>

Step 1. Can the power be turned on?

Step 2. Is "0" displayed?

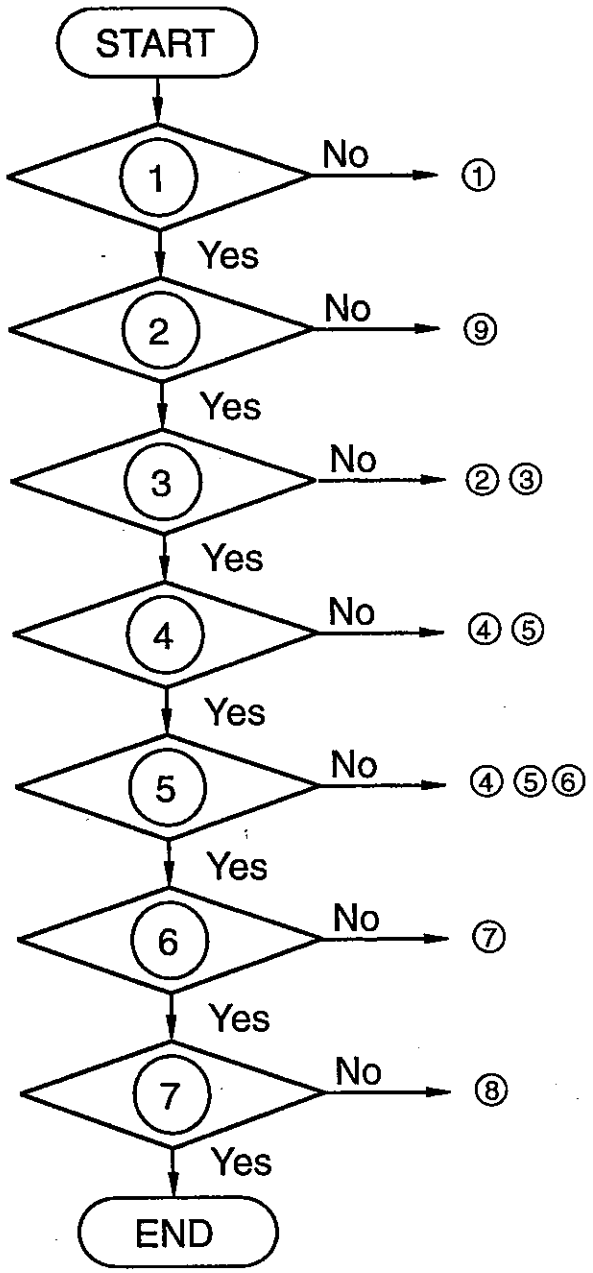
Step 3. Does the pump start and stop ok?

Step 4. Is the constant exhaust speed correct?

Step 5. Is the measurement result correct?

Step 6. Is the rapid exhaust ok?

Step 7. Does the automatic power off function work correctly?



# TROUBLESHOOTING TABLE

| | Symptom | Probable Cause | Treatment |
|---|---|---|---|
| ① | Power does not turn on | Low Battery | Replace the battery |
| | | Power lead broken | Resolder leads |
| | | Main board may be defective | Replace he main board and adjust pressure reading |
| ② | Pump does not start | Air pump broken | Replace the pump |
| | | Connector J1 came off | Reconnect J1 on the main board |
| ③ | No inflation | Tube came off | Reconnect tubing |
| | | Tubing broken | Replace tubing |
| | | Air connector broken | Replace air connector |
| | | Cuff leaking | Replace the cuff |
| | | Constant exhaust valve defective | Replace the constant exhaust valve ass'y |
| | | Solenoid valve defective | Replace the Solenoid valve assy. |
| ④ | Constant exhaust speed too fast | Constant exhaust valve defective | Replace the constant exhaust valve assy |
| | | Tubing broken | Replace tubing |
| | | Air connector broken | Replace the air connector |
| ⑤ | Constant exhaust speed too slow | Constant exhaust valve defective | Replace the constant exhaust valve assy |
| | | Tubing pinched | Replace tubing |
| ⑥ | Pressure reading is incorrect | Pressure reading adjusted incorrectly | Readjust the pressure reading |
| | | Main board may be defective | Replace the main board and adjust pressure reading |
| ⑦ | Rapid exhaust does not work | Solenoid valve is defective | Replace the Solenoid valve assy. |
| | | Tubing pinched | Replace tubing |
| ⑧ | Automatic power off function does not work | Main board defective | Replace the main board |
| ⑨ | Pressure sensor unstable | Main board is defective Pressure sensor is defective | Replace the main board |

# 5. REPAIR PROCEDURE

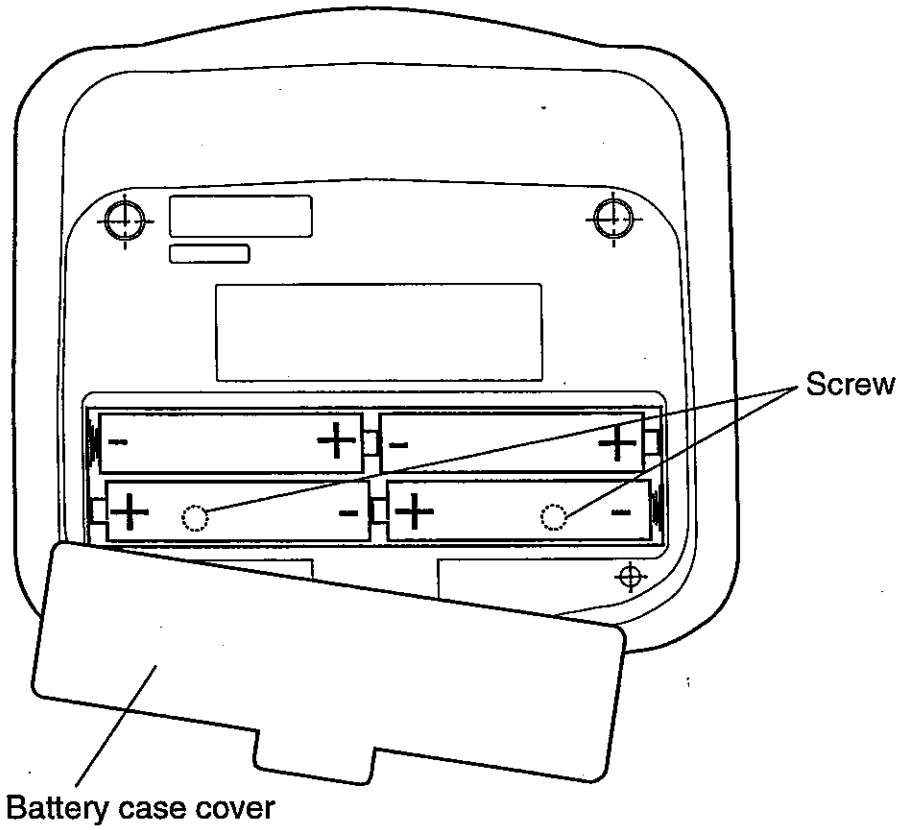
Top case removal

Step 1. Remove the battery compartment cover.

Step 2. Remove the batteries.

Step 3. Remove two screws shown in the battery compartment.

Step 4. Remove the upper case using caution not to damage the LCD display.

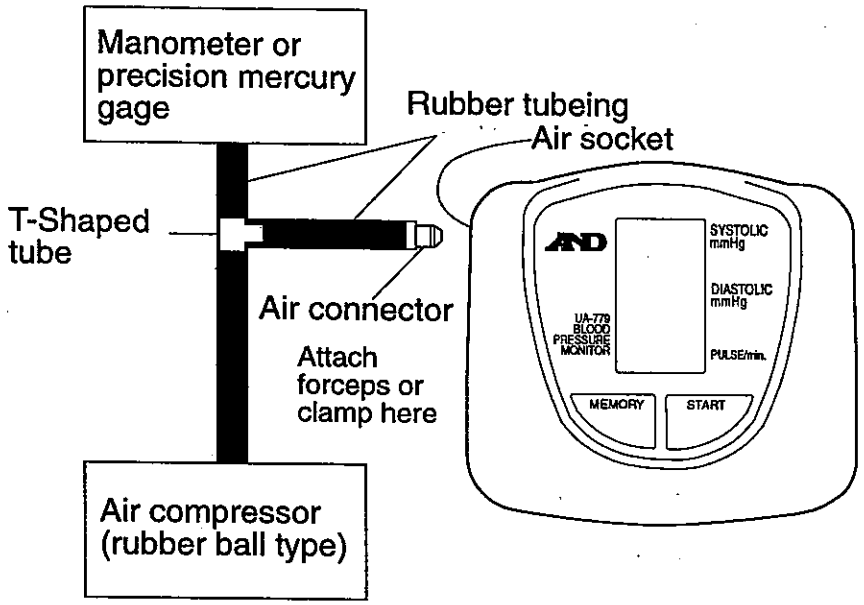



Under side of the monitor

# 6. PRESSURE ADJUSTMENT PROCEDURE

Test equipment and tools required

- Low capacitance screwdriver
- Manometer or precision mercury pressure gage
- Air compressor (rubber ball type)
- T-shaped tube
- Rubber tubing
- Forceps (or hose clamp)




Step 1. Enter the check mode.
<Entering the check mode>
The battery is inserted while pushing Start key.

Step 2. 0 0 0 is displayed on the LCD panel.

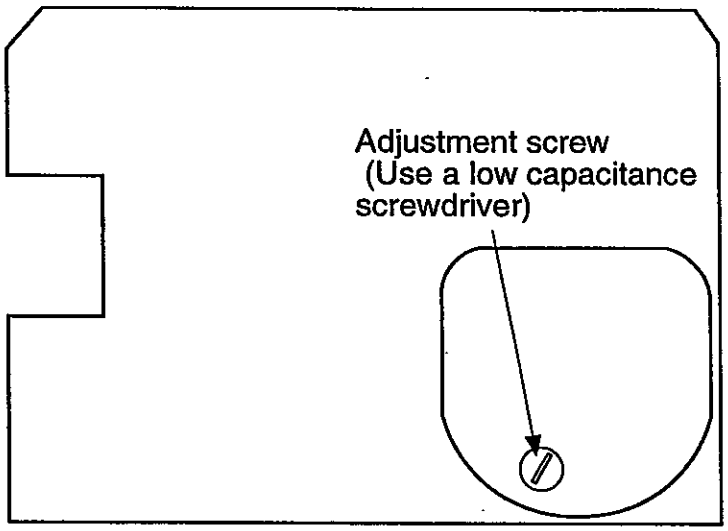
Step 3. Increase the pressure to 280 mmHg by using the compressor. Use a precision manometer or mercury pressure gage to monitor the air pressure.
When using a rubber bulb pump for inflation, close the rubber tube with forceps to maintain the pressure.

Step 4. If the pressure reading is incorrect, remove the upper case as described in the repair procedure to provide access to the adjustment screw.

Step 5. Under the following conditions;

Pressure value applied = A mmHg
Reading displayed = B mmHg
Remainder if A - B =C mmHg

Use the formula A mmHg - B mmHg = ±C mmHg.
When the reference is +C mmHg, turn the adjustment screw for a reading of B - C mmHg.
When the reference is -C mmHg, turn the adjustment screw for a reading of B + C mmHg.
Example:Pressure value applied = 280 mmHg .....A
Reading displayed = 273 mmHg.....B
280 mmHg - 273 mmHg = +7 mmHg .....C
273 mmHg - 7 mmHg = 266 mmHg
Adjust the reading to 266 mmHg




Main board

Step 6. Reduce the pressure to zero and turn the power off. ( press the start switch)

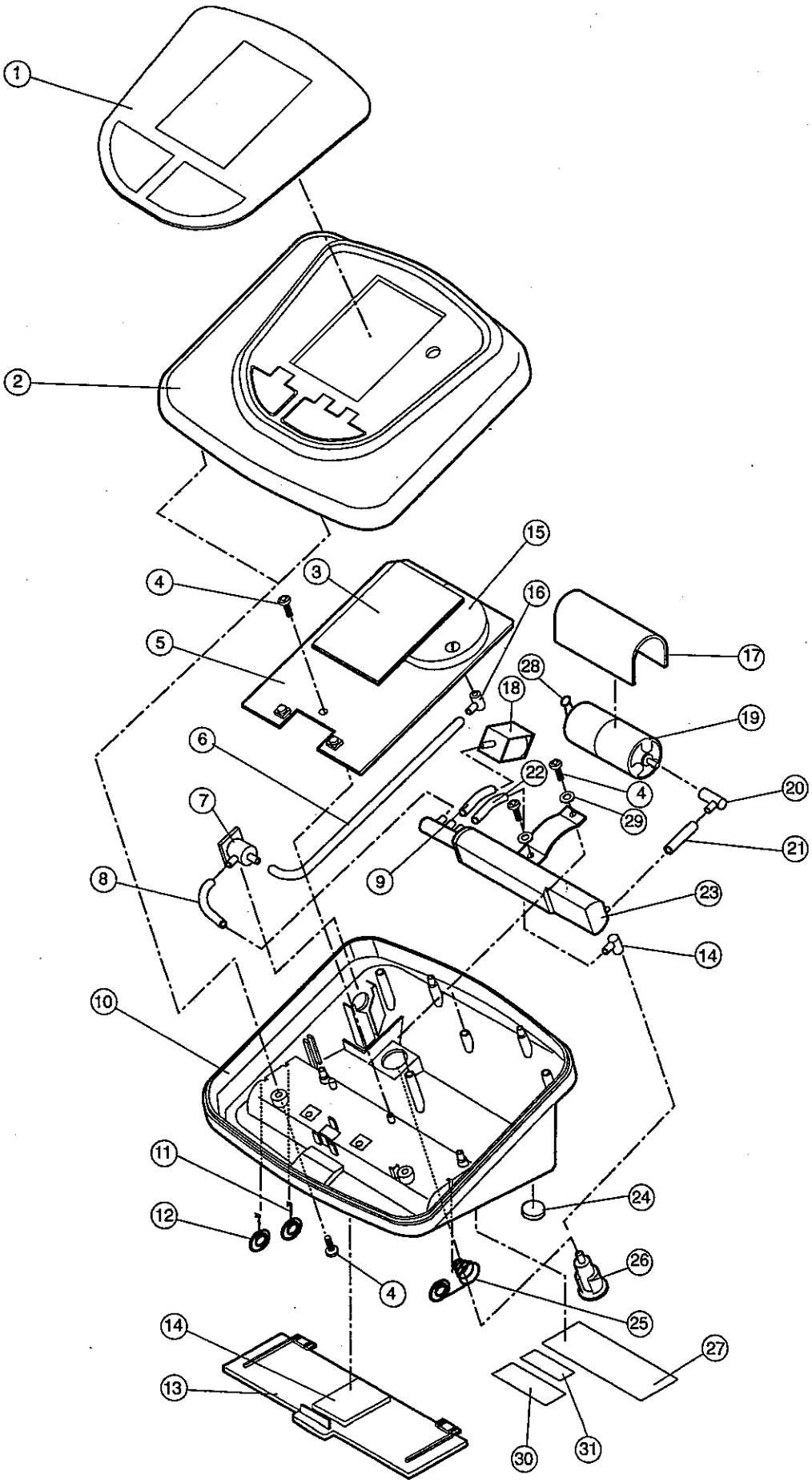
Step 7. Enter the check mode. Same procedure Step1.

Step 8. Increase the pressure to 280 mmHg by using the compressor and check the accuracy of the display.
When the correct reading is obtained, gradually reduce the pressure and confirm that the pressure readings at 150 mmHg and 50 mmHg are within ±3 mmHg against the external gage.

Step 9. Remove the special air plug and attach the cuff to the air connector.
Place the cuff on a plastic form about the size of a normal arm.
Press the START switch and pressurize the cuff to 160 mmHg by holding.
Watch the display reading. The rate of pressure drop between readings should be about 3 mmHg.
If necessary, adjust the constant exhaust valve for 3 mmHg between readings.

Step 10. Reassemble the case and test the instrument again.

# 7. EXPLODED VIEW



# 8. PARTS LIST

| No. | Parts number | Description | QTY |
|---|---|---|---|
| 1 | 08:4007189 | LCD Cover Panel | 1 |
| 2 | 07:2000320 | Upper Case | 1 |
| 3 | VL-BTJ007-TS | LCD | 1 |
| 4 | UZ4-0011 | Screw M2.3 X 8 | 5 |
| 5 | PA-0202S1 | PCB | 1 |
| 6 | TS-23400130TP | Tube | 1 |
| 7 | U4-4513 | Air Socket | 1 |
| 8 | TS-30500025 | Tube | 1 |
| 9 | TS-23400017TP | Tube | 1 |
| 10 | 07:1000069 | Lower Case | 1 |
| 11 | U4-5388 | Terminal(+) | 1 |
| 12 | U4-3521 | Terminal(-) | 2 |
| 13 | U3-1189 | Battery Cover | 1 |
| 14 | U4-5342-A | Battery Cushion | 1 |
| 15 | PA:4000406 | Sensor | 1 |
| 16 | U4-3242-A | Sensor Joint | 1 |
| 17 | U4-5346-A | Pump Cushion | 1 |
| 18 | LS-TDS-V05B-764 | Relase Valve | 1 |
| 19 | LM-P05H-0007 | Pump | 1 |
| 20 | U4-3609 | Pump Joint | 1 |
| 21 | TS-30500020TP | Tube | 1 |
| 22 | TS-23400020TP | Tube | 1 |
| 23 | UA4-5353 | Tank Assy | 1 |
| 24 | U4-5347-A | Rubber Foot | 1 |
| 25 | U4-1512-A | Terminal(+,-) | 1 |
| 26 | U4-5348 | Exhaust Valve | 1 |
| 27 | 08:4007416 | Rating Label | 1 |
| 28 | CD-0.01UTZ | Capacitor | 1 |
| 29 | 17:4006722 | Washer | 2 |
| 30 | 12:4006611 | Manufacture Label | 1 |
| 31 | ———— | Serial Label | 1 |