UB401

Digital Blood Pressure Monitor

MAINTENANCE MANUAL

WT:PD4000256

A&D Company, Limited

The contents of this manual and the specifications of the instrument covered by this manual are subject to change for improvement without notice.□

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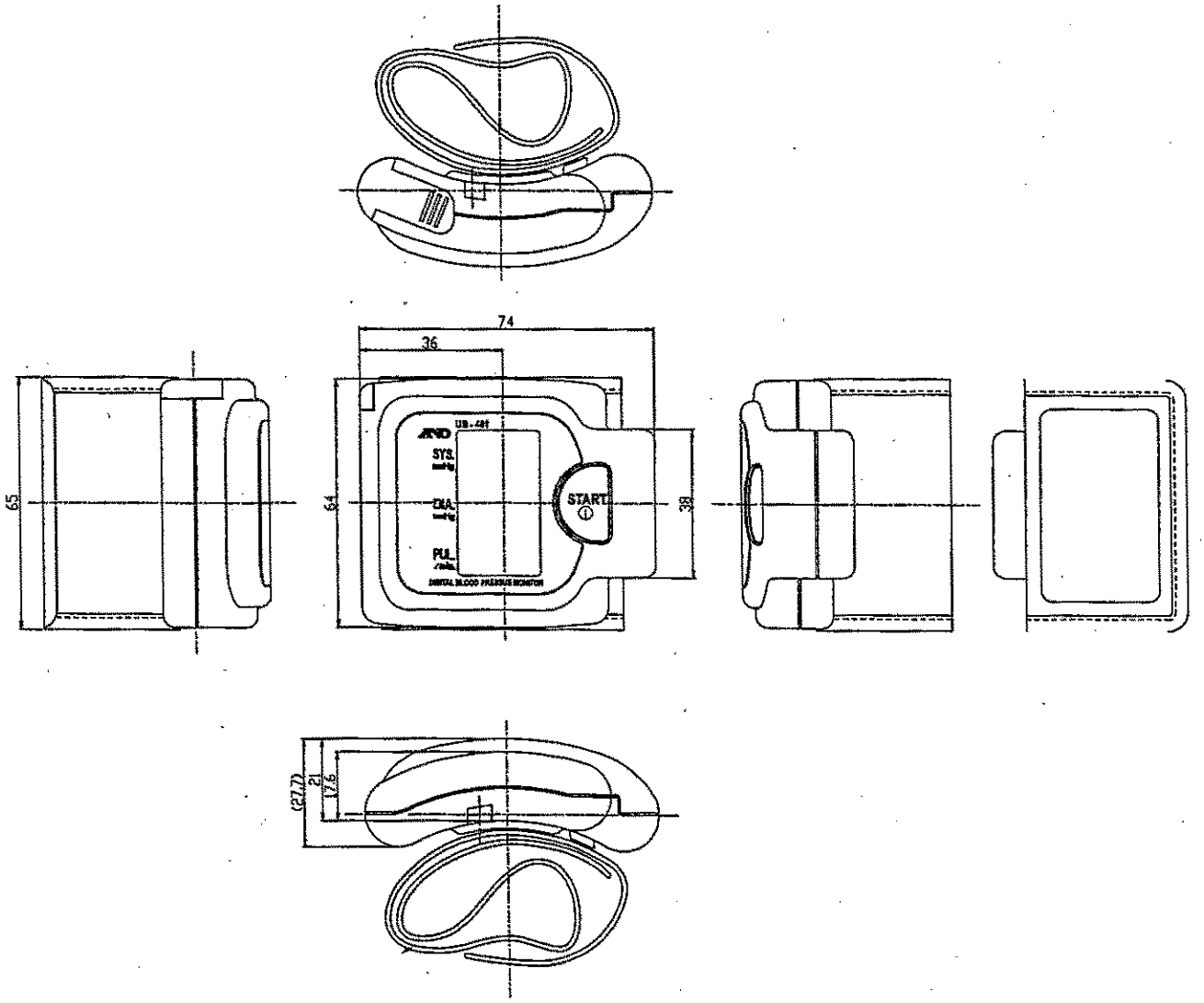
1. SPECIFICATIONS

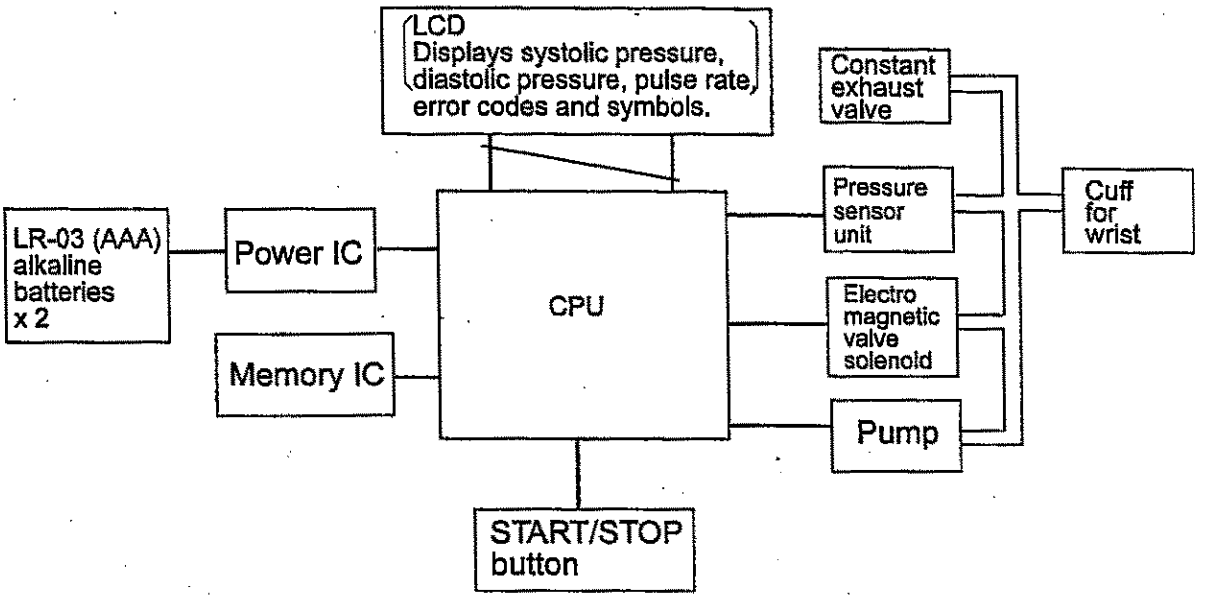
Type	UB-401
Measurement method	Oscillometric measurement
Measurement range	Pressure: 20 ~ 280 mmHg Pulse: 40 ~ 200 beats / minute
Measurement accuracy	Pressure: ±3 mmHg or 2%, whichever is greater Pulse: ±5%
Power supply	2 × 1.5 alkaline batteries (LR03/Micro/AAA)
Wrist circumference	13.5 – 21.5 cm ($5^1/_4 - 8^1/_2$ in.)
Classification	Type BF
Clinical test	According to ANSI / AAMI SP-10 1987
Operating condition	+10 to +40°C / 30%RH to 85% R.H.
Storage condition	−10 to +60°C / 30%RH to 85% R.H.
Dimensions	Approx. 74 [W] x 64 [D] x 63 [H] mm, excluding cuff
Weight	Approx. 93g, excluding batteries

2. OUTLINE DRAWING

(mm)



3. BLOCK DIAGRAM



4. TROUBLESHOOTING

This section describes the symptoms, probable causes and solutions to problems.

In the case of "can not measure" or "too much error", confirm that the measurement method is correct.

Pressure accuracy should be checked after repair. See "6.Pressure Adjustment Procedure"

PERFORMANCE CHECK CHART

Check the symptoms against the flow chart and find the corresponding number circled on the right side of the chart. Then proceed to the troubleshooting table.

Step 1. Can the power be turned on?

Step 2. Is "0" displayed?

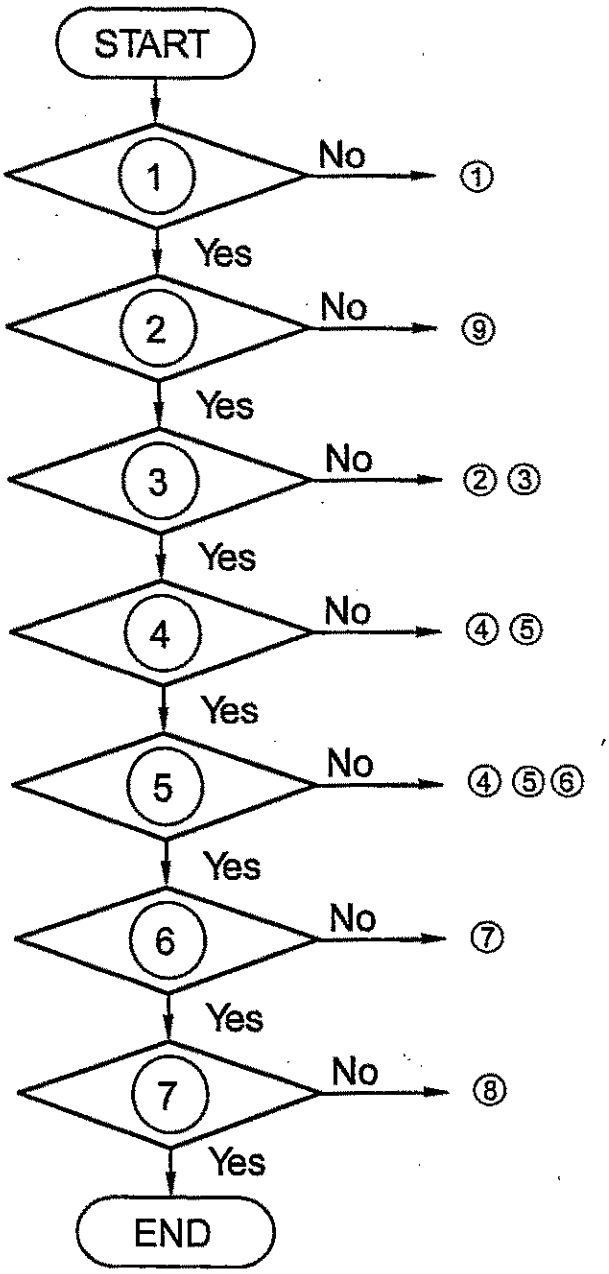
Step 3. Does the pump start and stop ok?

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?

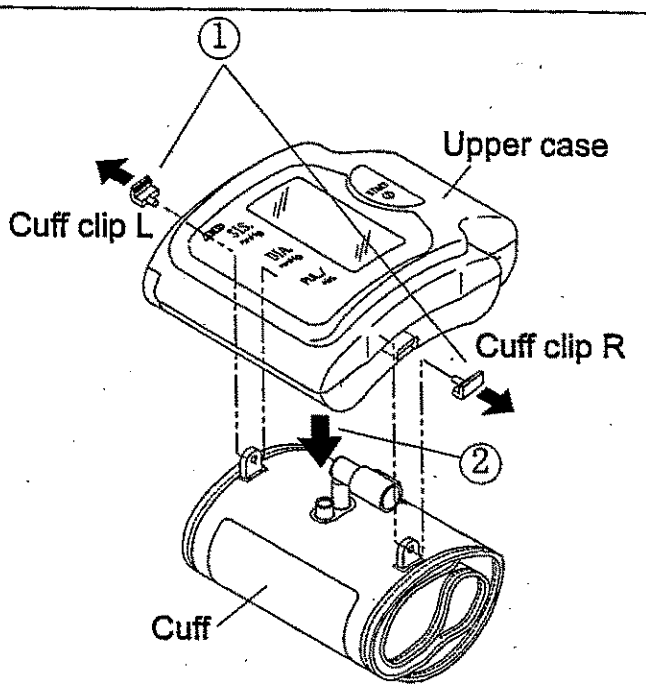
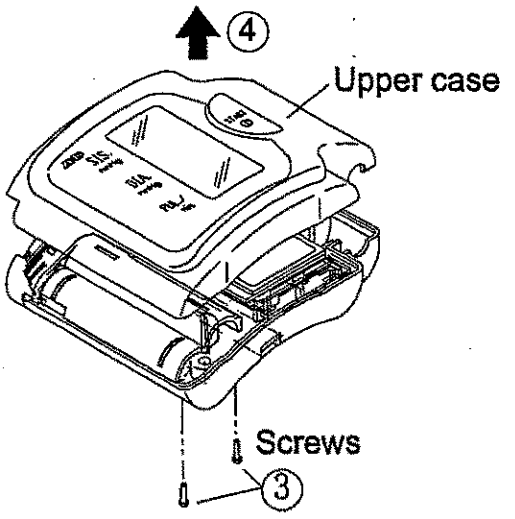


Troubleshooting Table

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

5. DISASSEMBLY

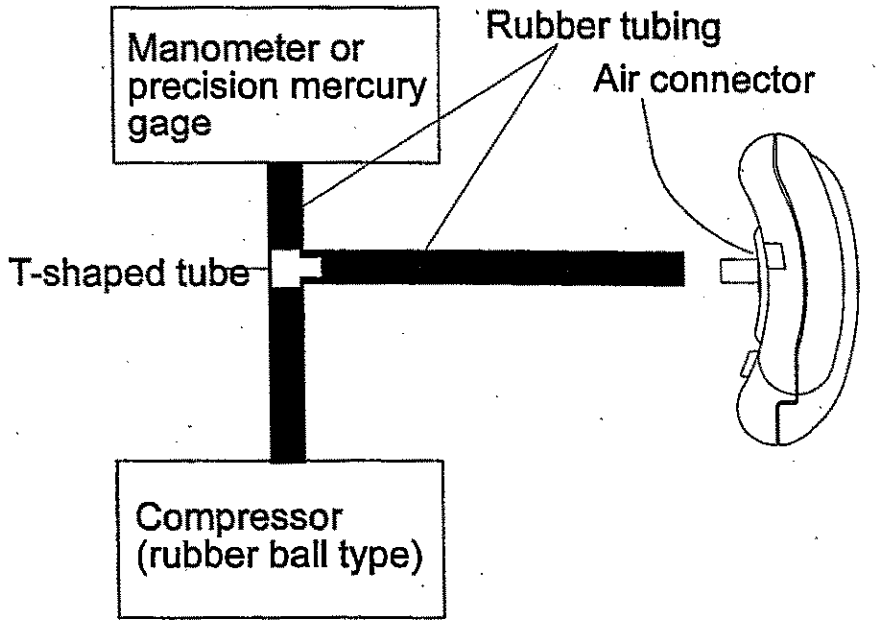
UPPER CASE REMOVAL

Step 1. Remove the cuff clip L and R. Step 2 Remove the cuff.	
Step 3 Remove two screws on the bottom. Step 4 Remove the upper case.	

6. PRESSURE ADJUSTMENT PROCEDURE

TEST EQUIPMENT AND TOOLS REQUIRED

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



PROCEDURES

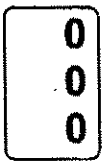
Step 1. Remove the magic fastener, and remove the blind label.

Step 2. Enter the check mode.

<Entering the check mode>

Press the START button. When "0" (zero) appears, immediately supply air up to about 400 mmHg. When the display flashes "320", stop the air supply. Once the display returns to "0" (zero), supply 100 mmHg of air or more.

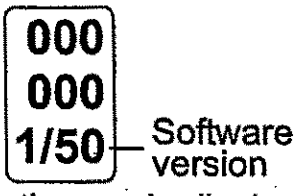
Step 3. The display shows 0s as shown below.



Step 4. 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 5. If the pressure reading is incorrect, perform pressure adjustment.

Step 6 Turn the power on shorting the test pin TP2 and TP15 on the back of the case.
After 'Zero' is detected, it enters the calibration mode by itself and displays the calibration mode display as shown below.



Calirbration mode display

Step 7 Press the Start button to display pressure value to be pressurized to.

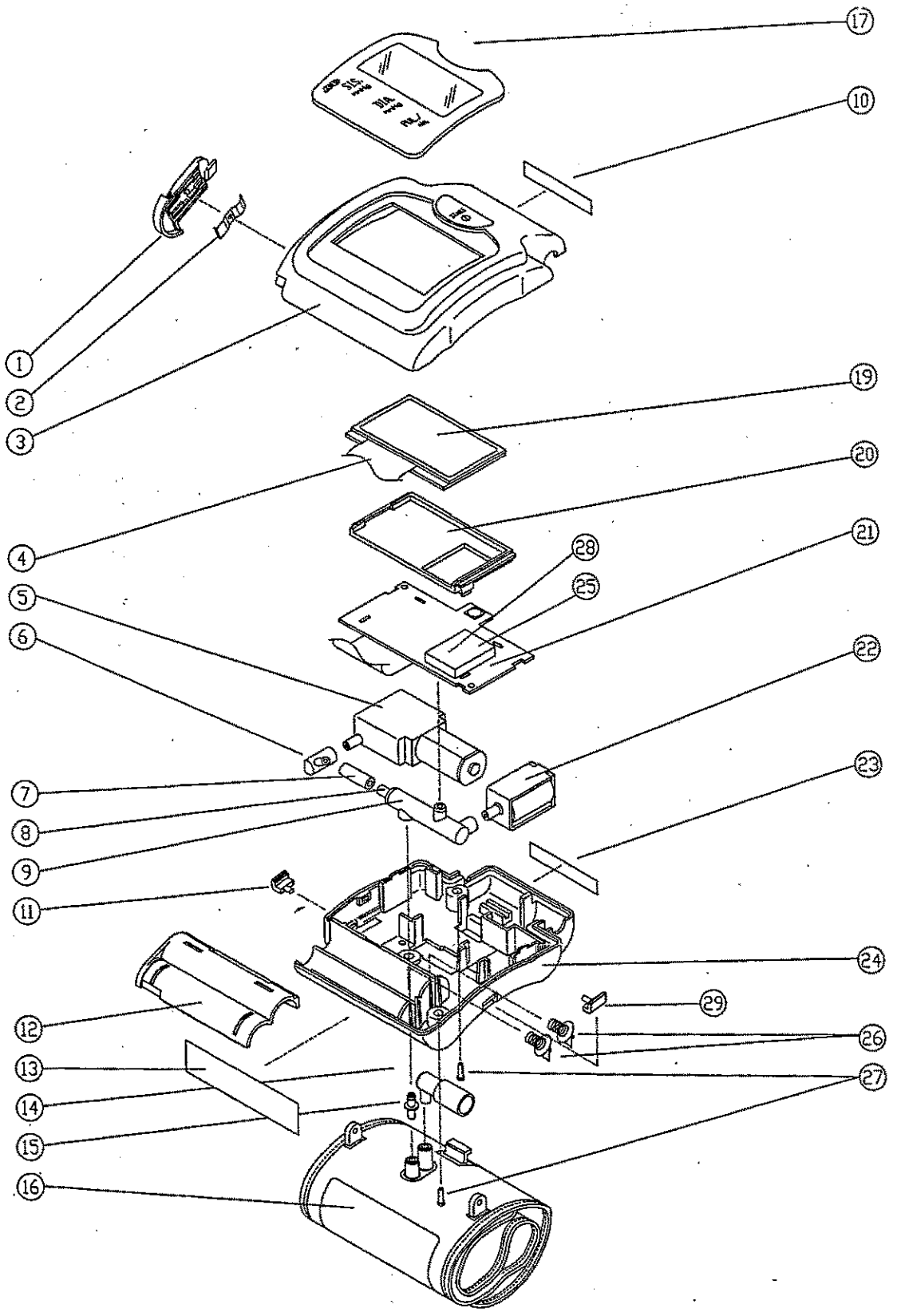
Calirbration pressure display

Step 8 Apply the displayed pressure (tolerance: less than +/- 0.2mmHg) and press the Start button.

Step 9 Repeat Step 7 through Step 8 until the "CAL END" display is appeared

Calirbration end display

7. EXPLODED VIEW



8. PARTS LIST

No.	PARTS NAME	DESCRIPTION	Q.T.Y
1	07:3003577	Battery cover	1
2	15:4007918	Terminal A	1
3	07:4008819	Upper case	1
4	KH-22P100L015	Flexible flat cable	1
5	LM-RWP10B-01	Pump	1
6	06:4007920A	Pump L joint	1
7	16:4006791A	Tube, Φ2 X Φ4 X Φ15	1
8	06:4007922	Center pipe cap	1
9	06:4007921A	Center pipe	1
10	12:4006569	MDD label	1
11	07:4007916	Cuff clip L (left)	1
12	07:3003578	Battery box cover	1
13	08:4008245	Rating label	1
14	PA:400528	Pipe ass'y 2	1
15	05:4008116B	Joint plug	1
16	13:3003540	Cuff	1
17	07:4007913	Display filter panel	1
18			
19	VL-BTJ023-JP	LCD	1
20	07:3003579	LCD holder	1
21	PA-0220S1	PCB ass'y	1
22	LS-TDSV05BL-711	Electromagnetic valve	1
23	08:4008494	Serial number label	1
24	07:4008414B	Lower case	1
25	04:4008140	Shield case	1
26	15:4007919	Terminal B	2
27	UZ4-0031	Screw, M2 X 8	2
28	ES-SP40L-G401	Sensor	1
29	07:4007915	Cuff clip R (right)	1

9. ERROR CODES

Display	Description
Err	Measurement error Measurement result error
Err (pulse)	Pulse measurement error (less than 35 or over 200)
Err CUF	No cuff attached Pressurization time error (over 1 minute) Measurement time error (over 2 minutes)
Err 9	System error
Err +M	Memory device error
Err C	Calibration error Calibration data error

calibration jig for UB-401