

LOAD CELL TYPE BABY SCALE

*"SUYASUYA" BSL-20*

MAINTENANCE MANUAL

FOCAL CORPORATION, Tokyo, Japan

- INTRODUCTION -

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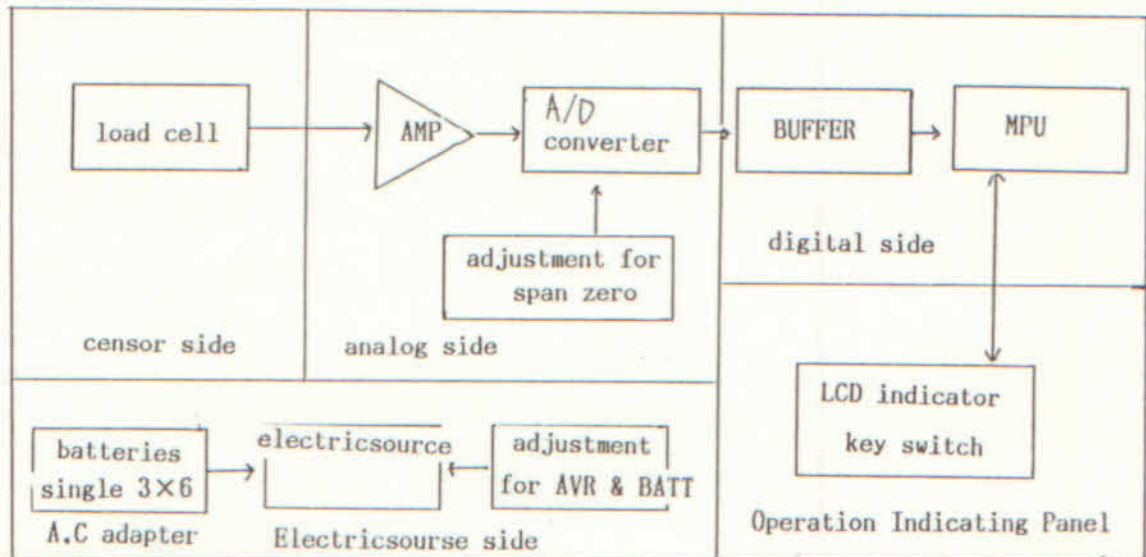
## 1. Outline of Baby Scale

This baby scale is made from a number of electronic parts and micro computer with an electric load cell.

This scale is consisted of a basket, a step, a base plate and an indicator. And you can use this as a little child scale if you take off a basket.

This has high durability and easy maintenance. This is high precise scale with two way battery system for saving energy.

### Action construction drawing



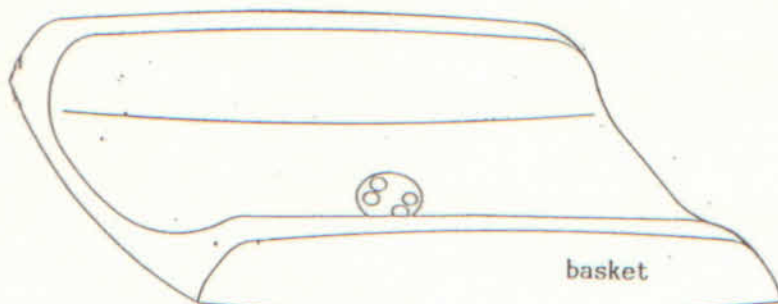
As above drawing, a tiny signal (analog signal) which you got through a load cell proportionating to load, is amplified and is converted to A/D.

Beside, it is converted to 10,000 bit digital signal for span(capacity).

And it is put in 4 bit micro-processor through buffer circuit. The weight is indicated on a liquid crystal after various instrument management have done in MPU. And various control by switch on a control panel are got in MPU, and they are managed in MPU equally and are out put on liquid crystal indicator.

Beside, you can use both of battery and AC electric source as supply electric source, and you can convert these to direct current and supply to various section requested.

# Disjointing picture of main body



basket

taping screw with crossmark head

M3x12

bolt with hexagonal  
holl spring washer

M6x40

step cover

washer to install

final screw with hexagonal hole

M6x25

hexagonal nut

step

crew No.4

zone name plate

gage element

small screw with cross hole head  
with plain washer  
spring washer

M3x8

hexagonal boat spring washer

M6x12

main electric board

indicating frame set

base plate

taping screw with  
cross hole head

M2.6x0.45x8

taping screw with  
cross hole head  
plain washer  
teeth washer

rubber foot

socket for DC adapter

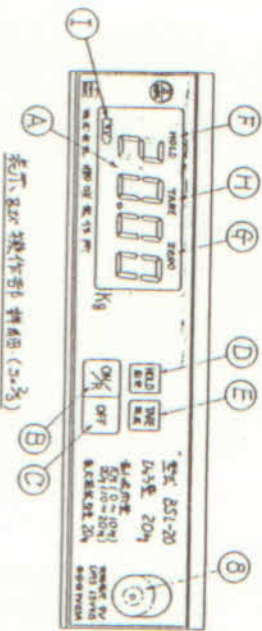
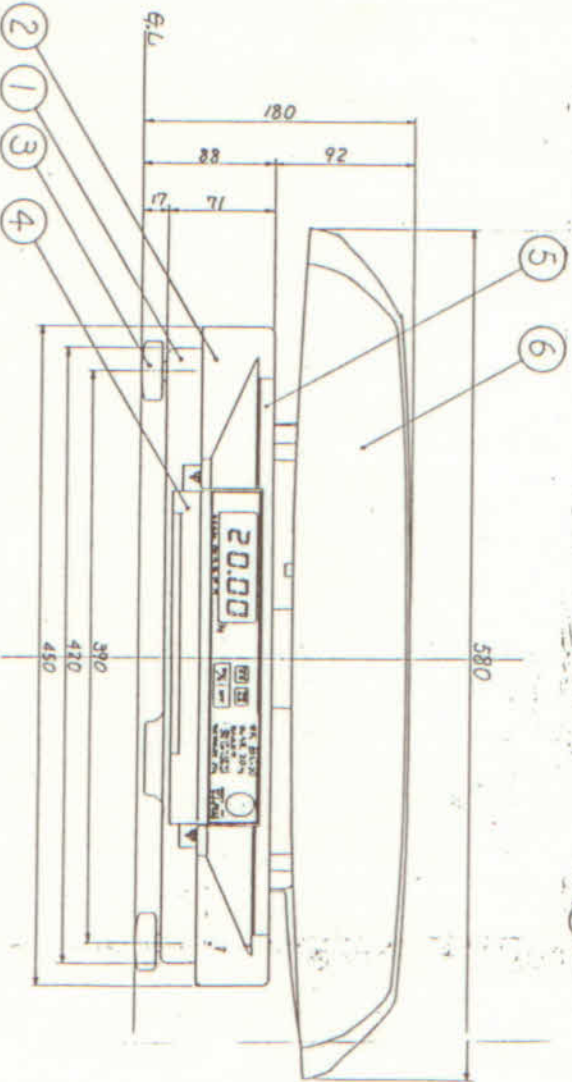
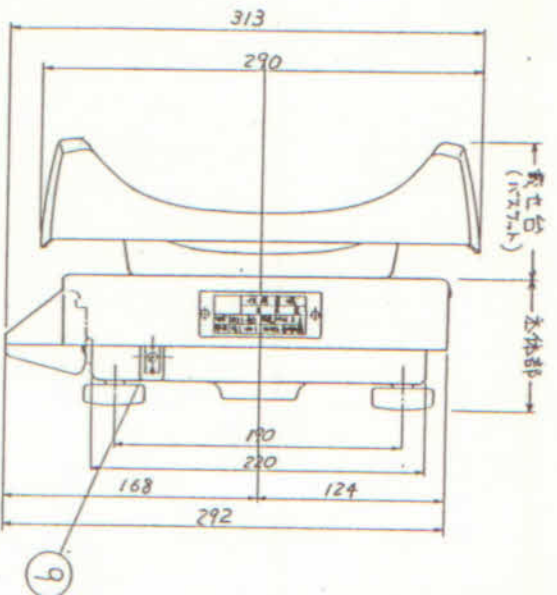
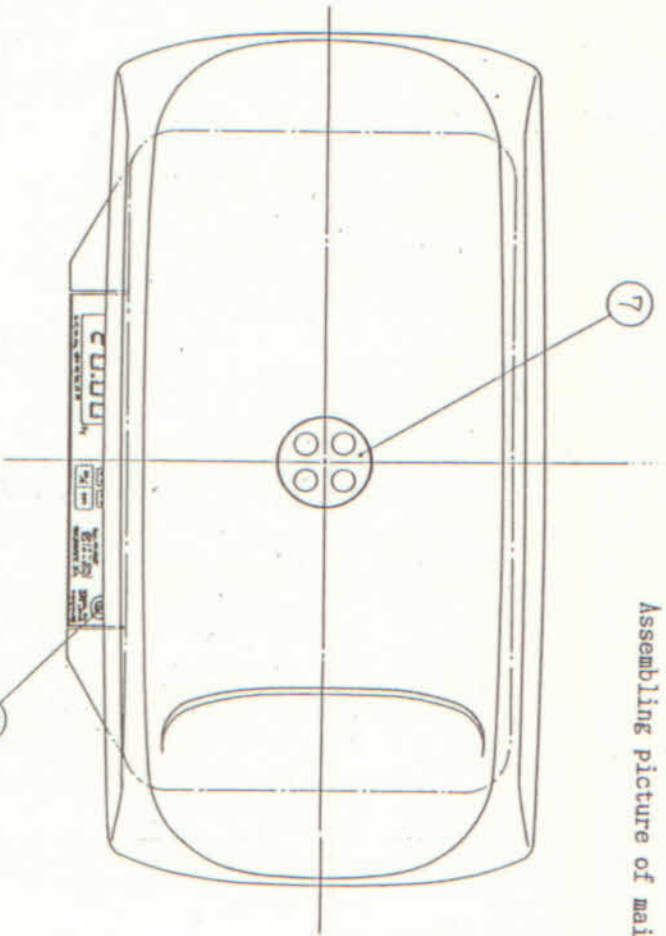
washer to install

bolt with hexagonal  
hold spring washer

M6x40



Assembling picture of main body



電子秤操作部詳細 (2/3)

9 DC power jack

... plastic

8 leveler

...

7 set dial

...

6 basket

...

5 setp cover

... steel

4 indicators frame

... plastic

3 adjusting stand

... rubber

2 step

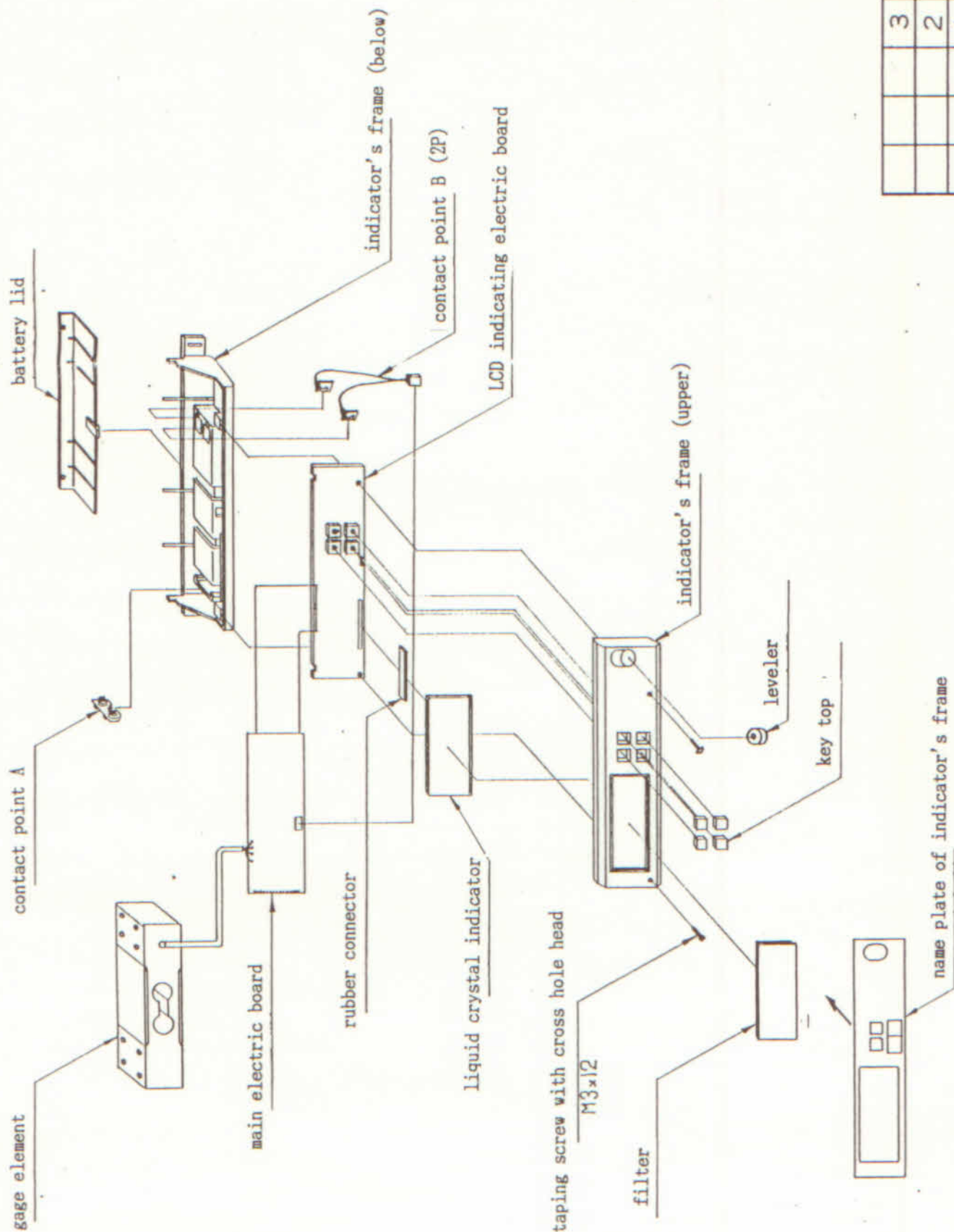
... aluminum

1 base plate

... aluminum

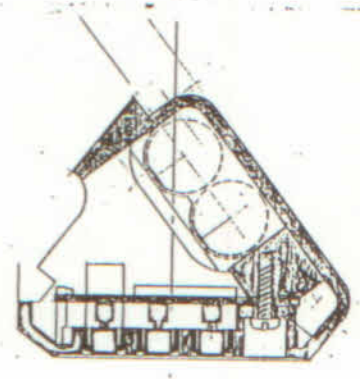
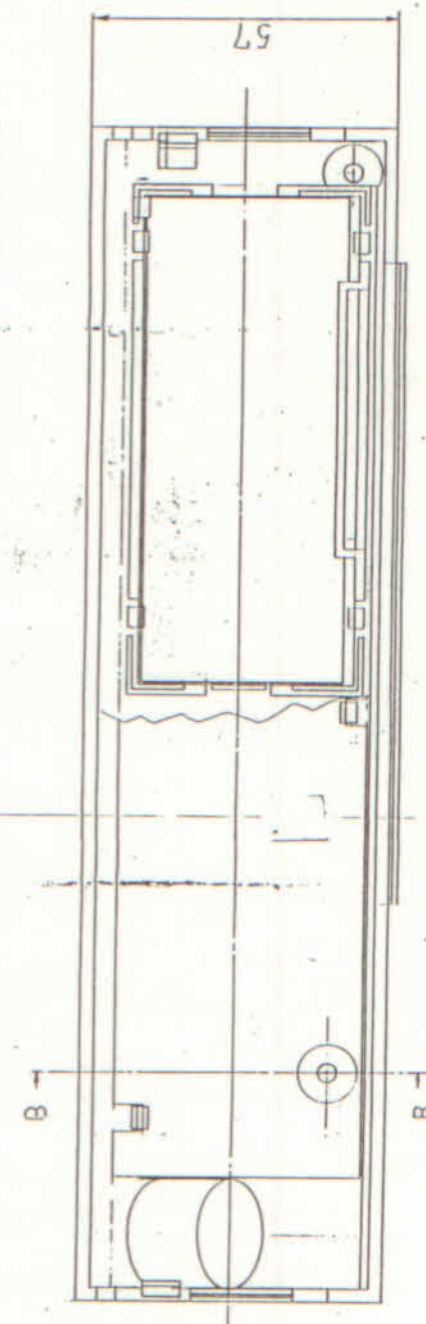
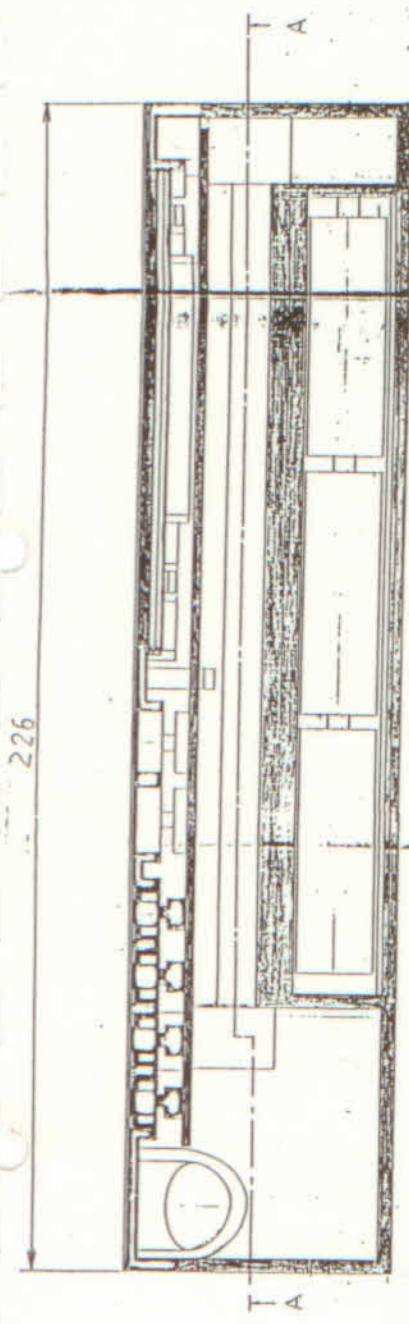
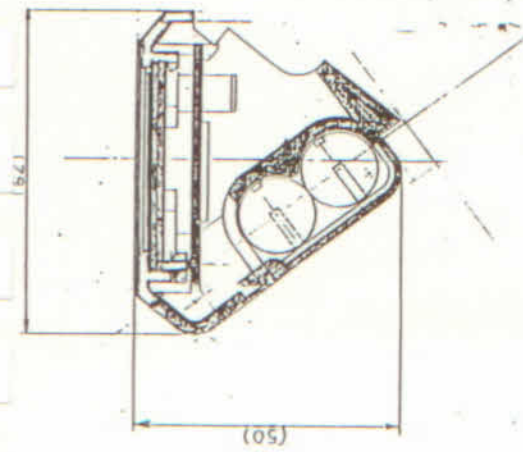
寸法の単位換算表	mm	cm	m	in	ft	yd
mm	1	0.01	0.001	0.03937	0.00328	0.00109
cm	10	1	0.01	0.3937	0.0328	0.0109
m	1000	100	1	39.37	3.28	1.09
in	25.4	2.54	0.0254	1	0.833	0.274
ft	304.8	30.48	0.3048	1.2	1	0.333
yd	914.4	91.44	0.9144	3.6	3	1

# Disjoining picture of indicator



部品 PARTS	品番 NO	個数 NO. REQD.	部 NAI
3			
2			
1	A		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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B-B CROSS SECTION

A-A CROSS SECTION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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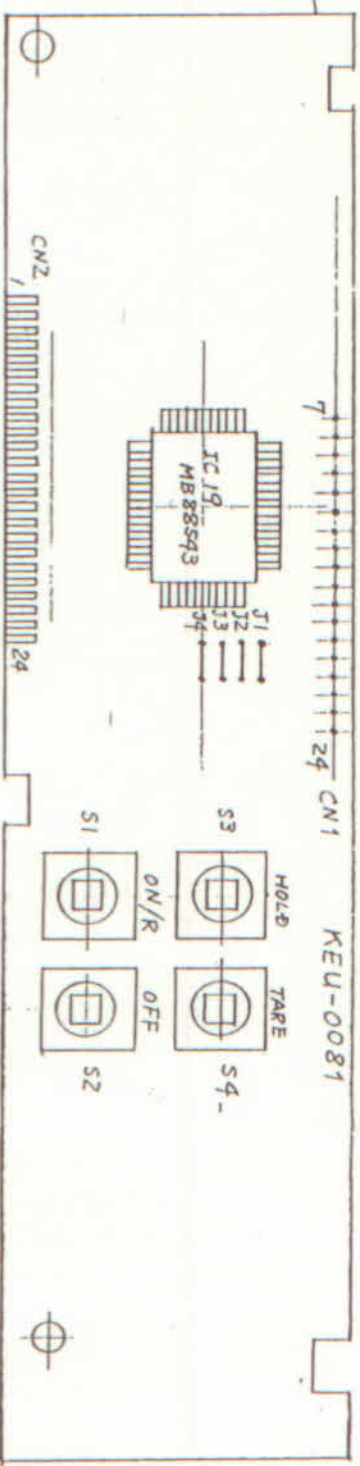
Assembling picture of indicator

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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05L-20  
表带部組立図  
KUM-0058

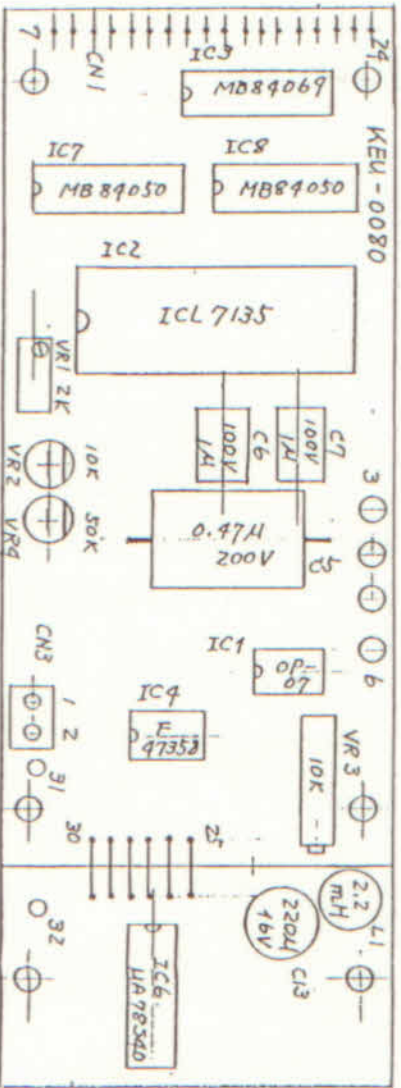


# LCD



arrangement picture of parts on main electric board

## main electric board



VR3 adjustment of electric source (shift adjustment)

- VR1 Span adjustment VR4 Battery
- VR2 zero adjustment TV adjustment



7. Each specification & function and correspondence for JUMPER cable.

Although there are four JUMPER cable J1-J4 on LCD indicating electric board showing on page 7, each of JUMPER cable has the specification and function as follows. When JUMPER cable is connected it is ON, not connected it is OFF, at following table.

Name of JUMPER cable	J1	ON	ON
	J2	ON	ON
	J3	ON	ON
	J4	ON	OFF
Capacity			20.00 kg
Accuracy			1/1000
Name		test mode	baby scale

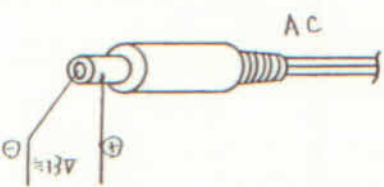
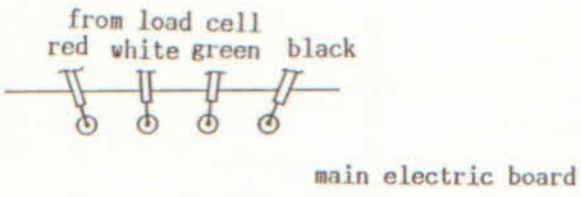
The meaning of TEST MODE is that it is mode when you adjust in plant, which indicates approximately 10,000 for each specification capacity.

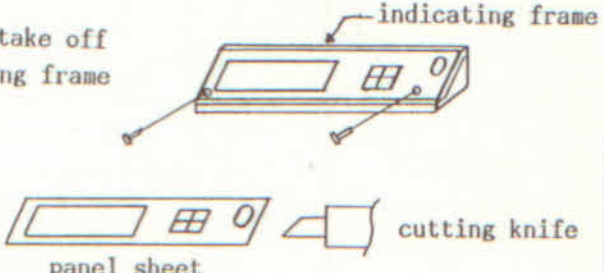
## 8. Easy adjustment

This baby scale has been checked for span(capacity) adjustment and temperature test, but we describe how to make easy adjustment if you will have an error on indicating figure as fellows.

1. First, you take off a basket, step cover and a step.  
(Please refer to 2. Disjointing picture of main body.)
2. Please connect AC adapter to main body.
3. You put on 20 Kg check weight on platter after you turned on switch, and confirmed 0.00 indicating on liquid crystal indicator. When it indicates smaller than 20.00 Kg, please revolve a little bit span adjustment volume VR1 (refer to page 6. arrangement picture of parts on main electric board) on main electric board (refer 2. disjointing picture of main board) clockwise, and when it indicates bigger than 20.00 Kg, please rebolve a little bit it counter-clockwise.
4. Please press the switch ON/R after taking off check weight.  
(confirm indicating 0.00 please)
5. Please confirm 20.00 Kg indicating on liquid crystal indicator after you put 20Kg test weight again.  
Please repeate it three, four or five times until it will indicate 20Kg, if it will not indicate 20Kg.
6. Please thrn off switch and attah a step, a step cover and a basket, after you fonfirmed that liquid crystal indicator shows correct weight comparing with actual test weight.  
Then, all of adjustment has finished.

## 9. Trouble shooting

Trouble's phenomenon	Cause & countermeasure								
<p>A) Liquid crystal indicator on panel does not indicate at all even when you turn on electric source switch ON/R.</p>	<p>1. Inferior of AC adapter system</p> <ol style="list-style-type: none"> <li>1) Take off a plug from adapter and reconnect it to adapter again.</li> <li>2) Inferior of AC adapter-self               <ul style="list-style-type: none"> <li>- Confirm out put about 13V on AC adapter's plug using tester or DVM as following picture.</li> </ul> </li> </ol>  <p>2. Inferior of battery system</p> <ol style="list-style-type: none"> <li>1) Exchange six pieces of new batteries please, since they run out naturally.</li> </ol> <p>3. Inferior of electric system</p> <ol style="list-style-type: none"> <li>1) Please check the connector connecting from a load cell on main electric board useing DVM as follows. (refer to Page 7)</li> </ol>  <table border="1" data-bbox="828 1512 1128 1585"> <tr> <td>③ Red</td><td>④ White</td></tr> <tr> <td>≐ +5V</td><td>GND</td></tr> </table> <p>It is inferior of printed electric board except above mentiond. Dispatch is to our plant fo fix it.</p> <table border="1" data-bbox="828 1740 1128 1813"> <tr> <td>⑤ Green</td><td>⑥ Black</td></tr> <tr> <td>≐ ±10mv</td><td>GND</td></tr> </table> <p>The load cell is inferior when there is no out put of voltage and except above mentiond. Dispatch the load cell to our plant to fix please.</p>	③ Red	④ White	≐ +5V	GND	⑤ Green	⑥ Black	≐ ±10mv	GND
③ Red	④ White								
≐ +5V	GND								
⑤ Green	⑥ Black								
≐ ±10mv	GND								

Trouble's phenomenon	Cause & contermeasure
<p>B) Some digits of liquid crystal indicator or some segment does not indicate.</p>	<p>1. Inferior of contact of rubber connection.</p> <p>Take off screws of indicating frame after taking off panel sheet carefully using knife.</p> <p>Next, take off indicating frame useing some tweezers, then clean up both side of contacting face of rubber connector with soft cloth containing thinner.</p> <p>how to take off indicating frame</p>  <p>2. Inferior of LCD indicating.</p> <p>Exchange LCD indicating electric board please (refer to Page 7)</p>
<p>C) Liquid crystal indicator indicates lighter for whole.</p>	<p>1. Running out of battery</p> <p>Please exchange six pieces of new batteries as they run out, if 9V is indicating which located on left and below of liquid crystal indicator.</p> <p>2. Inferior of contacting of rubber connector.</p> <p>Please clean up contacting face of rubber connector accordding to B).</p> <p>3. Please exchange LCD as it indicates lighter if the life of liquid crystal is over.</p> <p>4. Inferior of electric source for liquid crystal on main electric bord. (refer to Page 7)</p> <p>Please measure boltage between ③ red and ④ white from a load cell as above C) by tester. Dispatch it to our plant as electric board is inferior if out put is excepting 5V. We will re-adjust and fix it.</p>



Trouble's phenomenon	Cause & countermeasure
<p>D) Electric source is not turned off even if you press an electric switch OFF.</p>	<ol style="list-style-type: none"> <li>1. Ribbon cable No.24 which is wiring to CN1 with LCD and main electric board (refer to page 7) is cut off at the road of an electric board. Re-connect with a soldering copper please.</li> <li>2. Confirm OFF switch does work with your finger pressing OFF switch on indicating control panel. If it seems not to work, according to B) how to take off indicating frame, you take off a panel sheet and confirm OFF switch's action. If it does not work, OFF switch is inferior. If it does work, it seems that a panel sheet with carefull attention.</li> </ol> <p>In case of action inferior of switch such as same way please.</p>
<p>E) Can not measure accurately</p>	<ol style="list-style-type: none"> <li>1. Inferior of adjustment four pieces of adjusting stand. (Is not there ratting among four adjusting stand.)</li> <li>2. Inferior of level adjustment.</li> <li>3. Is not a table for a baby scale shivering ?</li> <li>4. Does not some step contact with something ?</li> </ol>

# 改訂

△ Ic7, Ic8  
部品変更

訂

△ Ic4  
部品変更

訂

△ R17, R18  
部品変更

設計部 訂

△ R12, R13, Vp2  
部品変更

設計部 訂

△ Tr2, R45 部品変更

Tr6, R49, R10 部品変更

2.6/10.1 訂

△ D1  
部品追加

設計部 訂

△ 仕様変更

1986.10.17 訂

R19, R49 → 廃止

Tr6, R49 → 22A146

R4, R45, 2.7kΩ → 9.7kΩ

R15: 1kΩ → 1.8kΩ

R48: 20kΩ → 2.2kΩ

R14: 10kΩ → 2.2kΩ

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

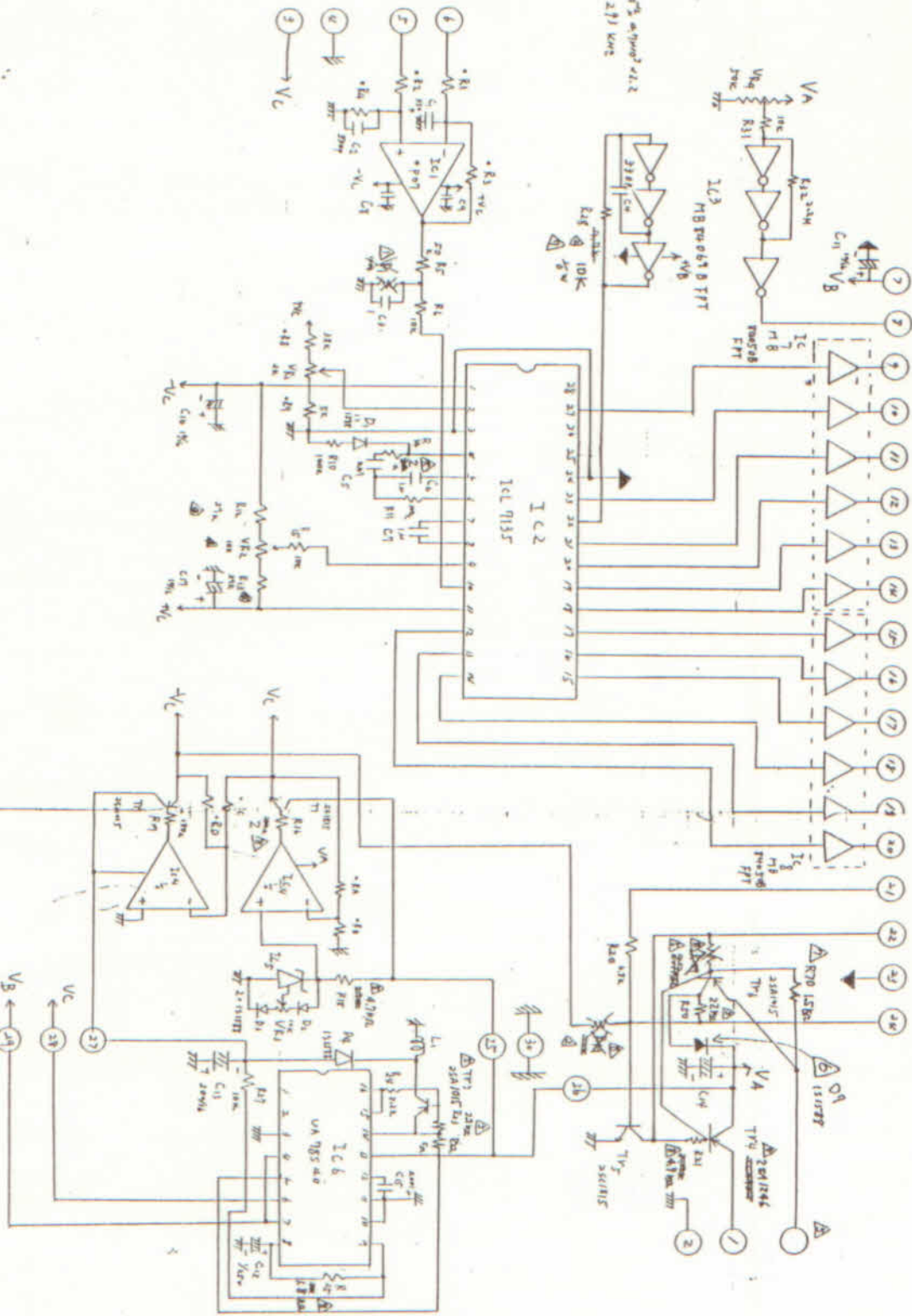
Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

Tr6, R49 → 22A146

$T = 330 \mu F, 0.7 \mu F, 0.2$   
 $T = \frac{1}{f} = 2.73 \text{ KHz}$



製圖設計審查承認  
電機部 設計部 審查部 承認部  
御味製作所

KEU-0080

electric circuit

記 事 實  
記 号 来 曆 年月日

図 号	部 品 名	材 質	材 寸	備 考
A				
1				

## 寸法の普通許容差

寸法差の記入のない寸法の普通許容差は  
JIS B 0404 1-14 又は 1-16  
に示された下表によること

公差等級		14 級	16 級
寸法の区分	を 超 え 以 下		
0.5	3	± 0.1	—
3	6	± 0.1	± 0.2
6	30	± 0.2	± 0.5
30	120	± 0.3	± 0.8
120	315	± 0.5	± 1.2
315	1,000	± 0.8	± 2
1,000	2,000	± 1.2	± 3

KEU-0080

CN1

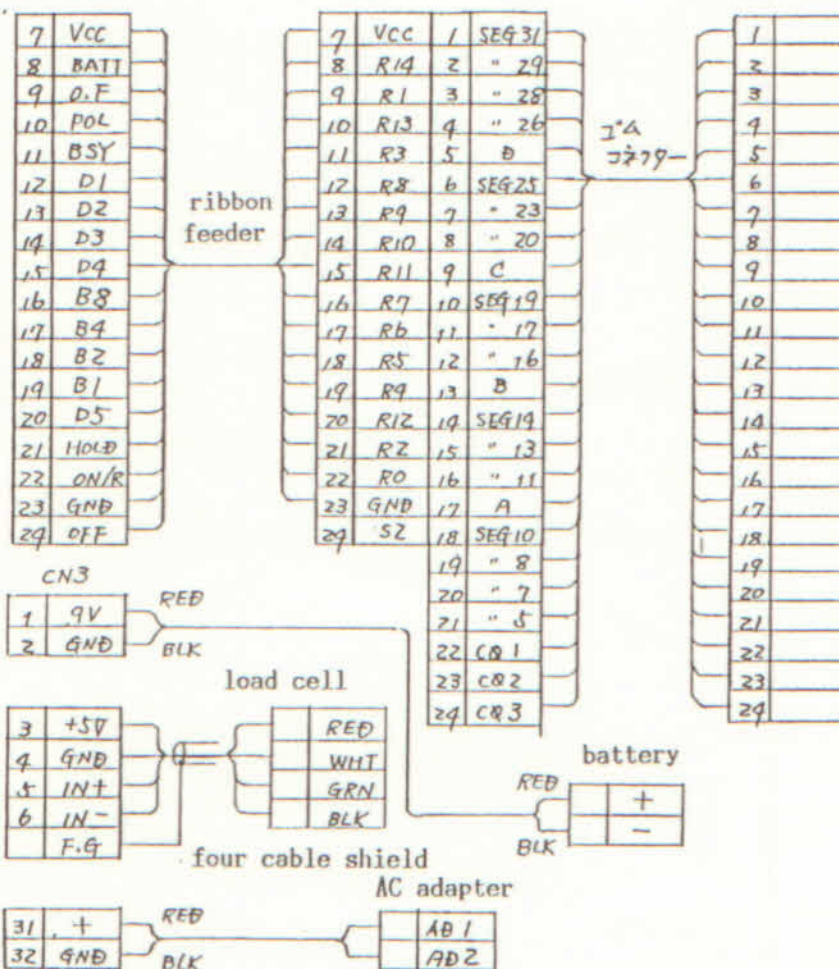
KEU-0081

CN1

CN2

LCD

CN2



備 考

A  
個 数  
NO. REQD

品 番  
PARTS  
NO.

部 品 名 称  
NAME OF PARTS

材 料  
MATERIAL

仕 上 重 量  
(kg)  
WEIGHT

備 考  
REMARKS

製 番 FILE NO.

製 番 ORDER NO.

第 三 角 法  
THIRD ANGLE PROJECTION

日 付 DATE  
1988. 11. 9

尺 度  
SCALE

形 式 TYPE

納 入 先 CUSTOMER

承 認  
APPROVED BY

検 査  
CHECKED BY

担 当  
DESIGNED BY

製 図  
DRAWN BY

図 名 TITLE

SUYASUYA Mutual wiring Diagram

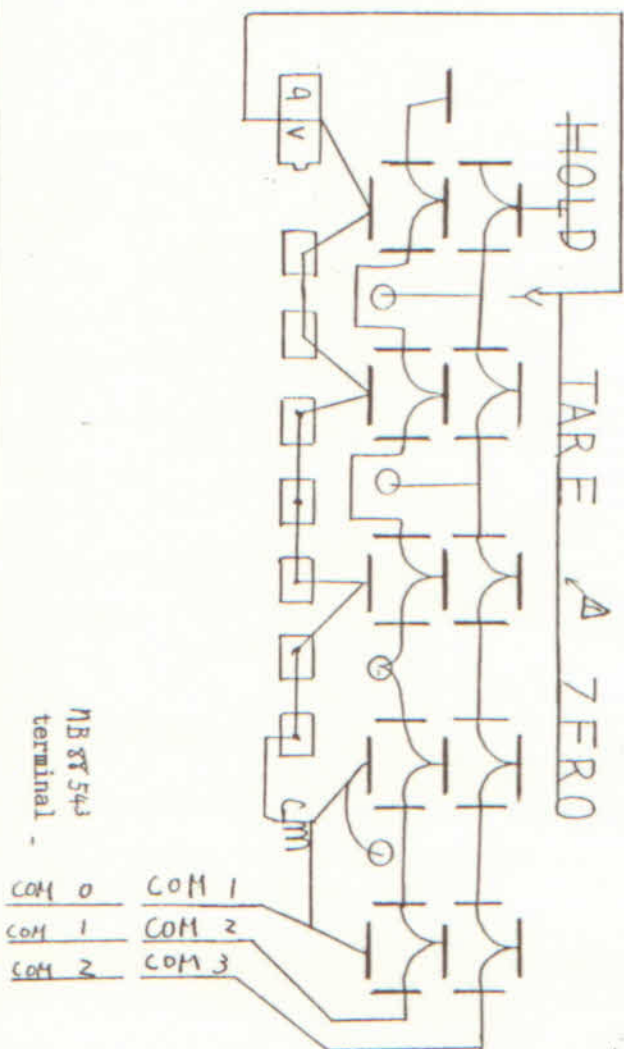


株 式 会 社  
御 幸 製 作 所

図 番 DWG. NO.



COMMON



LCD terminal wiring diagram



