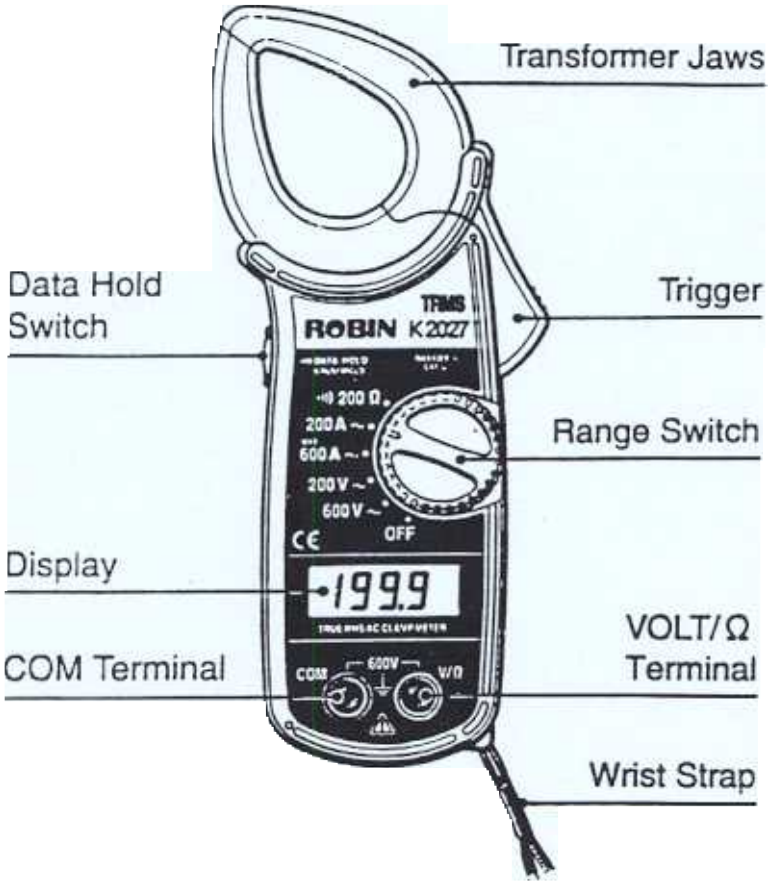
K2027
DIGITAL CLAMP METER



	Components of the product supplied. Description.	Visually inspect for clean unmarked appearance and for the following.
1.	K2027 Digital Clamp Meter.	Calibration accuracy within the Lo and Hi 70% limits detailed on page 2. Operational integrity.
2.	Pair of SL10 Test Leads. Packed in a clear, re-sealable, plastic bag.	Electrical continuity.
3.	Certificate of Conformity.	Standard Robin form with correct serial number.
4.	Instruction Manual.	Correct Instruction Manual.
5.	6F22 (PP3) 9 Volt Battery (sealed).	Correct Battery with seal intact.
6.	Grey, PVC Pouch with Zip Closure containing all of the above.	Correct pouch. Check Zip function.
7.	Warranty Registration Card.	Standard Robin Warranty Registration Card.
8.	Carton.	Correct carton with current address, logos and references

K2027 Digital Clamp Meter

Range		Tol %	+Dig	Applied	Tol +/-	Lo Limit	Hi Limit	Lo 70%	Hi 70%
AC Volts	200V	1	2	50 50Hz	0.7	49.3	50.7	49.5	50.5
				100 50Hz	1.2	98.8	101.2	99.2	100.8
				190 50Hz	2.1	187.9	192.1	188.5	191.5
	600V			600 50Hz	8	592	608	594	606
	200V	1.5	4	50 1kHz	1.2	48.8	51.2	49.2	50.8
				100 1kHz	1.9	98.1	101.9	98.7	101.3
				190 1kHz	3.3	186.7	193.3	187.7	192.3
	600V			600 1kHz	9	591	609	594	606
Resistance		1.2	4	10 Ω	0.5	9.5	10.5	9.7	10.4
				100 Ω	1.6	98.4	101.6	98.9	101.1
				190 Ω	2.7	187.3	192.7	188.1	191.9
AC Current	200A	1.5	4	50 50Hz	1.2	48.8	51.2	49.2	50.8
				100 50Hz	1.9	98.1	101.9	98.7	101.3
				190 50Hz	3.3	186.7	193.3	187.7	192.3
	600A	1	3	600 50Hz	9	591	609	593	607
	200A	2	5	50 400Hz	1.5	48.5	51.5	49.0	51.1
				100 400Hz	7.0	93.0	107.0	95.1	104.9

CHECK:	
BUZZER	< 30Ω
DATA HOLD FUNCTION	

Authorised  Service Manager

Date 06/01/2000

Service Manual: Model ~~2027~~ K2027

Date issued: December 5, 1996

1. Scope

This service manual applies to Digital Clamp-meter Model ~~2027~~ K2027

2. Contents

This document consists of the following sections.

(1) Compoment Layout

(2) Disassembly

(3) Calibration

(4) Trouble-shooting

3. Compoment Layout

See Figure 1

4. Disassembly

4.1 Removing Battery Compartment Cover

(1) Untighten screw (16) and remove Battery Compartment Cover

4.2 Removing Front Panel

(1) Untighten two Front Panel-fixing screws (13)

(2) Remove Front Panel (4) from Bottom Case (11)

4.3 Removing PCB

(1) Untighten two PCB-fixing screws (6)

(2) Remove PCB Assembly (10) from Front Panel (11)

Note) Take note of the position of Range Switch before removing PCB from Front Panel.

4.4 Removing Jaw Assembly

(1) Untighten U-nut (7) with a nutdriver

(2) Untighten Jaw-fixing screw (8)

(3) Remove Jaw Assembly (9) from Bottom Case.

5. Calibration

5.1 Required Equipment and Tools

(1) Variable-frequency AC current generator (up to about 20A)

(2) AC voltage generator (up to about 600V)

(3) DC voltage generator (6V and 9V, output current up to 10mA)

(4) Variable resistance box (up to 200 Ohms)

(5) Test coil (turns selectable from 1, 10, 20, 50 and 100)

(6) A calibration screw driver

5.2 Preparation

(1) Remove Name Plate from Front Panel

(2) Remove the battery from the battery snap.

(3) Connect output from the DC voltage generator with the battery contacts, observing the correct polarity.

5.3 Setting Ampere-turns of Test Coil

Ampere-turns of the test coil is the product of selected turns of the test coil and the value of AC current applied to it.

Ampere-turns (AT) = Current (A) x Turns of the coil (T)

Example settings are shown in the table below.

Ampere-turns	AC Current	Turns of Test Coil
100AT	1A	100
	10A	10
	20A	5
190AT	9.5A	20
	19A	10
600AT	6A	100

5.4 Checking Low Battery Warning and Data Hold

(1) Lower output from the DC voltage generator to;

7.1V and check that 'B' symbol is not shown on the display; and

6.5V and check that 'B' symbol is shown on the display.

(2) With output from the DC voltage generator set to 6.5V, set Range Switch to AC200V and apply 100VAC across the measuring terminals from the AC voltage generator.

Press Data Hold button and cut output from the AC voltage generator.

Check that 'R' symbol appears on the display and the reading is frozen.

5.5 AC V Calibration

(1) Set the DC voltage generator to 8V.

(2) Connect output from the AC voltage generator across the measuring terminals with test leads.

(3) Set Range Switch to AC200V.

(4) Output 190VAC from the AC voltage generator and adjust VR2 so that the display reads 190.0.

(5) Set Range Switch to AC600V with 190VAC being applied across the measuring terminals. Check that the display reads 189 to 191.

5.6 Adjusting Continuity Buzzer Sensitivity

(1) Set Range Switch to 200Ω and connect output of the resistance box across the measuring terminals.

(2) Set the resistance box to 50Ω and turn VR3 counterclockwise so that the buzzer does not sound. Slowly turn back VR3 clockwise until the buzzer sounds.

(3) Set the resistance box to;

68Ω and check that the buzzer does not sound; and

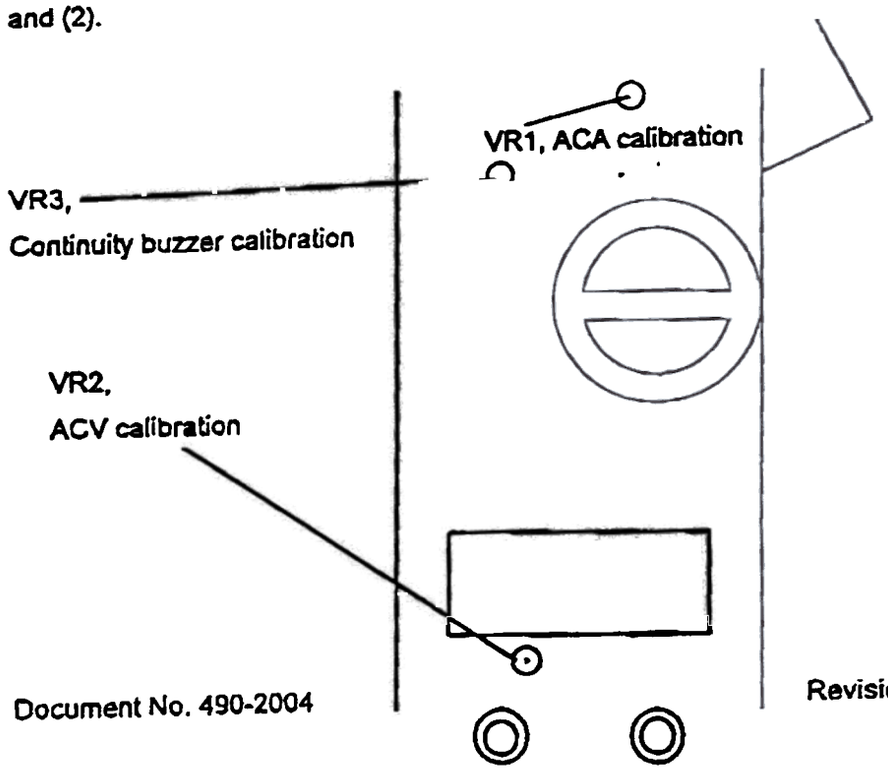
32Ω and check that the buzzer sounds.

(4) Set the resistance box to 190Ω and check that the display reads 188.1 to 191.1.

5.7 AC A Calibration

(1) Set Range Switch to 600A and clamp Jaw Assembly onto the test coil set to 600AT. Adjust VR1 so that the display reads 604.

(2) Set Range Switch to 200A and clamp Jaw Assembly onto the test coil set to 190AT. Check that that display reads 188.5 to 191.5. If not, adjust VR1 and repeat steps (1) and (2).



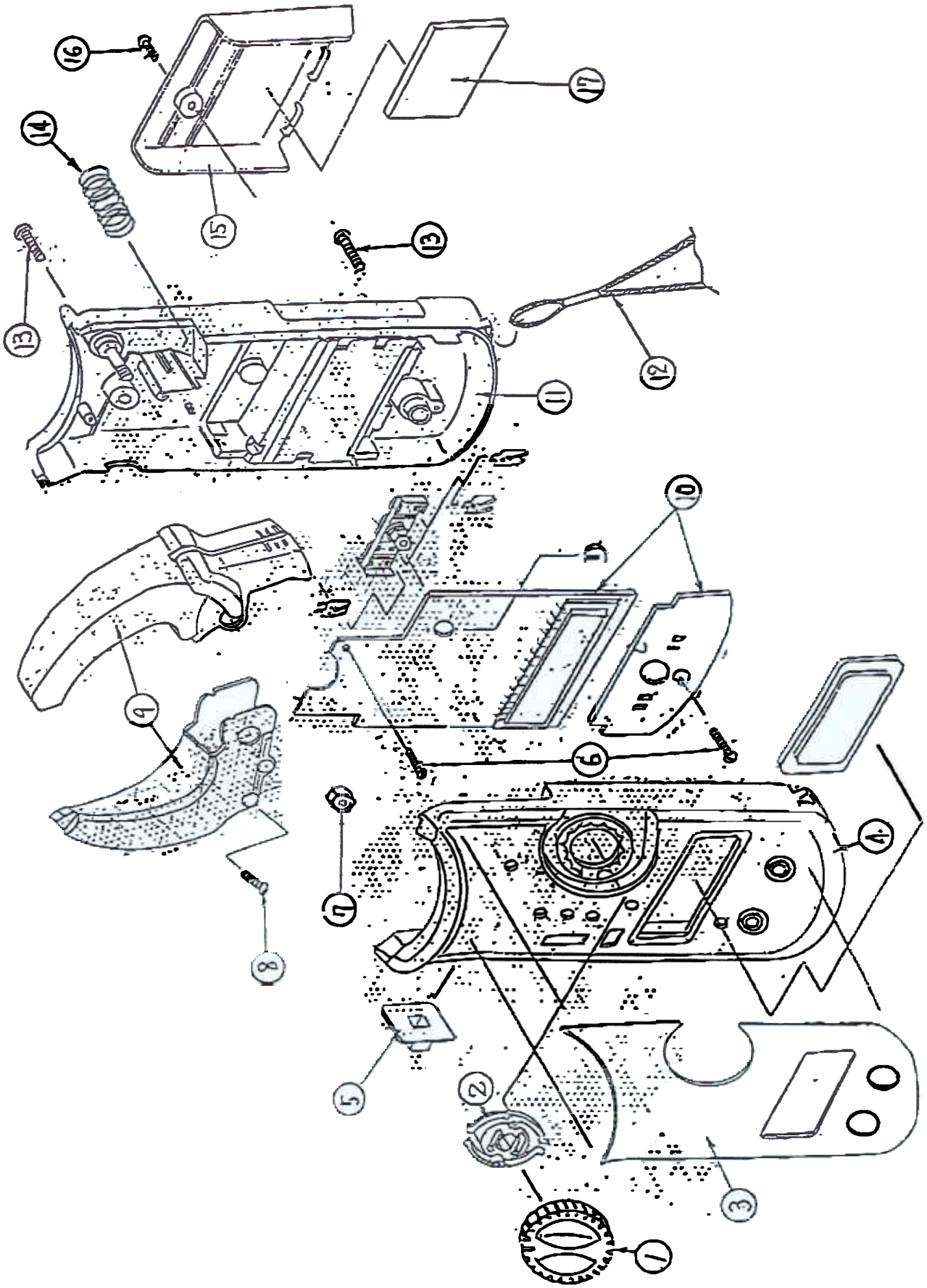
6. Trouble-shooing

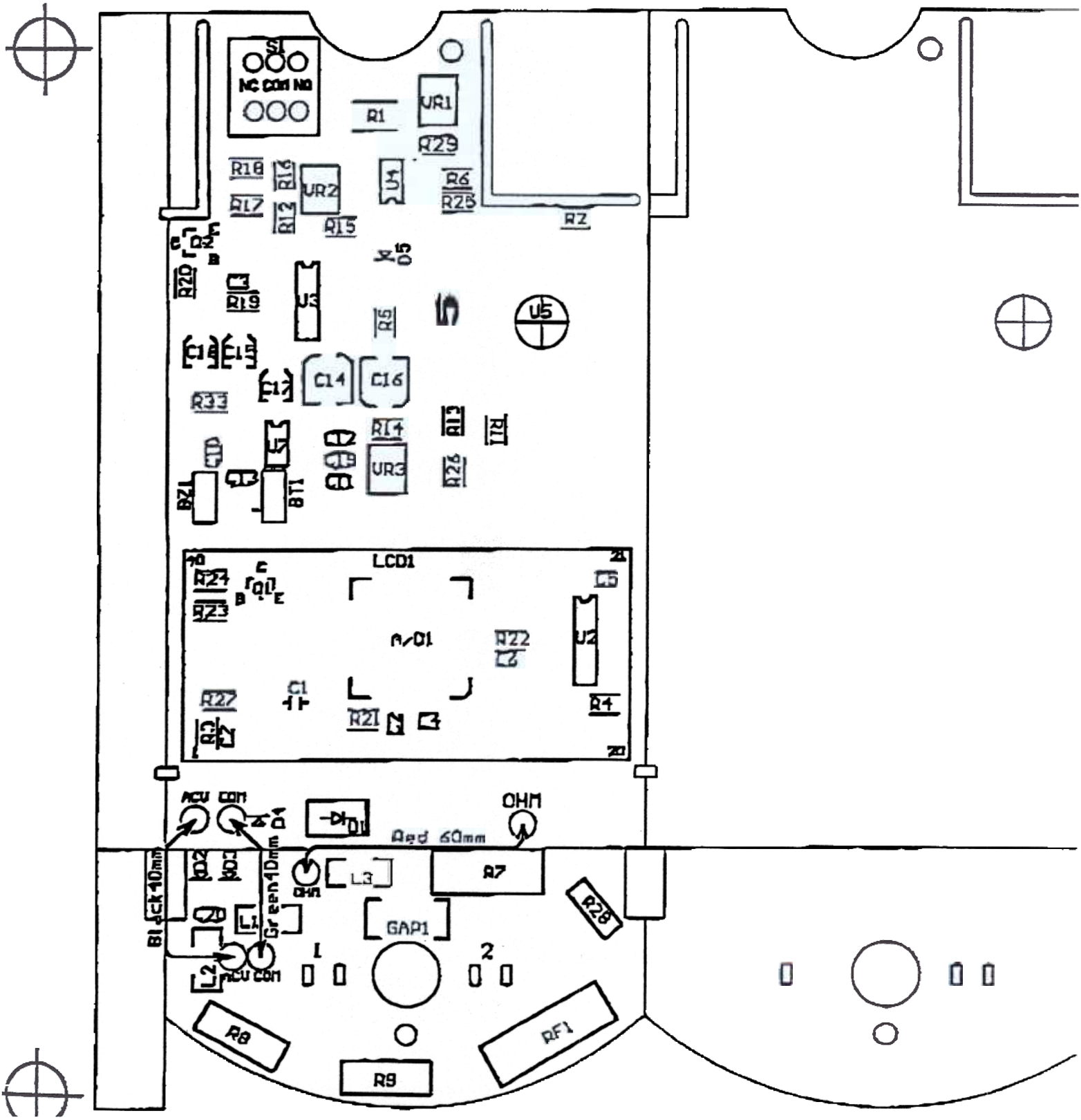
Symptoms	Possible Causes	Recommended Remedies
The display blanks when Range Switch is set to any position other then OFF.	Battery voltage is low	Replace the battery
	Faulty battery snap	Replace the battery snap
	Range Switch has poor contact with PCB patterns	Clean the PCB patterns
	Faulty components on PCB	If current consumption is over 2mA, replace PCB assembly.
Decimal points error	Range Switch has poor contact with PCB patterns	Clean the PCB patterns
	Faulty components on PCB	Replace PCB assembly.
LCD segment error	Faulty components on PCB	Replace PCB assembly.
LCD does not read 0	Faulty components on PCB	Replace PCB assembly.
LCD does not read on ACA ranges	A break in jaw winding	If Jaw Assembly has no voltage output, replace it. If Jaw Assembly outputs voltage follow remedies below.
	Faulty components on PCB	Replace PCB
	Data Hold button is pressed	If 'R' is shown on the display, release Data Hold button.
ACA readings out of accuracy	Battery voltage is low	If 'B' is shown on the display, replace the battery.
	Improper calibration	If battery voltage is OK, carry out steps in section 5 for calibration.
	Faulty Jaw Assembly	Adjust Jaw Assembly so it can fully close or replace it.
LCD does not read on ACV and Ω ranges	A break in test leads	Check continuity of test leads. If there is a break, repair or replace the faulty test lead. If not, follow remedies blow.
	Faulty components on PCB	Replace PCB assembly.
	Data Hold button is pressed	If 'R' is shown on the display, release Data Hold button.
LCD readings out of accuracy on ACV and Ω ranges	Battery voltage is low	If 'B' is shown on the display, replace the battery.
	Improper calibration	If battery voltage is OK, carry out steps in section 5 for calibration.
Buzzer does not sound on Ω range	Faulty components on PCB	Replace PCB

7. List of Spare Parts

Number	Spare Part No.	Description	Note
—	202700A-40-03	Range switch knob assembly	(1) + (2)
(1)	0006708	Range switch knob	
(2)	0006830	Locking shaft	
(3)	0008456 ~~0008015~~	Name plate	
(4)	0006705	Front Panel	
—	~~202700A-40-01~~ 202703A-40-01	Front Panel Assembly	(1)+(2)+(3)+(4)
(5)	0006709	Data Hold button	
(6)	0001303	B-tight screw +N2.3x8	
(7)	0006544	U-nut	
(8)	0001666	B-tight screw +N M3x8	
(9)	202700A-10-01	Jaw assembly	
(10)	202700A-20-01	PCB assembly	With switch shaft
(11)	0006706	Bottom Case	
(12)	0006138	Wrist strap	
(13)	0004202	B-tight screw +N3x16	
(14)	0006746	Jaw spring	
—	202700A-40-04	Battery compartment cover assembly	(15)+(16)+(17)
(15)	0006707	Battery compartment cover	
(16)	0001636	Screw +B MX8	
(17)	0006494	Battery cushion	
—	202700A-40-02	Bottom Case Assembly	(11)+(15)+(16)+(17)
—	0001933	Battery 006P.	
—	~~706600A~~ 0007123	Test leads ~~M-7066~~ SL-10	
—	~~0006722~~ 0007128	Carrying case	
-	0007797	Battery snap SN16PETALSL=150	

Fig. 1 Compoment Layout




NC COM NO
VR1
R1
R29
R18
R16
VR2
U4
R6
R25
R17
R12
R15
RZ
R20
C3
R19
U3
R5
U5
C14
C16
R33
R14
R13
R11
VR3
R26
BZ1
BT1
LCD1
R24
R23
R22
U2
R27
C1
R21
R4
ACU COM
OHM
Red 60mm
Black 10mm
Green 10mm
L3
R7
R28
GAP1
L1
L2
ACU COM
1
2
R8
RF1
R9

MODEL K2027 PARTS LIST - 1/2

確認	作成
共立 95.10.26 篠田	共立 96.10.28 白井

Part	Used	PartType	Designators
1	1	1Z7.5	D1
2	2	2SA1162Y	Q1 Q2
3	1	47J RF2W	RF1
4	1	100J SPR2W	R7
5	1	911P97E102YV10	R28
6	1	7116CKW	A/D1
7	1	AD737	U7
8	1	AG20PC252F	GAP1
9	3	BLM41P600SPT.	L1 L2 L3
10	1	CC20CG1H101J	C6
11	2	GRM40B103K50PT	C3 C5
12	2	GRM40B104K25PT	C4 C13
13	2	GRM40CH102J50PT	C7 C20
14	3	GRM40CH241J50PT	C10 C12 C19
15	1	GRM40CH680J50PT	C11
16	1	GRM40F474Z16PT	C2
17	1	KLC-700PN	LCD1
18	1	M2017	CT1
19	1	M2017RSW	U5
20	1	MKT0.22uF	C1
21	1	NJM062M	U4
22	1	OO6P	BT1
23	1	PKM11-4A0	BZ1
24	2	RK1/2 1MF	R8 R9
25	1	RK73H2B 1.3KF	R2
26	1	RK73H2B 1.8kD	R10
27	1	RK73H2B 1.82kD	R29
28	1	RK73H2B 1kF	R14
29	1	RK73H2B 9.53kF	R25
30	2	RK73H2B 10kF	R13 R15
31	1	RK73H2B 12kF	R26
32	1	RK73H2B 47kF	R21
33	1	RK73H2B ~~10.9KF~~ 56kF	R6
34	1	RK73H2B 100D	R3
35	1	RK73H2B 200D	R11
36	1	RK73H2B 270kF	R12
37	2	RK73K2B 1MJ	R4 R5
38	1	RK73K2B 3.3kJ	R20
39	1	RK73K2B 5.1MJ	R16
40	1	RK73K2B 10kJ	R19
41	2	RK73K2B 13kJ	R17 R18

42	1	RK73K2B 82kJ	R33
43	2	RK73K2B 100kJ	R22 R24
44	1	RK73K2B 200kJ	R27
45	1	RK73K2B 470kJ	R23
46	1	RK73M2H 2.2J	R1
47	1	RLS4448	D5
48	3	RLZ6.2B	D2 D3 D4
49	1	SPPJ6 N2	S1
50	1	TMC3K B1k	VR1
51	1	TMC3K B10k	VR3
52	1	TMC3K B20k	VR2
53	2	UWX1A330MCR1GB	C14 C16
54	1	UWX1C100MCR2GB	C18
55	2	UWX1H010MCR2GB	C15 C17
56	1	uPD4030BG	U3
57	1	uPD4053BG	U2
58			