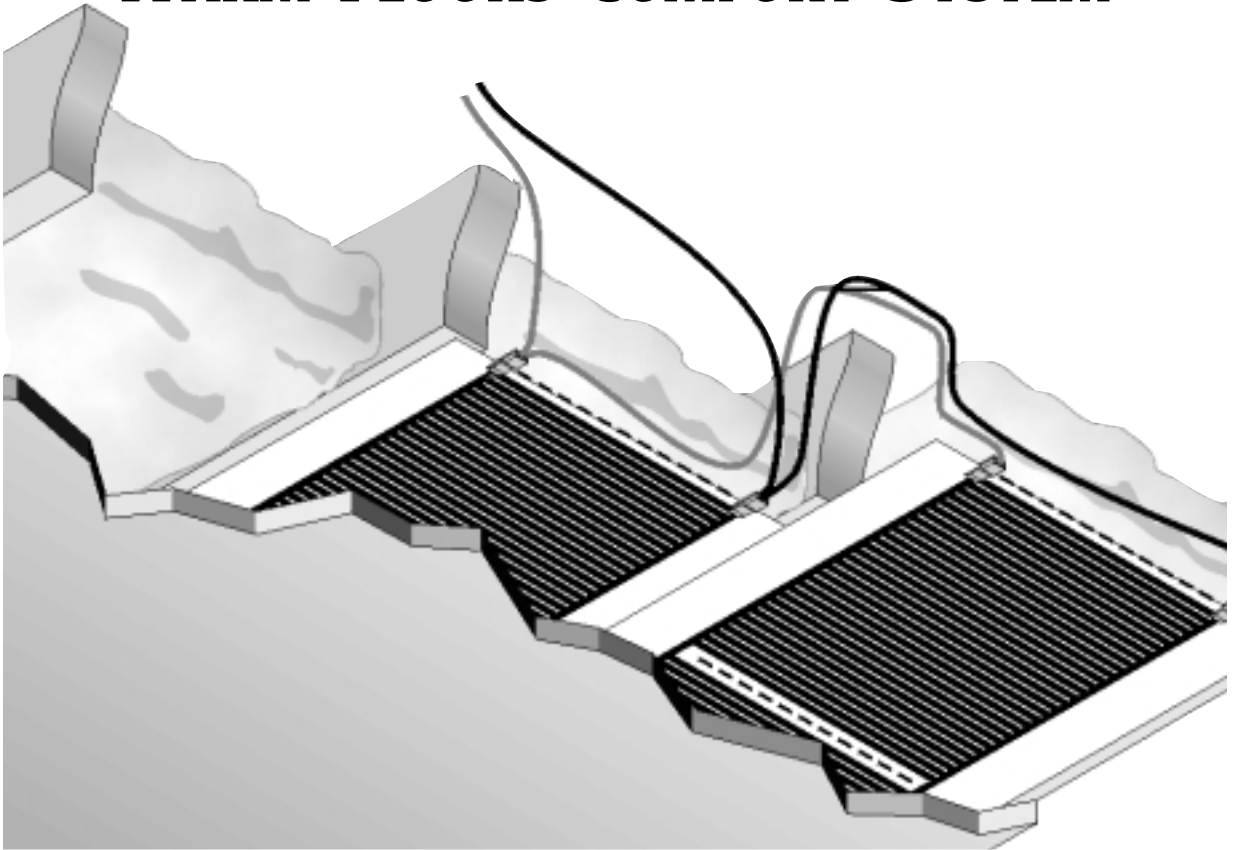


**CALORIQUE**

***RADIANT CEILING HEATING SYSTEM  
&  
WARM FLOORS COMFORT SYSTEM***



**Operating Manual**



## INTRODUCTION

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The Calorique Radiant Ceiling Heating (RCH) or Warm Floors System installed in your home is the finest heating system available. The RCH system is located above your home's ceilings gently heating the occupants and furnishings in your home with even, comfortable radiant heat that never overheats the air — this results in large energy savings over any other electric-based heating system. The Warm Floors system is located about 2 inches / 50 mm below the floor surface and gently warms the floor for the ultimate in luxury and comfort. Both systems are completely solid state so there are no moving parts to wear out, and the sealed construction means the system doesn't require cleaning.

This operating manual is provided to help you understand how your system works, provide tips to ensure that it keeps operating at peak efficiency and to instruct technicians working near the system how to safely deal with the system.

### HOW THE SYSTEM WORKS

The Calorique RCH and Warm Floors systems work just like the sun. When the thermostat calls for power, the heating panels warm the ceiling or floor surface which then give off infra-red heat, the same type of heat that you feel on a cool spring day — although the air is cool, the infra-red heat from the Sun keeps you warm.



As the infra-red heat rays radiate throughout the room, they uniformly warm the objects providing an even, comfortable heat while leaving the mass of air at a lower temperature. There is no need to directly over-heat the air because it is less effective at keeping occupants warm. This is the opposite of how a conventional forced hot air or baseboard heating system works — in other types of heating systems the large mass of air in a home is heated while the objects (and especially the outside walls) remain relatively cool. These cool objects literally *suck* the heat out of the occupants, making them feel cold.

The Calorique Systems are made up of four major components: the heating panels, the wiring, the control device and the ceiling or floor structure. These components work together to create a system that provides comfortable, trouble-free heating.

## OPERATION

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Operation of both the RCH and Warm Floors systems is the same as with other heating systems: set the thermostat to the desired temperature and the system warms the room.

There are a couple of things to keep in mind when using Calorique's systems to ensure your comfort and the system's economical operation:

- Since each room has its own thermostat, you can individually tailor room temperatures based on activity or occupancy. For instance, if a room is rarely used, you can set its thermostat lower to conserve electricity.
- Lower the temperature settings before you leave your home for an extended period of time to reduce the amount of power that the system will consume.
- Setting the thermostat to a very high temperature will not make a room warm up faster — it will merely result in the occupants being too hot when the set temperature is ultimately reached.
- High airflow velocities (from open doors or windows or extreme drafts) may make occupants feel cold.
- Routinely test thermostats according to their manufacturer's instructions.

## CAUTION NOTICES

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Although the Calorique systems require no maintenance, there are some things that must be taken into account to ensure that the systems are not damaged. Additional information for remodeling and repair technicians is available in the system's installation manual. If the installation manual was not left behind by the installers, call Calorique technical support at (508) 291-4224 for a replacement copy.


### RADIANT CEILING HEATING SYSTEM


- Never pierce the ceiling.  
Hitting the electrically conductive portions of a heating panel can result in a potentially dangerous electric shock. Piercing the elements will damage them and may present a fire hazard.
- If a portion of the ceiling surface must be replaced (due to water damage, etc.), replace any exposed heating panel sets. A qualified RCH installer must handle this operation to ensure that the re-installation is properly performed.

- Never cover any heated portion of a ceiling with decorative beams, track lighting, trim or other objects. This may trap heat and create a potential for overheating.
- If new walls or partitions are added in contact with heated portions of a ceiling, the heating panels which are covered must be disconnected from power to avoid a potential for overheating. Note that additional heating panels may have to be installed to compensate for the disconnected panels.
- Do not add additional facing materials (such as gypsum board, sheet rock or acoustic tile) to heated ceilings. This may trap heat and create a potential for overheating.

### WARM FLOORS SYSTEM

- Never pierce the floor.  
Hitting the electrically conductive portions of a heating panel can result in a potentially dangerous electric shock. Piercing the elements will damage them and may present a fire hazard.
- If a portion of the floor surface must be replaced, inspect any exposed heating panel sets for damage that may have occurred while removing the flooring. See the installation manual (Part 4 — Inspection / Testing / Completion) for complete instructions on inspecting the panels.
- Never cover any heated portion of a floor with walls or other permanent structures. This may trap heat and create a potential for overheating.
- If new walls or partitions are added over heated portions of a floor, the heating panels under the walls or partitions must be disconnected from power to avoid a potential for overheating.
- Carpeting and other flooring with a maximum thermal resistance of R-4 may be added on top of warmed floors.

 When installing any other materials on or near a heated ceiling or floor, ensure that no heating elements are punctured by nails, screws, etc.

 Never cut into a heated ceiling to install recessed lighting or similar devices.

## INFORMATION FOR REPAIR/REMODELING TECHNICIANS

This information must be read and understood by all repair and remodeling technicians who will be working on the house structure in the area of an installed RCH system or main electrical systems. Failure to follow these guidelines may result in risk of electric shock or fire hazard.

### Note

Before performing any remodeling work near a heated ceiling or floor, carefully read the appropriate installation manual's sections: Part 1 — Design Criteria, Part 2 — Job Site Preparation and Part 4 — Inspection / Testing / Completion. These sections detail the clearances, materials involved and testing procedures required to ensure system safety.



# Resistance Charts

## Calorique Radiant Ceiling Heating System

Panels	RCH13P13W240V Resistance			RCH17P17W240V Resistance			RCH25P25W240V Resistance		
	Power	From ...	To	Power	From ...	To	Power	From ...	To
2	26 watts	2105 ...	2437	34 watts	1609 ...	1864	50 watts	1094 ...	1267
4	52	1052 ...	1218	68	805 ...	932	100	547 ...	634
6	78	702 ...	812	102	536 ...	621	150	365 ...	422
8	104	526 ...	609	136	402 ...	466	200	274 ...	317
10	130	421 ...	487	170	322 ...	373	250	219 ...	253
12	156	351 ...	406	204	268 ...	311	300	182 ...	211
14	182	301 ...	348	238	230 ...	266	350	156 ...	181
16	208	263 ...	305	272	201 ...	233	400	137 ...	158
18	234	234 ...	271	306	179 ...	207	450	122 ...	141
20	260	210 ...	244	340	161 ...	186	500	109 ...	127
22	286	191 ...	222	374	146 ...	169	550	99.5 ...	115
24	312	175 ...	203	408	134 ...	155	600	91.2 ...	106
26	338	162 ...	187	442	124 ...	143	650	84.2 ...	97.5
28	364	150 ...	174	476	115 ...	133	700	78.2 ...	90.5
30	390	140 ...	162	510	107 ...	124	750	73.0 ...	84.5
32	416	132 ...	152	544	101 ...	116	800	68.4 ...	79.2
34	442	124 ...	143	578	94.7 ...	110	850	64.4 ...	74.5
36	468	117 ...	135	612	89.4 ...	104	900	60.8 ...	70.4
38	494	111 ...	128	646	84.7 ...	98.1	950	57.6 ...	66.7
40	520	105 ...	122	680	80.5 ...	93.2	1000	54.7 ...	63.4
42	546	100 ...	116	714	76.6 ...	88.7	1050	52.1 ...	60.3
44	572	95.7 ...	111	748	73.2 ...	84.7	1100	49.7 ...	57.6
46	598	91.5 ...	106	782	70.0 ...	81.0	1150	47.6 ...	55.1
48	624	87.7 ...	102	816	67.1 ...	77.6	1200	45.6 ...	52.8
50	650	84.2 ...	97.5	850	64.4 ...	74.5	1250	43.8 ...	50.7
52	676	80.9 ...	93.7	884	61.9 ...	71.7	1300	42.1 ...	48.7
54	702	77.9 ...	90.3	918	59.6 ...	69.0	1350	40.5 ...	46.9
56	728	75.2 ...	87.0	952	57.5 ...	66.6	1400	39.1 ...	45.3
58	754	72.6 ...	84.0	986	55.5 ...	64.3	1450	37.7 ...	43.7
60	780	70.2 ...	81.2	1020	53.6 ...	62.1	1500	36.5 ...	42.2
62	806	67.9 ...	78.6	1054	51.9 ...	60.1	1550	35.3 ...	40.9
64	832	65.8 ...	76.2	1088	50.3 ...	58.2	1600	34.2 ...	39.6
66	858	63.8 ...	73.8	1122	48.8 ...	56.5	1650	33.2 ...	38.4
68	884	61.9 ...	71.7	1156	47.3 ...	54.8	1700	32.2 ...	37.3
70	910	60.1 ...	69.6	1190	46.0 ...	53.2	1750	31.3 ...	36.2
72	936	58.5 ...	67.7	1224	44.7 ...	51.8	1800	30.4 ...	35.2
74	962	56.9 ...	65.9	1258	43.5 ...	50.4	1850	29.6 ...	34.2
76	988	55.4 ...	64.1	1292	42.4 ...	49.0	1900	28.8 ...	33.3
78	1014	54.0 ...	62.5	1326	41.3 ...	47.8	1950	28.1 ...	32.5
80	1040	52.6 ...	60.9	1360	40.2 ...	46.6	2000	27.4 ...	31.7
82	1066	51.3 ...	59.4	1394	39.3 ...	45.5	2050	26.7 ...	30.9
84	1092	50.1 ...	58.0	1428	38.3 ...	44.4	2100	26.1 ...	30.2
86	1118	48.9 ...	56.7	1462	37.4 ...	43.3	2150	25.5 ...	29.5
88	1144	47.8 ...	55.4	1496	36.6 ...	42.4	2200	24.9 ...	28.8
90	1170	46.8 ...	54.2	1530	35.8 ...	41.4	2250	24.3 ...	28.2
92	1196	45.8 ...	53.0	1564	35.0 ...	40.5	2300	23.8 ...	27.5
94	1222	44.8 ...	51.8	1598	34.2 ...	39.6	2350	23.3 ...	27.0
96	1248	43.8 ...	50.8	1632	33.5 ...	38.8	2400	22.8 ...	26.4
98	1274	43.0 ...	49.7	1666	32.8 ...	38.0	2450	22.3 ...	25.9
100	1300	42.1 ...	48.7	1700	32.2 ...	37.3	2500	21.9 ...	25.3

# Resistance Charts

## Calorique Warm Floors Comfort System

Panels	FLR13P8W120V			FLR13P8W240V		
	Power	From ...	To	Power	From ...	To
2	16 watts	855 ...	990	16 watts	3420 ...	3960
4	32	428 ...	495	32	1710 ...	1980
6	48	285 ...	330	48	1140 ...	1320
8	64	214 ...	247	64	855 ...	990
10	80	171 ...	198	80	684 ...	792
12	96	143 ...	165	96	570 ...	660
14	112	122 ...	141	112	489 ...	566
16	128	107 ...	124	128	428 ...	495
18	144	95.0 ...	110	144	380 ...	440
20	160	85.5 ...	99.0	160	342 ...	396
22	176	77.7 ...	90.0	176	311 ...	360
24	192	71.3 ...	82.5	192	285 ...	330
26	208	65.8 ...	76.2	208	263 ...	305
28	224	61.1 ...	70.7	224	244 ...	283
30	240	57.0 ...	66.0	240	228 ...	264
32	256	53.4 ...	61.9	256	214 ...	248
34	272	50.3 ...	58.2	272	201 ...	233
36	288	47.5 ...	55.0	288	190 ...	220
38	304	45.0 ...	52.1	304	180 ...	208
40	320	42.8 ...	49.5	320	171 ...	198
42	336	40.7 ...	47.1	336	163 ...	189
44	352	38.9 ...	45.0	352	155 ...	180
46	368	37.2 ...	43.0	368	149 ...	172
48	384	35.6 ...	41.3	384	143 ...	165
50	400	34.2 ...	39.6	400	137 ...	158
52	416	32.9 ...	38.1	416	132 ...	152
54	432	31.7 ...	36.7	432	127 ...	147
56	448	30.5 ...	35.4	448	122 ...	141
58	464	29.5 ...	34.1	464	118 ...	137
60	480	28.5 ...	33.0	480	114 ...	132
62	496	27.6 ...	31.9	496	110 ...	128
64	512	26.7 ...	30.9	512	107 ...	124
66	528	25.9 ...	30.0	528	104 ...	120
68	544	25.1 ...	29.1	544	101 ...	116
70	560	24.4 ...	28.3	560	97.7 ...	113
72	576	23.8 ...	27.5	576	95.0 ...	110
74	592	23.1 ...	26.8	592	92.4 ...	107
76	608	22.5 ...	26.1	608	90.0 ...	104
78	624	21.9 ...	25.4	624	87.7 ...	102
80	640	21.4 ...	24.8	640	85.5 ...	99.0
82	656	20.9 ...	24.1	656	83.4 ...	96.6
84	672	20.4 ...	23.6	672	81.4 ...	94.3
86	688	19.9 ...	23.0	688	79.5 ...	92.1
88	704	19.4 ...	22.5	704	77.7 ...	90.0
90	720	19.0 ...	22.0	720	76.0 ...	88.0
92	736	18.6 ...	21.5	736	74.3 ...	86.1
94	752	18.2 ...	21.1	752	72.8 ...	84.3
96	768	17.8 ...	20.6	768	71.3 ...	82.5
98	784	17.4 ...	20.2	784	69.8 ...	80.8
100	800	17.1 ...	19.8	800	68.4 ...	79.2

### Note:

For element lengths not included on these charts, use the following appropriate formulas to determine the acceptable resistance values:

#### FLR13P8W120V

Low limit =  $1710 \div \# \text{ panels}$

High limit =  $1980 \div \# \text{ panels}$

#### FLR13P8W240V

Low limit =  $6840 \div \# \text{ panels}$

High limit =  $7920 \div \# \text{ panels}$

#### FLR17P10W120V

Low limit =  $1368 \div \# \text{ panels}$

High limit =  $1584 \div \# \text{ panels}$

#### FLR17P10W240V

Low limit =  $5472 \div \# \text{ panels}$

High limit =  $6336 \div \# \text{ panels}$

#### FLR25P17W120V

Low limit =  $805 \div \# \text{ panels}$

High limit =  $932 \div \# \text{ panels}$

#### FLR25P17W240V

Low limit =  $3219 \div \# \text{ panels}$

High limit =  $3727 \div \# \text{ panels}$

#### RCH13P13W240V

Low limit =  $4209 \div \# \text{ panels}$

High limit =  $4874 \div \# \text{ panels}$

#### RCH17P17W240V

Low limit =  $3219 \div \# \text{ panels}$

High limit =  $3727 \div \# \text{ panels}$

#### RCH25P25W240V

Low limit =  $2189 \div \# \text{ panels}$

High limit =  $2534 \div \# \text{ panels}$

# Resistance Charts

## Calorique Warm Floors Comfort System

Panels	FLR17P10W120V Resistance			FLR17P10W240V Resistance		
	Power	From ...	To	Power	From ...	To
2	20 watts	684 ...	792	20 watts	2736 ...	3168
4	40	342 ...	396	40	1368 ...	1584
6	60	228 ...	264	60	912 ...	1056
8	80	171 ...	198	80	684 ...	792
10	100	137 ...	158	100	547 ...	634
12	120	114 ...	132	120	456 ...	528
14	140	97.7 ...	113	140	391 ...	453
16	160	85.5 ...	99.0	160	342 ...	396
18	180	76.0 ...	88.0	180	304 ...	352
20	200	68.4 ...	79.2	200	274 ...	317
22	220	62.2 ...	72.0	220	249 ...	288
24	240	57.0 ...	66.0	240	228 ...	264
26	260	52.6 ...	60.9	260	210 ...	244
28	280	48.9 ...	56.6	280	195 ...	226
30	300	45.6 ...	52.8	300	182 ...	211
32	320	42.8 ...	49.5	320	171 ...	198
34	340	40.2 ...	46.6	340	161 ...	186
36	360	38.0 ...	44.0	360	152 ...	176
38	380	36.0 ...	41.7	380	144 ...	167
40	400	34.2 ...	39.6	400	137 ...	158
42	420	32.6 ...	37.7	420	130 ...	151
44	440	31.1 ...	36.0	440	124 ...	144
46	460	29.7 ...	34.4	460	119 ...	138
48	480	28.5 ...	33.0	480	114 ...	132
50	500	27.4 ...	31.7	500	109 ...	127
52	520	26.3 ...	30.5	520	105 ...	122
54	540	25.3 ...	29.3	540	101 ...	117
56	560	24.4 ...	28.3	560	97.7 ...	113
58	580	23.6 ...	27.3	580	94.3 ...	109
60	600	22.8 ...	26.4	600	91.2 ...	106
62	620	22.1 ...	25.5	620	88.3 ...	102
64	640	21.4 ...	24.8	640	85.5 ...	99.0
66	660	20.7 ...	24.0	660	82.9 ...	96.0
68	680	20.1 ...	23.3	680	80.5 ...	93.2
70	700	19.5 ...	22.6	700	78.2 ...	90.5
72	720	19.0 ...	22.0	720	76.0 ...	88.0
74	740	18.5 ...	21.4	740	73.9 ...	85.6
76	760	18.0 ...	20.8	760	72.0 ...	83.4
78	780	17.5 ...	20.3	780	70.2 ...	81.2
80	800	17.1 ...	19.8	800	68.4 ...	79.2
82	820	16.7 ...	19.3	820	66.7 ...	77.3
84	840	16.3 ...	18.9	840	65.1 ...	75.4
86	860	15.9 ...	18.4	860	63.6 ...	73.7
88	880	15.5 ...	18.0	880	62.2 ...	72.0
90	900	15.2 ...	17.6	900	60.8 ...	70.4
92	920	14.9 ...	17.2	920	59.5 ...	68.9
94	940	14.6 ...	16.9	940	58.2 ...	67.4
96	960	14.3 ...	16.5	960	57.0 ...	66.0
98	980	14.0 ...	16.2	980	55.8 ...	64.7
100	1000	13.7 ...	15.8	1000	54.7 ...	63.4

# Resistance Charts

## Calorique Warm Floors Comfort System

Panels	FLR25P17W120V			FLR25P17W240V		
	Power	From ...	To	Power	From ...	To
2	34 watts	402 ...	466	34 watts	1609 ...	1864
4	68	201 ...	233	68	805 ...	932
6	102	134 ...	155	102	536 ...	621
8	136	101 ...	116	136	402 ...	466
10	170	80 ...	93	170	322 ...	373
12	204	67 ...	78	204	268 ...	311
14	238	57.5 ...	67	238	230 ...	266
16	272	50.3 ...	58.2	272	201 ...	233
18	306	44.7 ...	51.8	306	179 ...	207
20	340	40.2 ...	46.6	340	161 ...	186
22	374	36.6 ...	42.4	374	146 ...	169
24	408	33.5 ...	38.8	408	134 ...	155
26	442	31.0 ...	35.8	442	124 ...	143
28	476	28.7 ...	33.3	476	115 ...	133
30	510	26.8 ...	31.1	510	107 ...	124
32	544	25.1 ...	29.1	544	101 ...	116
34	578	23.7 ...	27.4	578	94.7 ...	110
36	612	22.4 ...	25.9	612	89.4 ...	104
38	646	21.2 ...	24.5	646	84.7 ...	98.1
40	680	20.1 ...	23.3	680	80.5 ...	93.2
42	714	19.2 ...	22.2	714	76.6 ...	88.7
44	748	18.3 ...	21.2	748	73.2 ...	84.7
46	782	17.5 ...	20.3	782	70.0 ...	81.0
48	816	16.8 ...	19.4	816	67.1 ...	77.6
50	850	16.1 ...	18.6	850	64.4 ...	74.5
52	884	15.5 ...	17.9	884	61.9 ...	71.7
54	918	14.9 ...	17.3	918	59.6 ...	69.0
56	952	14.4 ...	16.6	952	57.5 ...	66.6
58	986	13.9 ...	16.1	986	55.5 ...	64.3
60	1020	13.4 ...	15.5	1020	53.6 ...	62.1
62	1054	13.0 ...	15.0	1054	51.9 ...	60.1
64	1088	12.6 ...	14.6	1088	50.3 ...	58.2
66	1122	12.2 ...	14.1	1122	48.8 ...	56.5
68	1156	11.8 ...	13.7	1156	47.3 ...	54.8
70	1190	11.5 ...	13.3	1190	46.0 ...	53.2
72	1224	11.2 ...	12.9	1224	44.7 ...	51.8
74	1258	10.9 ...	12.6	1258	43.5 ...	50.4
76	1292	10.6 ...	12.3	1292	42.4 ...	49.0
78	1326	10.3 ...	11.9	1326	41.3 ...	47.8
80	1360	10.1 ...	11.6	1360	40.2 ...	46.6
82	1394	9.8 ...	11.4	1394	39.3 ...	45.5
84	1428	9.6 ...	11.1	1428	38.3 ...	44.4
86	1462	9.4 ...	10.8	1462	37.4 ...	43.3
88	1496	9.1 ...	10.6	1496	36.6 ...	42.4
90	1530	8.9 ...	10.4	1530	35.8 ...	41.4
92	1564	8.7 ...	10.1	1564	35.0 ...	40.5
94	1598	8.6 ...	9.9	1598	34.2 ...	39.6
96	1632	8.4 ...	9.7	1632	33.5 ...	38.8
98	1666	8.2 ...	9.5	1666	32.8 ...	38.0
100	1700	8.0 ...	9.3	1700	32.2 ...	37.3