

# Service manual

## Hand grip dynamometer

### KERN MAP

Version 1.0  
3/2010  
GB



MAP-SH-e-1010



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Version 1.0 3/2010

## **Service manual**

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# 1 Basic Information

## Grundlegende Hinweise

**The device must be repaired only by trained specialist staff or personnel with professional formation (such as a repair-specialist accredited by law concerning verification).**

**The service manual is obligatory for repair work.**

**After repair, original conditions of the device have to be restored.**

**Only original spare parts should be used.**


Das Gerät darf nur von geschultem oder beruflich ausgebildetem Fachpersonal (z. B. eichrechtlich anerkannter Instandsetzer) repariert werden.

Die Serviceanleitung ist bindend für Reparaturen.

Das Gerät muss nach erfolgter Reparatur wieder in den Originalzustand zurückversetzt werden.

Es dürfen nur Originalersatzteile verwendet werden.

## 2 Technical Data

KERN	MAP 80K1		
Capacity	80 kg (blue)	40 kg (green)	20 kg (red)
			
Readability (d)	0.1 kg / 0.2 lb		
Units	kg, lb		
Auto Off	After 1 min without change of load		
Electric Supply	1 x CR2450		
Operating temperature	+ 5°C ... + 35°C		
Storage temperature	- 20°C ... + 60°C		
Humidity of air	max. 80 % (not condensing)		
Dimensions fully mounted (W x D x H) mm	212 x 55 x 102		

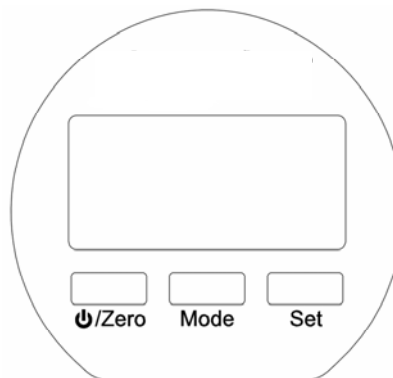
### 3 Overview of Display / Keys

#### Overview of displays









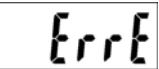
1. Stability display
2. Battery status
3. Operation modus
4. Percentage display
5. Weighing unit "lb"
6. Weighing unit "kg"

#### Keyboard overview

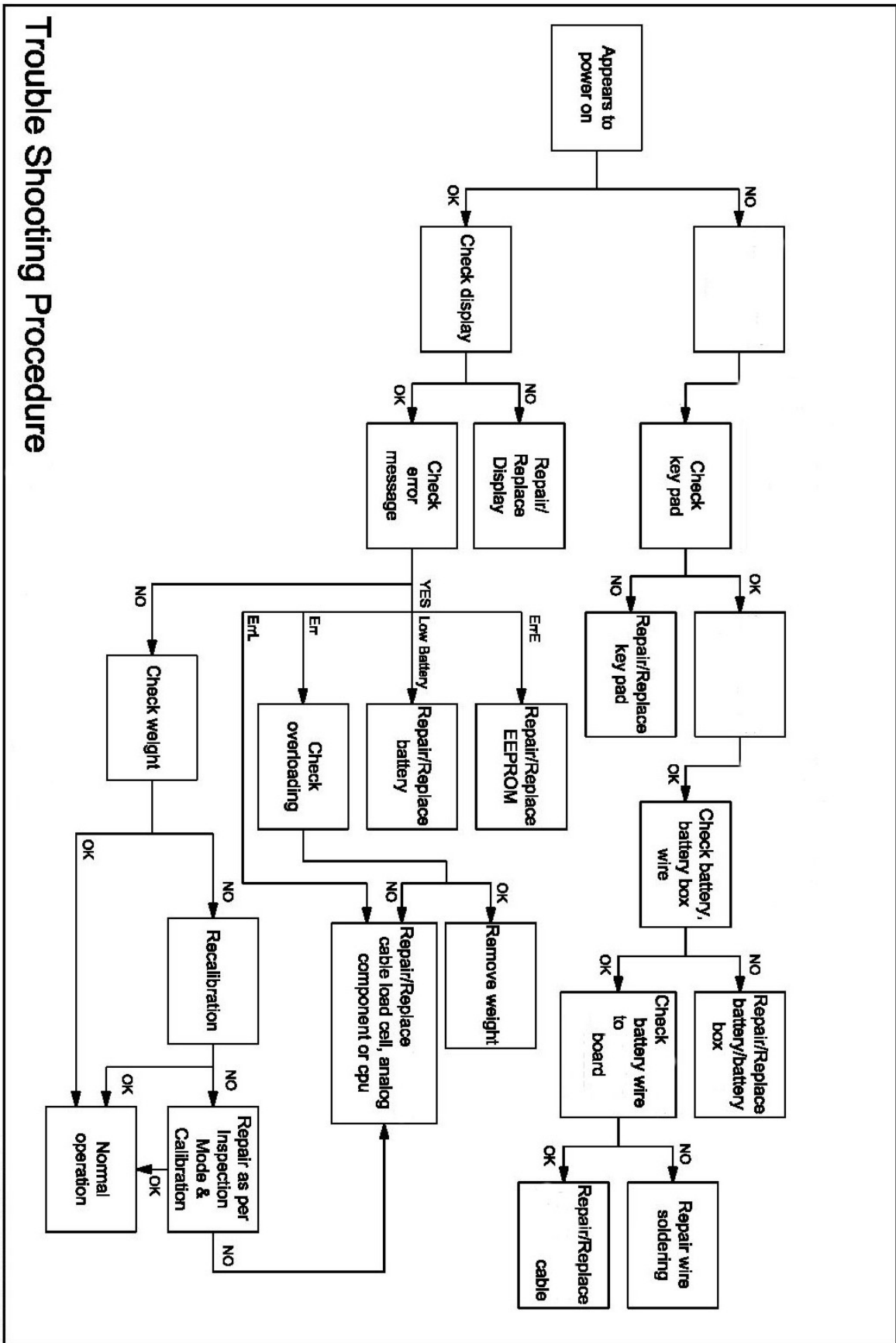


Button	Function
Power / Zero	Switch-on / off, zeroing
Mode	Select operating mode
Set	Confirm display
	In real mode: Switch unit from kg ↔ to lb

## 4 Error Message Indication

	Capacity of batteries exhausted.
	
	Underload, set to zero by pressing  /zero key
	Overload
	Preload error
	EEPROM error

# 5 Trouble Shooting



## 6 Calibration Procedure

1. Switch-off the device.
2. While pressing the **⏻/zero** key, after 1 second hit the **Mode** key sequentially 3 times and releases the **⏻/zero** key. The display shows the internal zero count (e.g. 1933).
3. Press the **⏻/zero** key once. The display appears [ 0 ].
4. Load calibration weight (**40kg**). The display shows the internal span count (e.g. 1146).
5. Press the **⏻/zero** key once to start the calibration. Shortly after the value of the calibration weight (40.0 kg) appears.
6. Remove the calibration weight and switch-off the device. Calibration is completed.

MODEL	ZERO Count	SPAN Count	Calibration Weight
MAP 80K1	500-3000	500-2700	40kg



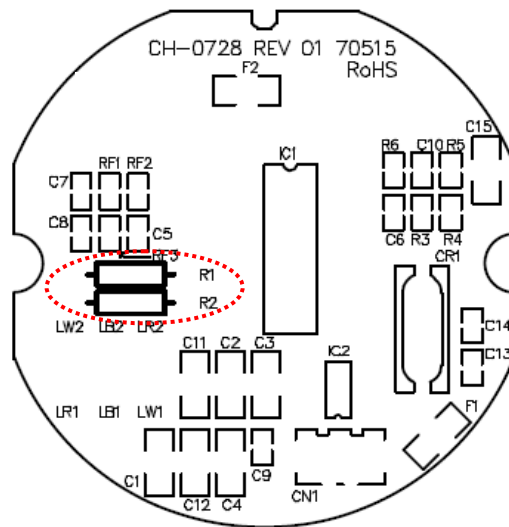
## 7 Zero Count Adjustment

If the **ZERO COUNT** value is out of range, adjust **R1** or **R2** on the main board:

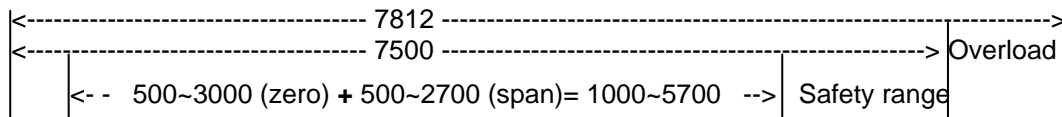
If zero count is below 500, use a variable resistor on R1 to adjust the zero count.

If zero count is above 3000, use a variable resistor on R2 to adjust the zero count.

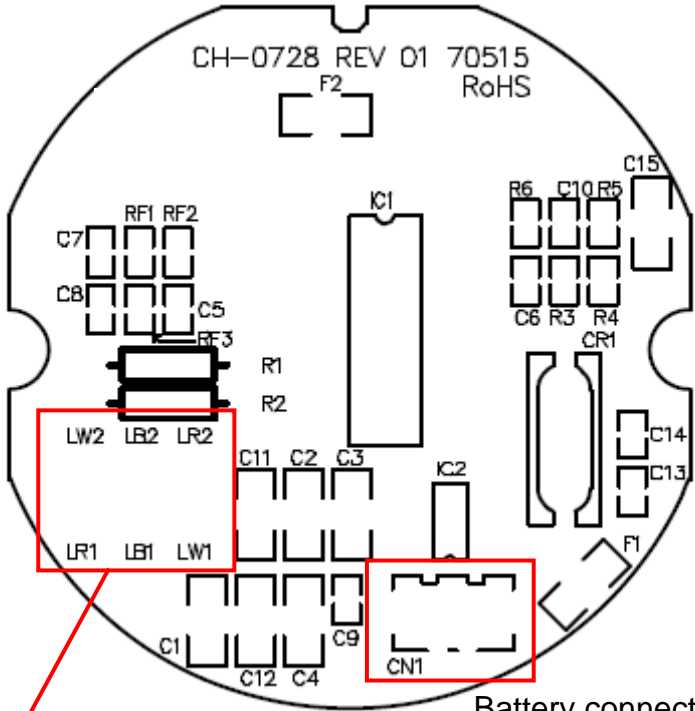
After determination of the required resistor, solder it on the main board.



The **total internal count** is 7812. Overload was set at 7500 (in production).

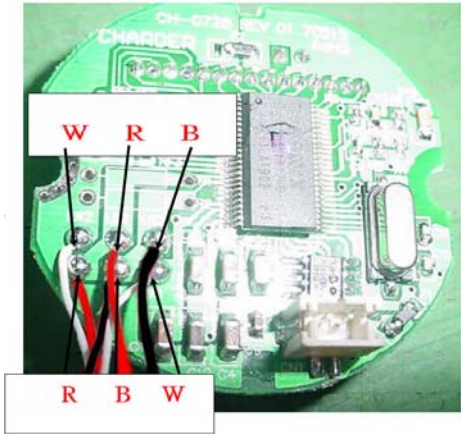


# 8 PCB Layout

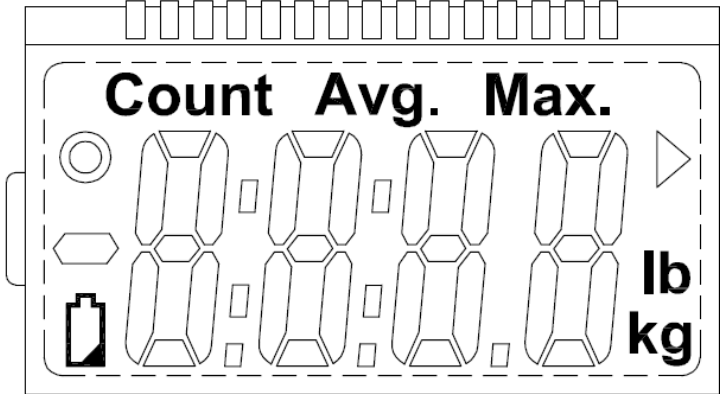


Battery connector

Load cell



# 9 Display Format



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COM1	p1	1e	1d	2e	2d	3e	3d	4e	4d	p3	p2	c1	/	/	/
COM2	☐	1g	1c	2g	2c	3g	3c	4g	4c	kg	/	/	c2	/	/
COM3	◁	1f	1b	2f	2b	3f	3b	4f	4b	lb	/	/	/	c3	/
COM4	◎	1a	Count	2a	col1	3a	Avg.	4a	Max.	s1	col2	/	/	/	c4

# 10 Assembly Drawing

NO.	Item	Spec.	MAP 80K1		
			20kg	40kg	80kg
1	Loadcell	AL-0950	2		
2	PCB	CH-0728	1		
3	Spring Support	SS-5021	2		
4	Spring	SS-5041	2		
5	HandGrip	SS-5051	1		
6	Screw-fixed spring support	SS-5061	2		
7	HandGrip-Top Cover	CR-2651	1		
8	Rubber (Hand Grip)	ST-2611	1		
9	Base Cover	BM-1511	1		
10	Rubber (Top Cover)	ST-2621	1		
11	Switch	SW-1401	3		
12	Battery	CR-2450	1		
13	Battery Cover	BT-1051	1		
14	Sleeve	BT-8181	2		
15	Hexagon Screw	M5X0.8X10	2		
16	Hexagon Screw	M3X0.5X15	2		
17	Plastic Sheet	NP-4541	1		
18	Panel (40kg)	NP-4551	1		
19	Recessed Head Screw	M2.5X0.45X6	2		
20	Plastic Sheet	NP-4561	2		
21	Battery Contact Plates(+)	BT-0741	1		
22	Battery Contact Plates(-)	BT-0731	1		
23	PVC+Housing	WR-2751	1		
24	0.5mm Foam Tape (EVA)		1		
25	5mm Tape		1		
4	Spring-80kg	SS-5031		2	
18	Panel (80kg)	NP-4571		1	
4	Spring-20kg	SS-5201		2	
18	Panel (20kg)	NP-4661		1	

