MAYTAG

Maytag

Glass Cooktop Service Manual

56304
Issued 1987
Revised 11/97

MODEL COVERED:

CSE800

SAFETY

SAFETY NOTICE

This service publication is intended for use by individuals possessing adequate electrical and mechanical backgrounds. Any attempt to repair an appliance without observing the proper Safety Practices may result in personal injury and or property damage. This company cannot be responsible for the interpretation of it's service publication, nor can it assume any liability in connection with it's use.

EXAMPLES OF SAFETY PRACTICES

1. Don't attempt a repair if you have any doubts as to your ability to complete it in a safe manner.

2. Before servicing **ALWAYS DISCONNECT THE PRODUCT FROM ELECTRICITY.** Pull the plug from the wall receptacle or remove the fuse or trip the circuit breaker to off.

3. Never bypass or disconnect any part or device designed into the appliance.

4. Always use genuine Maytag replacement parts.

5. When electricity is required to make a check, only reconnect power for the time required to run check. Disconnect the power after the check.

6. Before reconnecting the electricity to the product, check for the following:

   (a) All connections are secure.
   (b) All wiring is secured away from sharp edges and moving parts.
   (c) All ground wires are connected and secure.
   (d) All access panels and covers are installed.

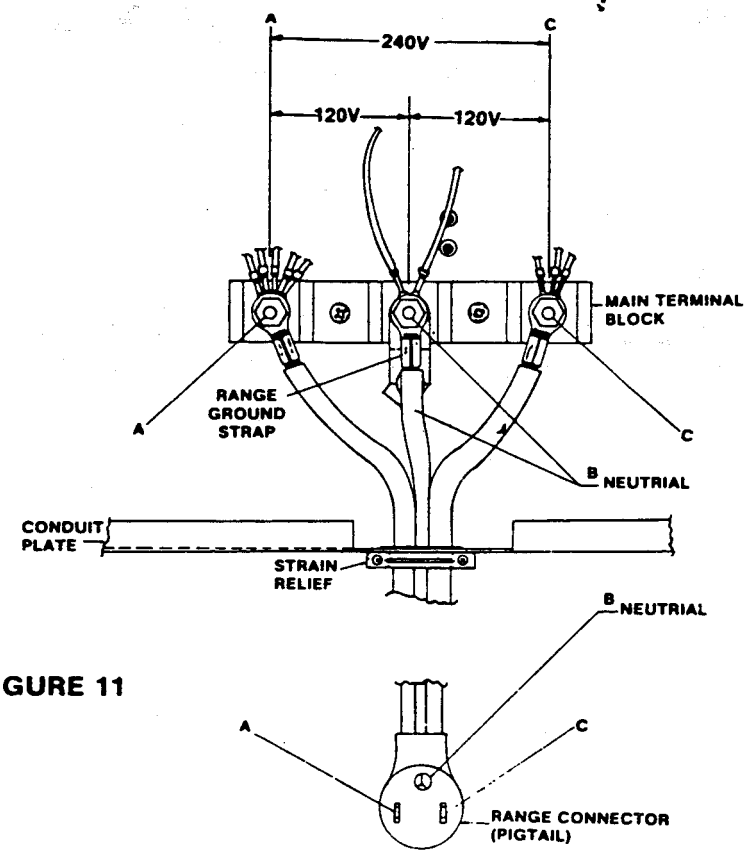


FIGURE 11

ELECTRICAL CONNECTIONS/VOLTAGE

With range connected to electricity by means of an approved range connector (pigtail) Figure 11, voltmeter reading between (across) terminals (A) and (C) should be approximately 240V.A.C. Voltmeter reading between terminal (B) and terminal (A) should be approximately 120V.A.C. Voltmeter reading between terminal (B) and terminal (C) should be approximately 120V.A.C. Center terminal of main terminal block is neutral. Range frame is connected to neutral at this point by a ground strap and screw.

NOTE: Some ranges may not have white (neutral) wire(s) at main terminal block.

RANGE AMPERAGE

The total range wattage is stamped on model plate in kilowatts, (kilowatt = 1,000 watts) to determine amperage for fuse or circuit breaker:

A. Check incoming voltage at range main terminal block (pigtail) Figure 11.

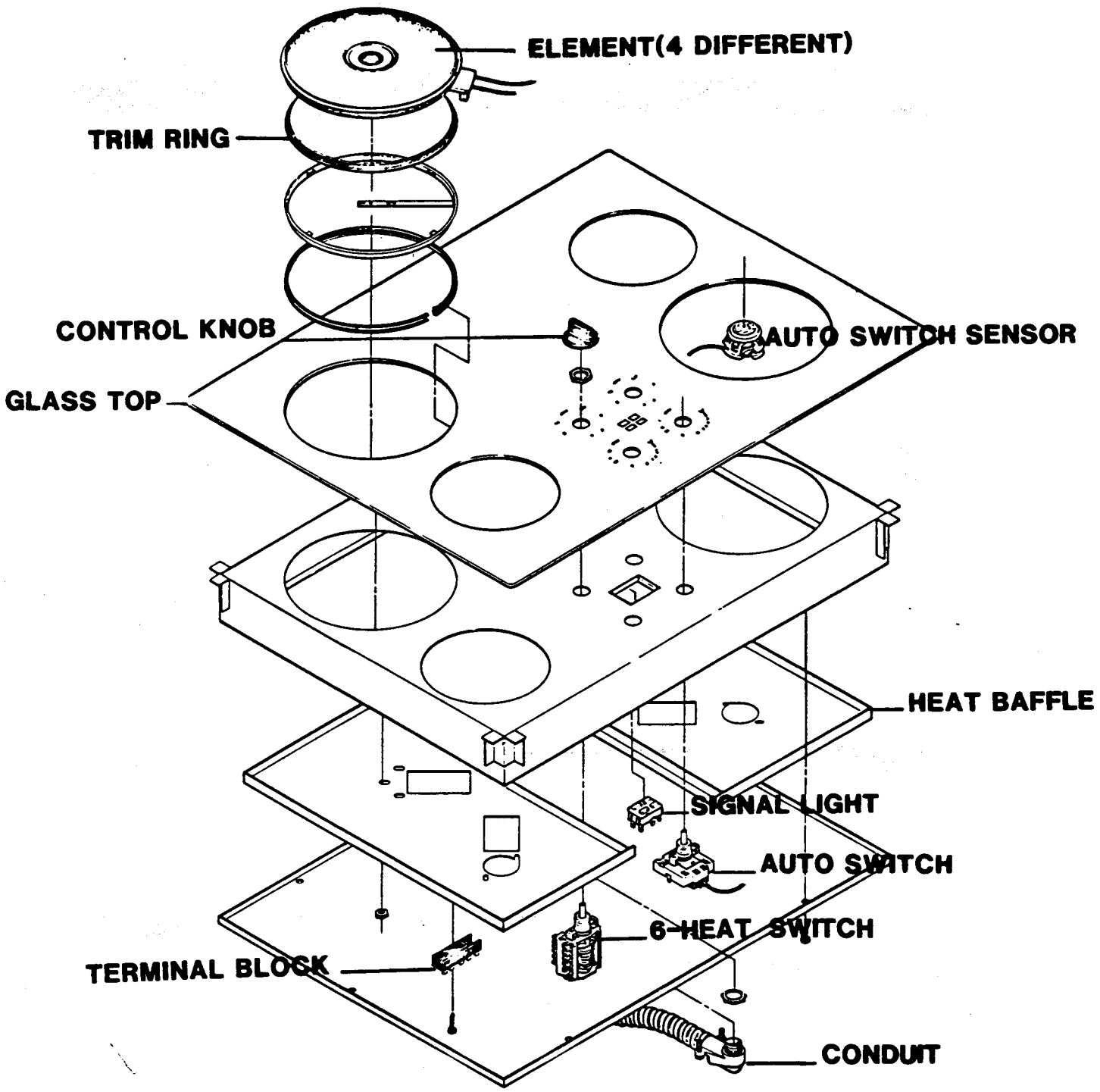
B. Divide voltage into total wattage.
Example:
10. K.W. (stamped on model plate) X 1,000 = 10,000 watts. Voltage (at terminal block) is 240 V.A.C. See Figure 11 10,000 ÷ 240 = 41.6 (AMPS). This indicates a fuse or circuit breaker with a rating of slightly over 41 AMPS would be needed.

CONTINUITY TEST OF RANGE CONNECTOR

With range **disconnected** from electricity, ohmmeter set at RX1, there should be continuity between point (A) at end of range connector (pigtail) and point (A) at main terminal block Figure 11. There should be continuity between point (B) (neutral) at end of pigtail and point (B) at main terminal block. There should be continuity between point (C) at end of pigtail and point (C) at main terminal block.

CONSTRUCTION EXAMPLE

GLASS TOP SURFACE UNIT CHASSIS EXAMPLE



COMPONENT TEST PROCEDURES

DISC ELEMENTS

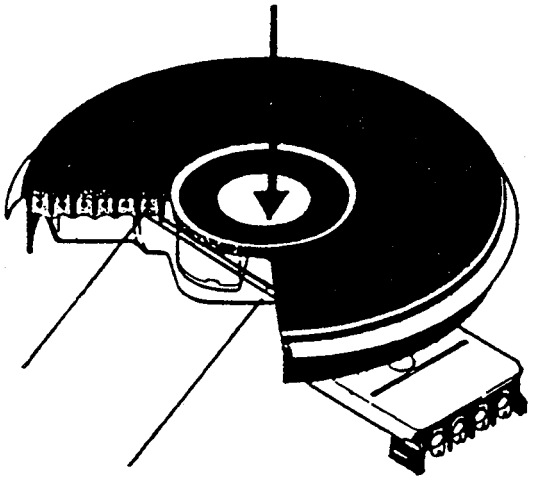
To test element check resistance of coils.

ILLUSTRATION A
is Two coil unit.

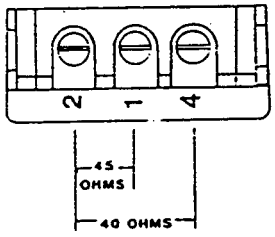
ILLUSTRATION B
is Three coil unit.

ILLUSTRATION C
High limit is 1 coil unit

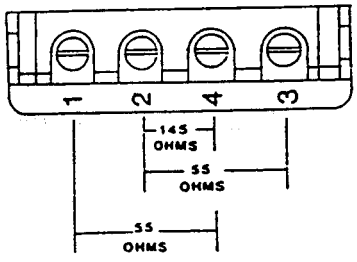
Sensor if equipped



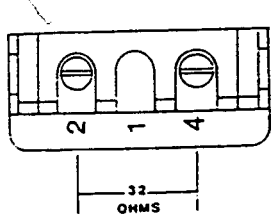
A

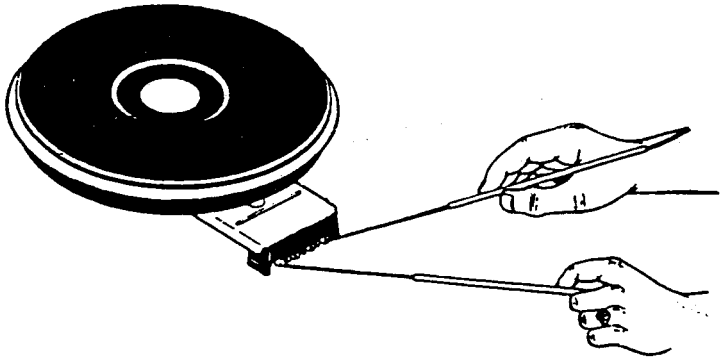


B



C

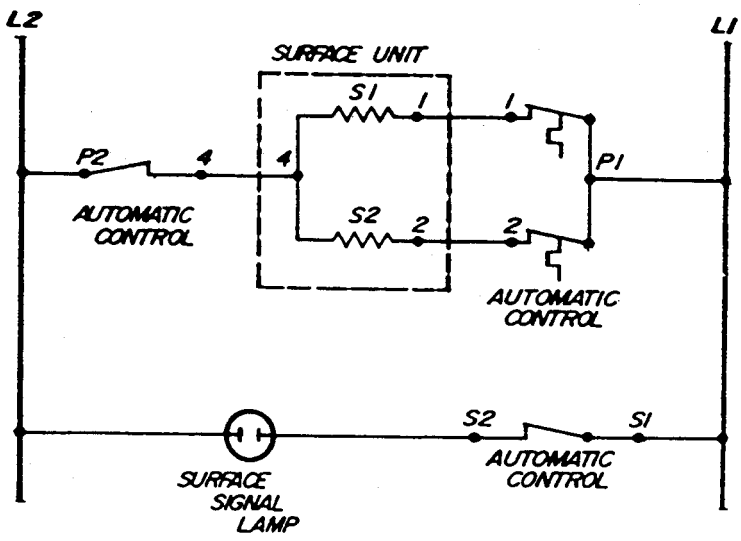


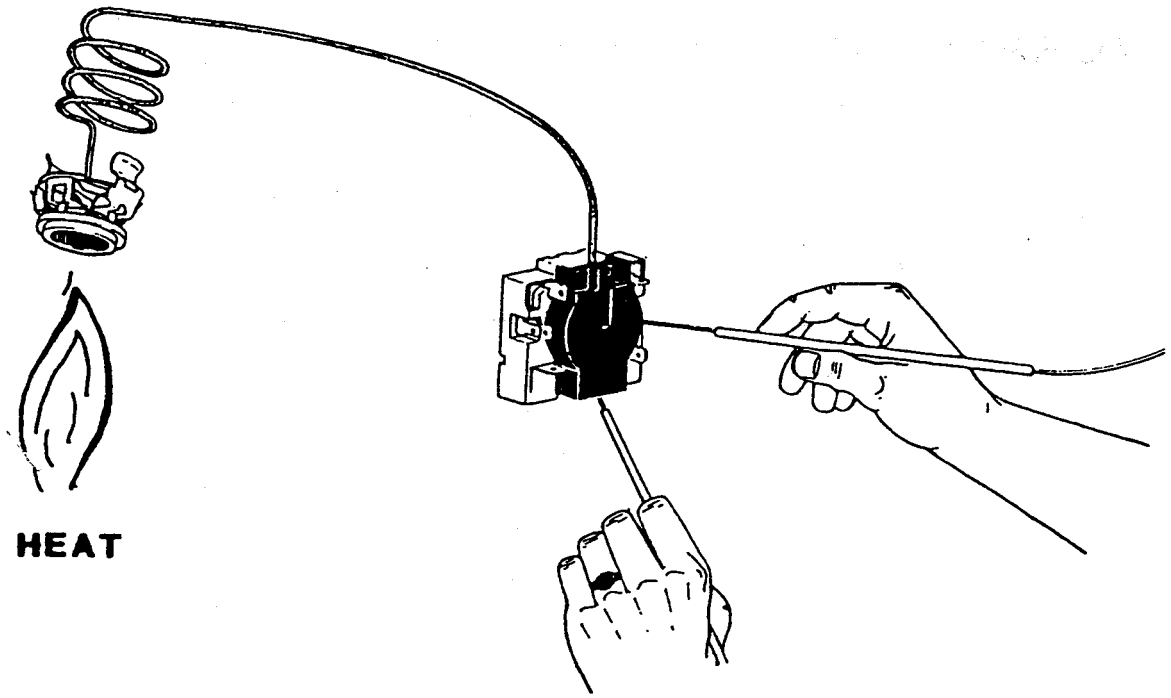


AUTOMATIC CONTROL FOR DISC ELEMENTS

The automatic central can be check by checking continuity between:
P2 & 4
S1 & S2
and
P1 & 1
P1 & 2
When heat is applied as shown below.

TYPICAL AUTOMATIC CONTROL





SOLID DISC ELEMENT OPERATION AND TEST PROCEDURES

General Considerations

Automatic sealed hotplates are intended to relieve the housewife from supervising cooking, i.e. to switch-over automatically from boiling to simmering heat, ensuring the housewife need no longer be tied to the cooker.

The automatic sealed hotplates differ from other types, in that they are equipped with a temperature sensor, flexibly mounted in the unheated central area. When in use the sprung sensor is in positive contact with the pan bottom and automatically controls the food temperature.

Dial, Setting

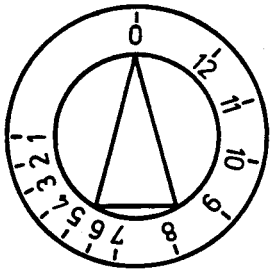


fig. 1 dial with markings

As the sensor of the automatic sealed hotplate is also thermally coupled with the sealed hotplate, some other points must in practice be borne in mind. Setting of the indicator dial depends on the material of which the pan is made, as well as on the shape of the pan bottom. Cooking utensils with poor, uneven bottoms, require higher settings than good quality utensils with flat bottoms. Higher settings are also required when using pans which conduct badly as against those with good thermal conductivity, e.g. one has to set by two dial markings higher when using glass utensils, providing these are of good quality.

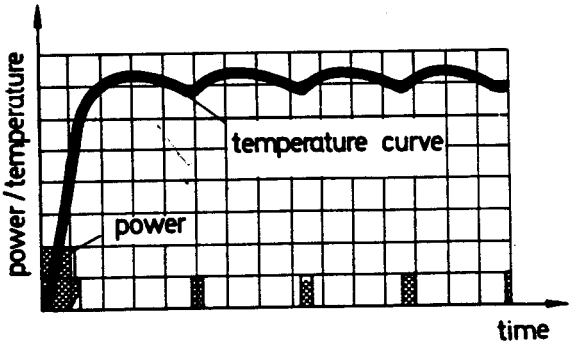


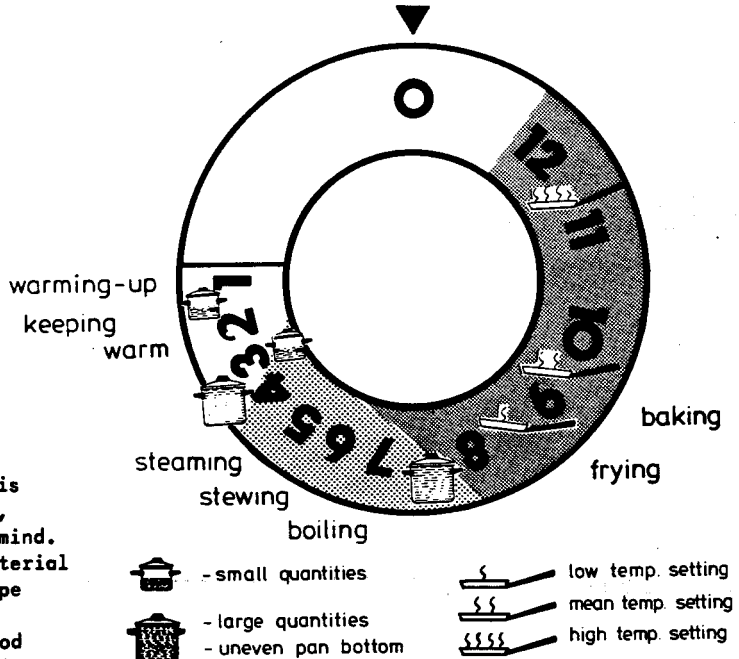
fig. 2 typical temperature and power curve for the cooking process (of an automatic sealed hotplate with pan sensor

Waste of heat has a perceptible effect, i. e. with or without lid, and a higher setting is necessary when no lid is used. Basically we recommend using a lid since boiling-over is less likely and electricity is saved. Finally it should be noted that the heat requirement differs depending on the amount of food being cooked - a slightly higher setting is needed for larger quantities. Please refer to fig. 2.

Dial setting table

Set the dial at the outset to the required number - the automatic sealed hotplate will provide quick heating-up since on switching the initial boost is equivalent to a maximum dial setting of 12.

Higher marking means higher temperature.



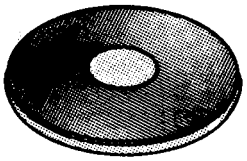
The exact setting depends on the utensils used and quantities of food being cooked.

As a rule of thumb relative to setting the following points should be considered:

a lower setting for small quantities

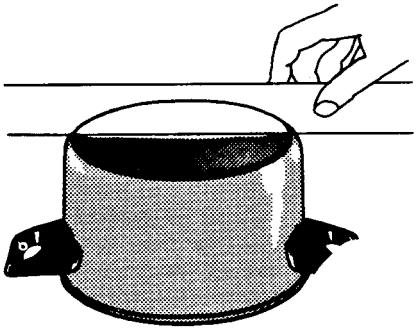
a higher setting for larger quantities - also for uneven pan bottoms and glass utensils

Care and Maintenance of EGO Sealed Hotplates



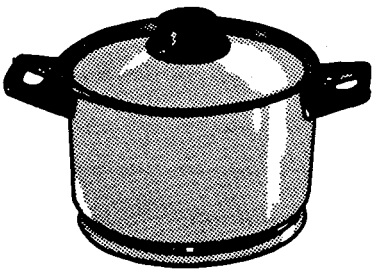
The solid sealed hotplate body is made of high-quality cast-iron, the spillring and the temperature sensor of the automatic sealed hotplate is in stainless steel.

The top working surface has a heat resistant coating. Before using the sealed hotplates for the first time they should be heated for a short period without a pan to harden and burn off the protective coating (3 - 5 minutes six-heat sealed hotplate at setting 3 and automatic sealed hotplate at setting 5 - 6).



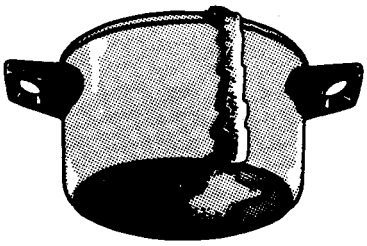
Use only pans of good quality on the sealed hotplates. They should have a stable bottom, slightly concave towards the inside, just enough so that the bottom of the pan has the greatest possible contact with the sealed hotplate during heating operation. This results in the maximum use of energy.

Pans with convex bottoms are not suitable. Evenness of the pan bottom can be checked by a rule or the straight edge of a table.

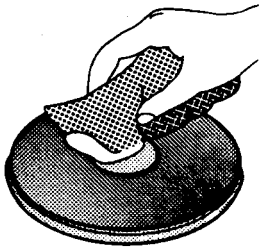


Use pans of the correct diameter only. They should cover the sealed hotplate like an umbrella and spillage will flow off easily.

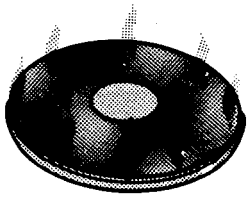
If the pan is too small energy is wasted and spillage can flow into the sealed hotplate.



Place only dry pans on the sealed hotplate. Do not place lids on the sealed hotplate, particularly wet lids.



Normal care:
Wipe off sealed hotplates after use with a damp cloth. Clean very dirty sealed hotplates with a damp cloth and a little domestic cleaning powder - Scotch-Brite or Brillo-Pads. Spillring and temperature sensor can also be cleaned in the same way.



Important!
After cleaning dry sealed hotplates by switching-on for a short time. Apply a thin coat of oil or a little domestic cleaning powder such as Collo-Electrol or Electro-Puzzi from time to time.
In this way the sealed hotplates remain like new.

Effect of Pan Shape on Cooking Process

Whether or not electric cooking is economical depends on the quality and design of the pan, especially the pan bottom (ref. chart).

The pan should be larger than the sealed hotplate and should have a flat, thick and solid bottom *(ref. DIN 44 904). A slight concave bending of the pan bottom is balanced by the normal expansion of material when being heated resulting in maximum energy utilization.

Pans with too large cold bending of the bottom are unsuitable since the pan bottom is not changed to the flat condition on being heated. To keep the permissible bending in heated condition according to the latest specifications DIN 44 904, the maximum cold bending should not exceed the following values:

diameter of pan bottom	maximum bending
145 mm	0.8 mm
180 mm	1 mm

In principle no pans with convex bottoms, or pans with bottoms bending towards the outside when being heated should be used.

Classification in accordance with the heating-up power consumption is the best method for suitable pans. For this purpose we classified pans 1, 2 and 3 (ref. chart) whereby pan 3 presents the limit of the pans to be used on the electric cooker.

*Good quality pans have to comply with all requirements of DIN 44 904.

Many tests have confirmed again and again that shortest heating-up time and lowest power consumption are reached by good electric pans.

The three ways in which the heat generated in the sealed hotplate is transferred from the surface of the sealed hotplate to the bottom of the pan are as follows:

1. By conduction from the sealed hotplate to the pan when both are in direct contact.
2. By radiation when the bottom of the pan and the sealed hotplate are not in direct contact.
3. By convexion, i.e. transmission of the heat through the intervening air between the bottom of the pan and the sealed hotplate.

The first method of the 3 is to be preferred, since the greater proportion of the heat is transmitted between sealed hotplate and pan by contact, even if there are small differences in temperature.

Boiling tests with various pans and 1 resp. 2 litres of water on EGO sealed hotplates ø 145 mm 1000 W and ø 180 mm 1500 W

Sealed hotplate ø	145 mm	180 mm	145 mm	180 mm	145 mm	180 mm
Pan quality	1	1	2	2	3	3
Current consumption	140 - 150 Wh	270 - 280 Wh	162 - 172 Wh	300 - 310 Wh	185 - 195 Wh	330 - 340 Wh
Boiling time	8.4 - 9 min	10.8 - 11.2 min	9.7 - 10.3 min	12 - 12.4 min	11.1 - 11.7 min	13.3 - 13.6 min
Efficiency	62.3 - 58.2%	64.5 - 62.3%	53.8 - 50.7%	58 - 56.2%	47.1 - 44.7%	52.8 - 51.2%
Temperature of sealed hotplate after boiling	approx. 220 °C	approx. 200 °C	approx. 310 °C	approx. 290 °C	approx. 400 °C	approx. 390 °C

*Where applicable, other National Standards and Recommendations must be noted.

These sealed hotplates are of well-proved design and manufactured in the standardized diameters of 145 mm and 180 mm. They are fitted with 3 heating conductors which are combined to one heating circuit.

The high performance of these sealed hotplates provides a quick heating-up process, but also requires a reliable protection against overheating, which is guaranteed by a built-in rod protector. When operated without a pan the rod protector reduces the power of the sealed hotplate to a minimum rating. After reaching of fixed temperatures the rod protector, at intervals, cuts off the heating conductors N1 and N2. The rod protector is adjusted so that sufficient power is released even if poor quality pans are used, but still avoiding an overheating of the sealed hotplate. This is ensured by a close coupling of the rod protector to the sealed hotplate. The close coupling effects a sensitive response to the given facts.

CONDITION 1=FLATBOTTOMED

CONDITION 2=CONVEX

CONDITION 3=CONCAVE

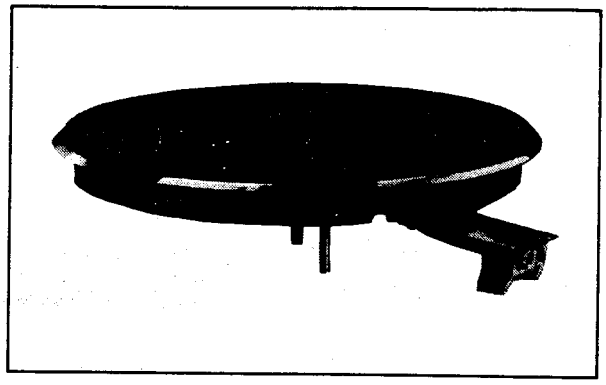


fig. 1 single circuit high-speed sealed hotplate with rod protector

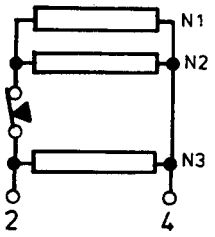
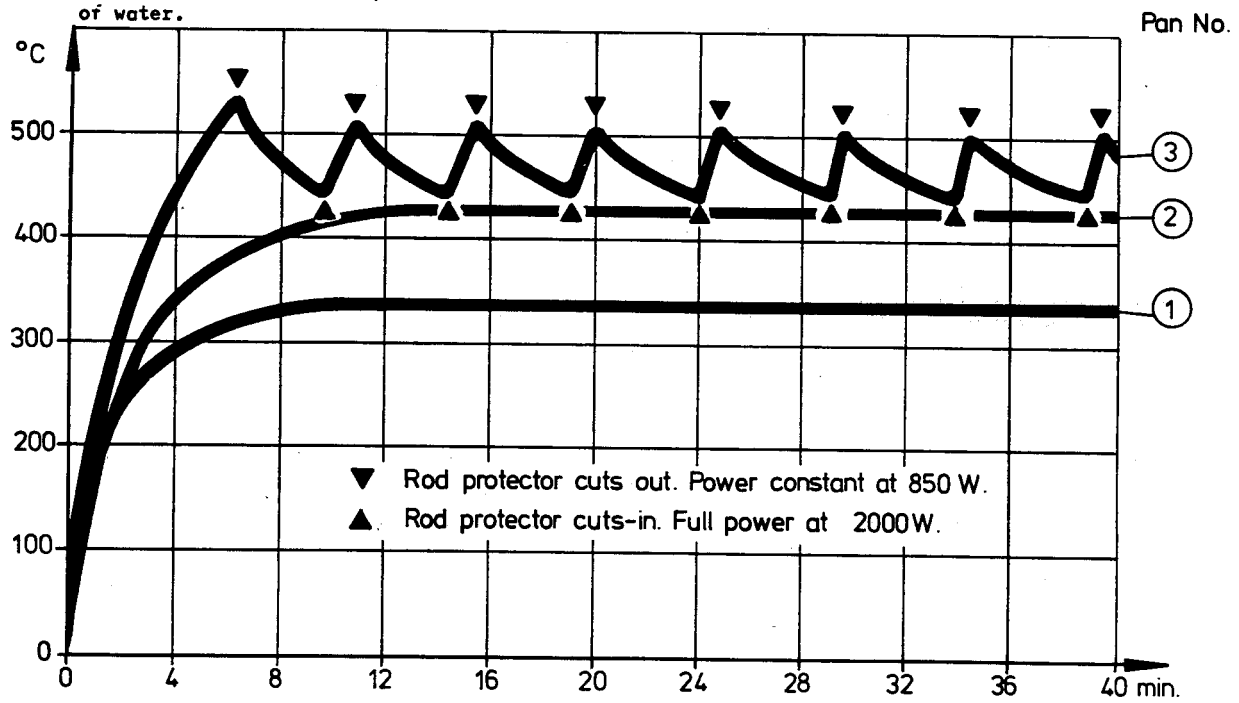


fig. 3 circuit diagram for single-circuit high-speed sealed hotplate with rod protector

fig. 2 surface temperature on a single-circuit high-speed sealed hotplate with rod protector in 180 mm dia., 2000 W during operation with different pans and 2 litres of water.



quality of pan	power consumption for boiling	boiling time	rod protector
(1)	ca. 275 Wh	8,25 min	permanently „on"
(2)	ca. 310 Wh	9,3 min	permanently „on"
(3)	ca. 340 Wh	11,2 min	periodically „on" and „off"

The EGO Six-Heat High-Speed Sealed Hotplates with Protector

Sealed hotplates in normal sizes but providing more power output and additionally protection against overheating are known as six-heat high-speed sealed hotplates with protector (ref. fig. 5).

The overheating protection device (protector) is necessary to prevent excessively high temperatures if the sealed hotplate is switched-on without a pan, or if poor quality utensils are used. It consists of a bimetal snap-action switch which cuts-off part of the power when a given temperature is exceeded (ref. fig. 6 and 7).

The advantage of six-heat high-speed sealed hotplates with protector is very rapid heating and full power with good quality pans, whilst ensuring relatively low sealed hotplate operating temperature. With low-grade quality pans the heat is reduced by disconnection of one or more heating conductors, or complete disconnection of the power input with a poor pan or no pan at all.

CONDITION 1=FLATBOTTOMED
CONDITION 2=CONVEX
CONDITION 3=CONCAVE

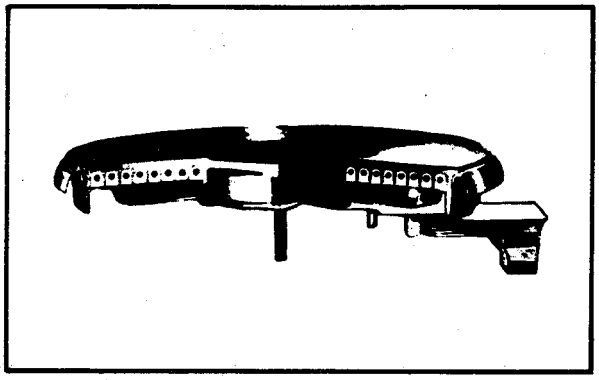


fig. 5 section of six-heat high-speed sealed hotplate with built-in protector

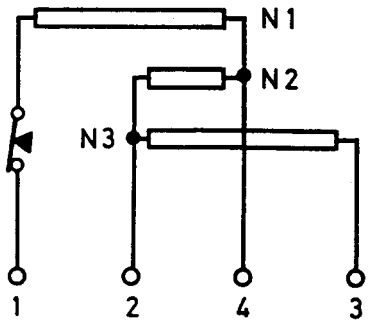
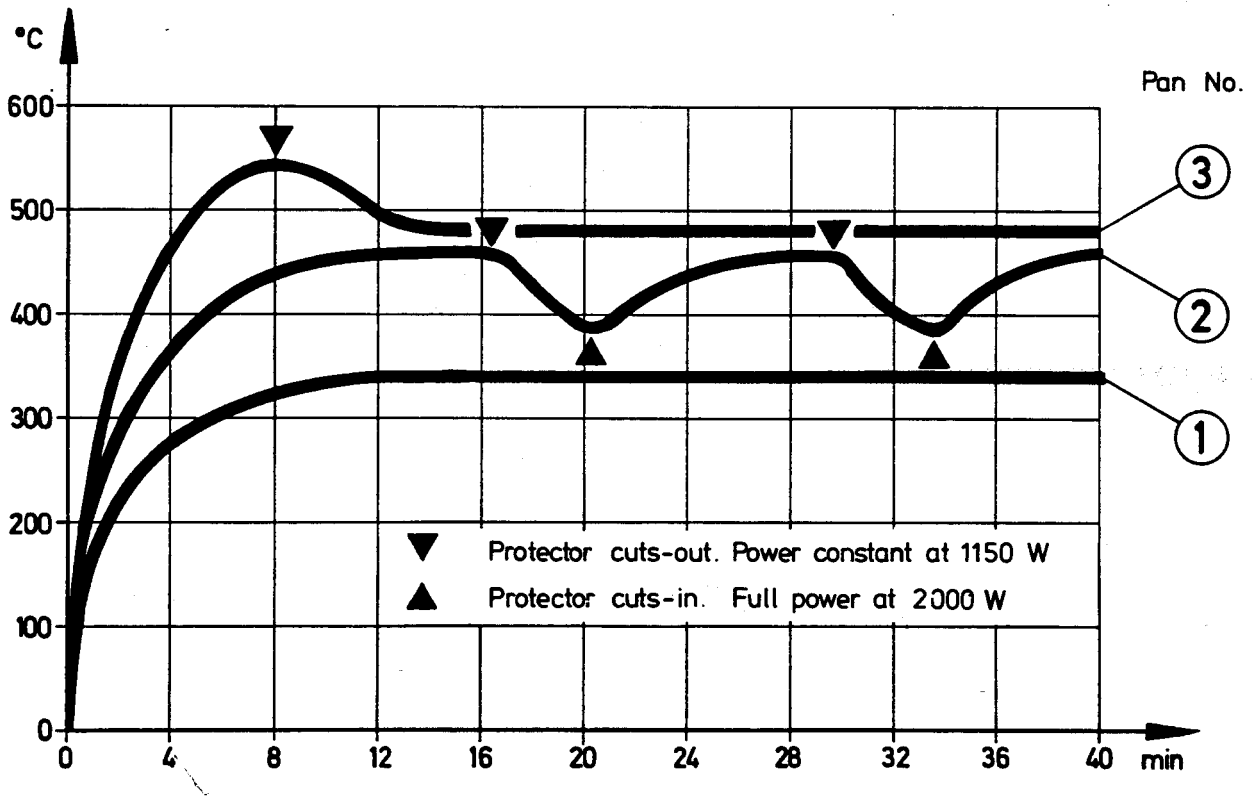
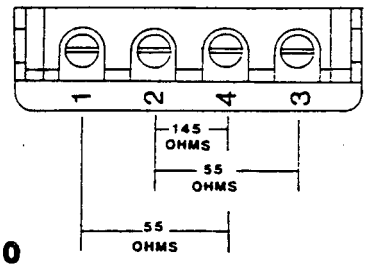


fig. 6 circuit diagram for six-heat high-speed sealed hotplates with protector

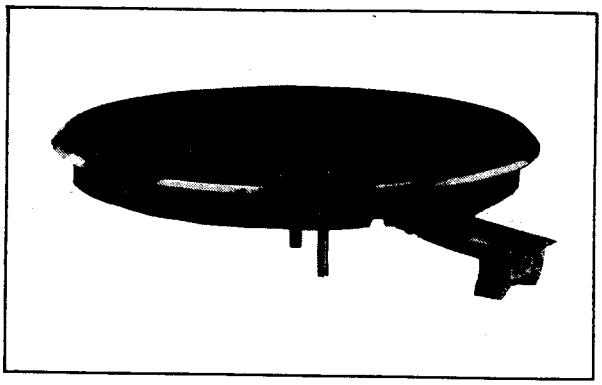
fig. 7 surface temperature of a six-heat high-speed sealed hotplate with protector 180 mm in diameter, 2000 W during operation with different pans and 2 litres of water



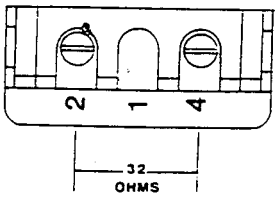
quality of pan	power consumption for boiling	boiling time	protector
(1)	approx. 275 Wh	8.25 min	permanently „on"
(2)	approx. 310 Wh	9.3 min	periodically „on" and „off"
(3)	approx. 340 Wh	11.2 min	permanently „off" after heating-up

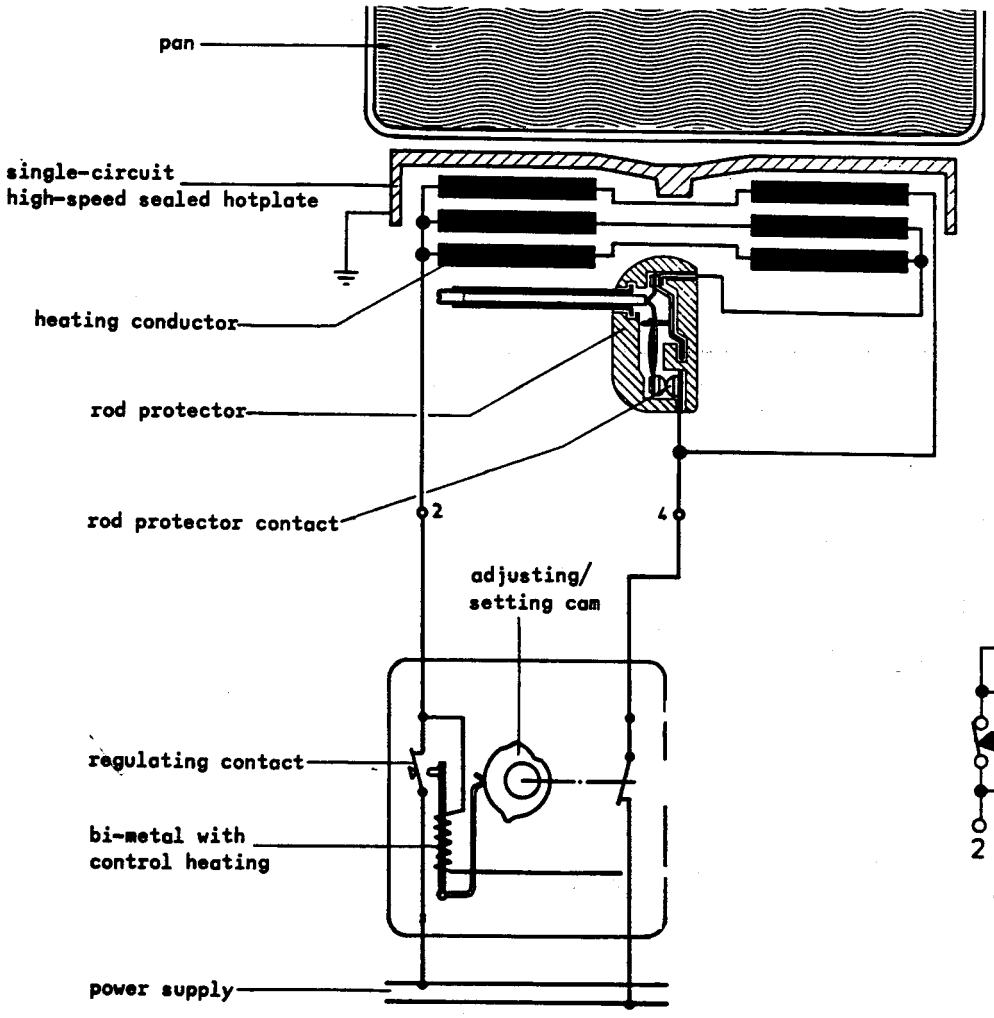


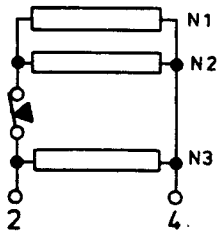
A rod protector built-in in the sealed hotplate ensures that the single-circuit high-speed sealed hotplates are protected against overheating. The rod protector is adjusted so that sufficient power is released when running empty or in the event that poor quality pans are used.



nominal diameter	wattages	
mm	total	
145	1500	
180	2000	





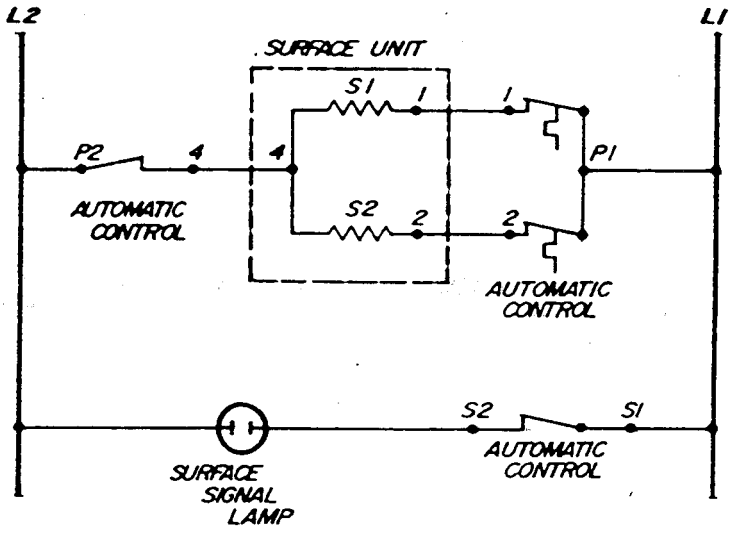


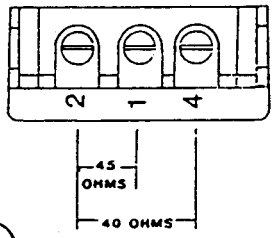
wiring diagram

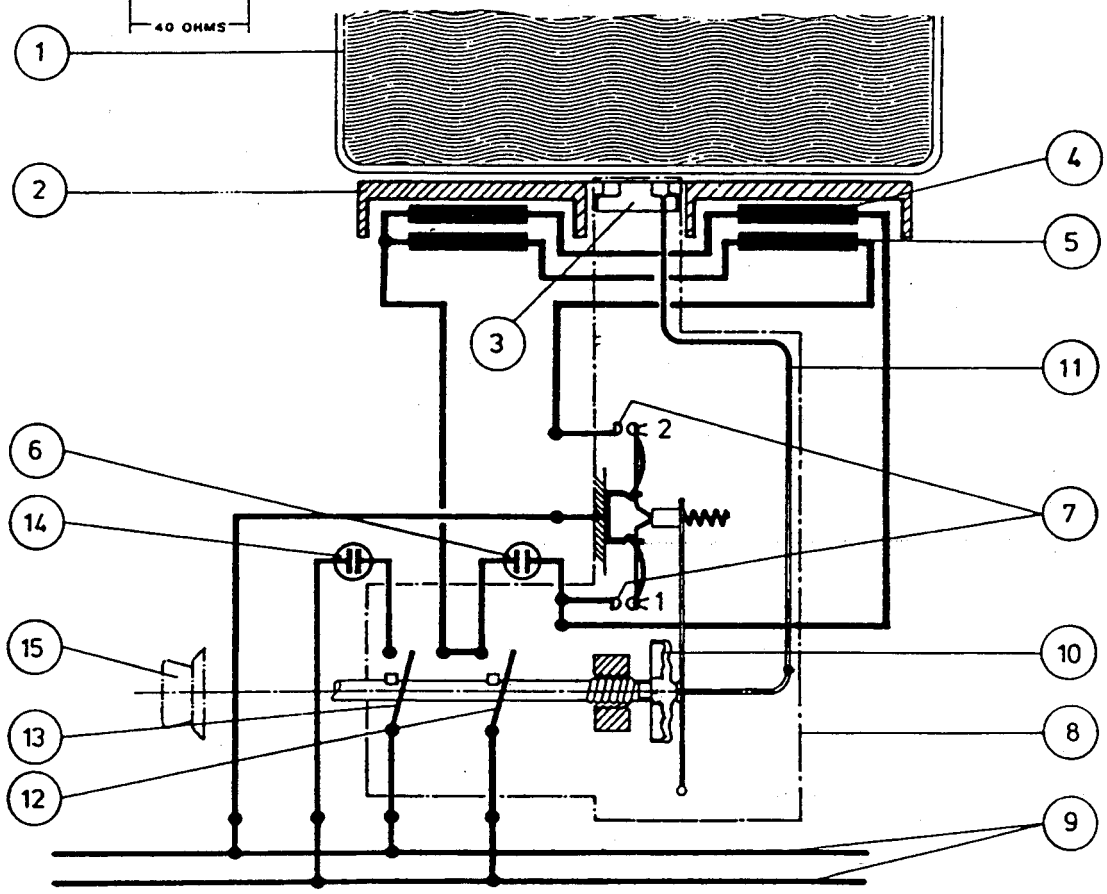
AUTOMATIC SENSOR FOR DISC ELEMENTS

The automatic sealed hotplate has two heating circuits each of which is switched-on and off in connection with the above mentioned pan sensor by means of two separate temperature-controlled snap-switches in the thermostat. The snap-switches are adjusted in relation to each other so that the heating conductors are switched off one after the other during the heating-up process.

During the simmering process the adjusted temperature is controlled by alternate switching-on and off, of power. Depending on the power requirement one heating circuit is switched-on, and both heating circuits are switched-on when high power is required.







1. Pan
2. Automatic Sealed Hotplate
3. Flexible temperature sensor
4. Heating conductor
5. Heating conductor
6. Condition signal lamp (Function indicator lamp) *
7. Regulating contacts 2 and 1
8. Pan Sensor
9. Electric supply line
10. Expansion diaphragm
11. Capillary tube with expansion liquid
12. Switch contact
13. Signal contact
14. Common signal lamp (Operation indicator lamp)
15. Setting dial

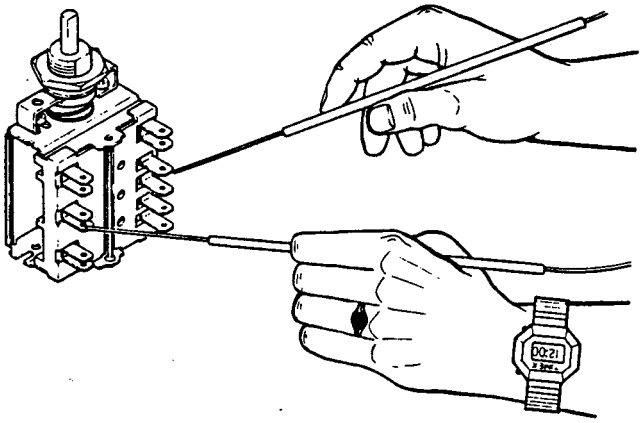
* Optional signal light

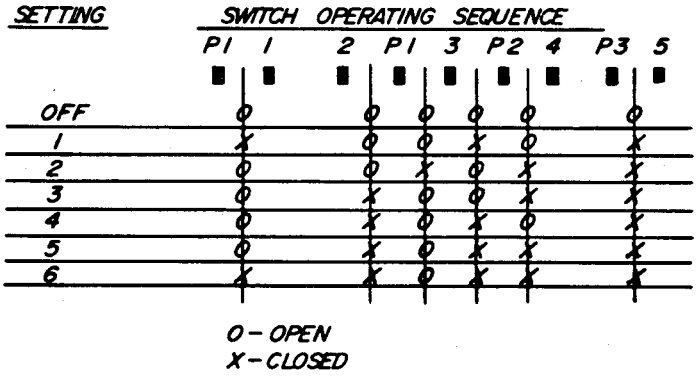
SIX HEAT SELECTOR SWITCH

The Typical 6-heat selector switch is a series of cam operated switches controlled by the turning of the shaft.

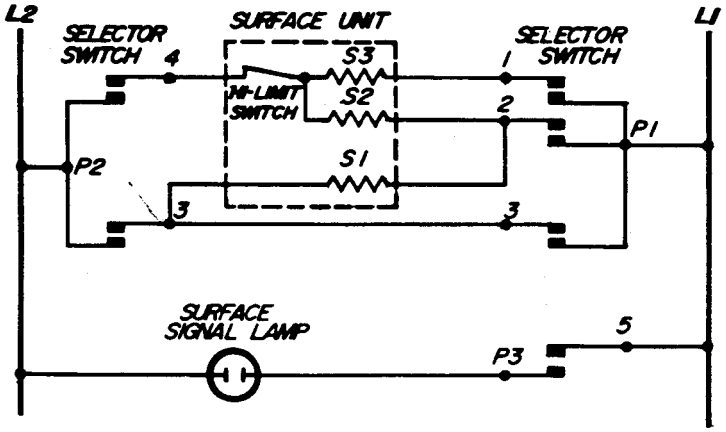
Refer to switch operating sequence chart for contact positions.

Switch positions	0	6	5	4	3	2	1
Circuit diagram	N1 N2 N3 P1O P2O						
ø145	N1 = 250 W N2 = 250 W N3 = 500 W	1000 W	750 W	500 W	250 W	165 W	100 W
	N1 = 750 W N2 = 250 W N3 = 500 W	1500 W*	750 W	500 W	250 W	165 W	135 W
ø180	N1 = 350 W N2 = 300 W N3 = 850 W	1500 W	1150 W	850 W	300 W	220 W	135 W
	N1 = 850 W N2 = 300 W N3 = 850 W	2000 W*	1150 W	850 W	300 W	220 W	175 W





TYPICAL 6-HEAT SELECTOR SWITCH



Switching of EGO Six-Heat Sealed Hotplates

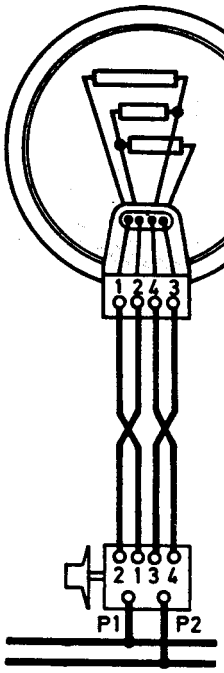


fig. 1
circuit diagram for six-heat sealed hotplates and six-heat high-speed sealed hotplates with protector

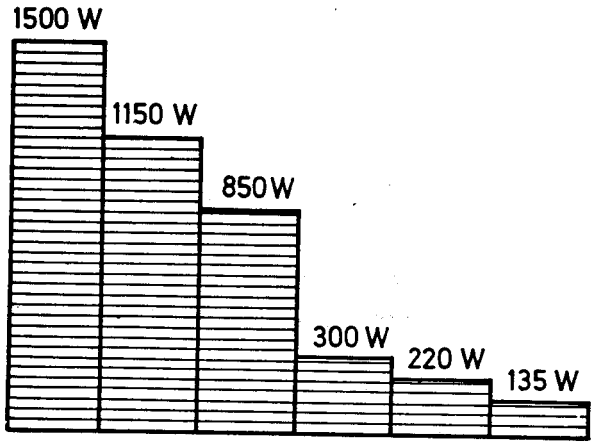
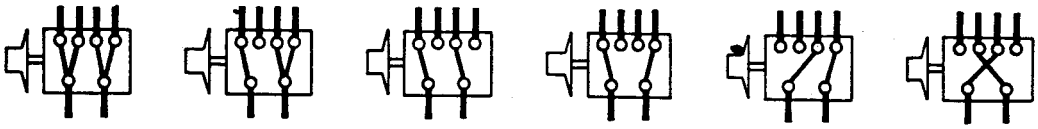


fig. 2
switching/loadings available with a six-heat sealed hotplate 180 mm diameter, 1500 W



0 6 5 4 3 2 1

Switching position

The sealed hotplates have three heating conductors of different loadings, these are controlled by a six-heat switch to give six different heats and an off-position (fig. 1). There are three boiling and three simmering and warming positions (fig. 2). It has been possible to retain the well-tried settings of the three-heat switching (fig. 3) with the addition of another boiling stage, a faster simmering and warming position. The two additional slow positions are particularly useful in the simmering range, permitting slightly faster or lower simmering than the single setting previously provided. All simmering and warming temperatures likely to be required can now be obtained. The introduction of the six-heat high-speed sealed hotplate has made this system exeptionally effective for rapid heating-up.

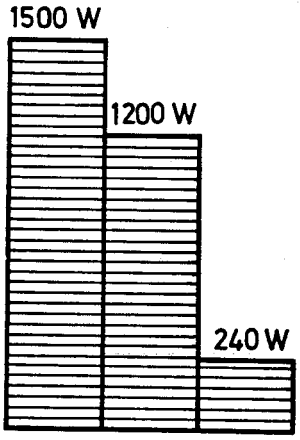


fig. 3
switching/loadings of three-heat switches formerly used (sealed hotplate 180 mm diameter, 1500 W)

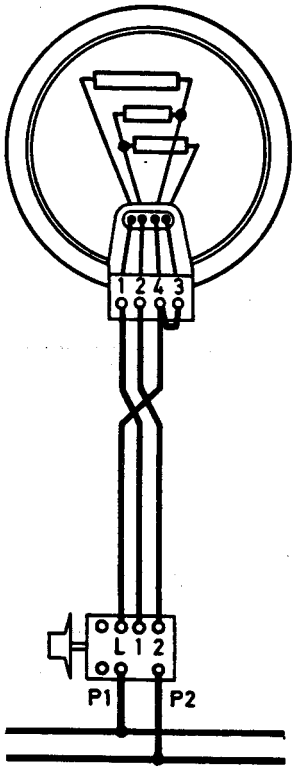
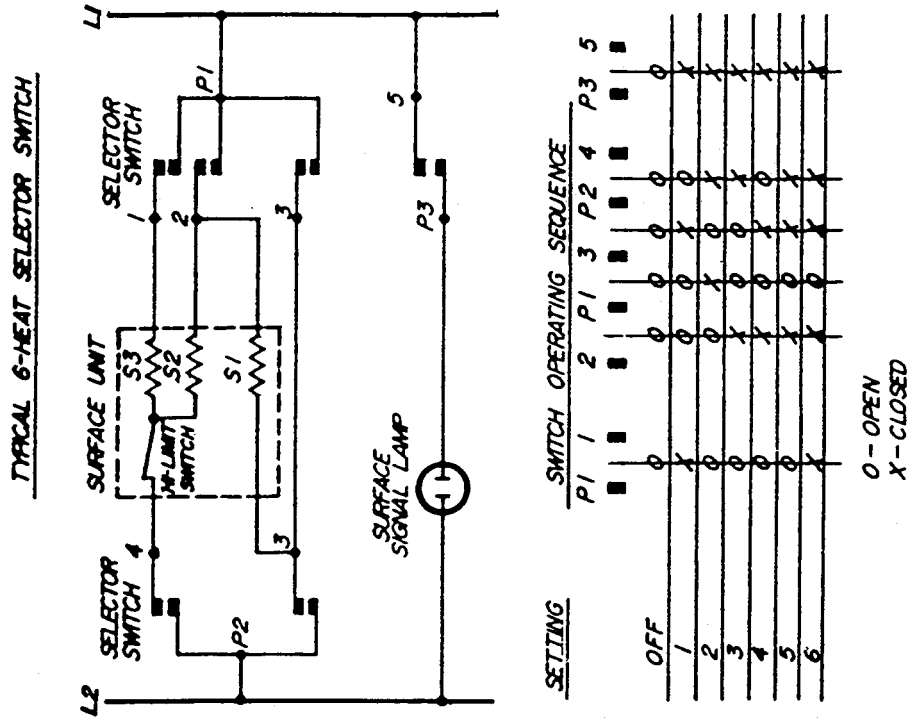


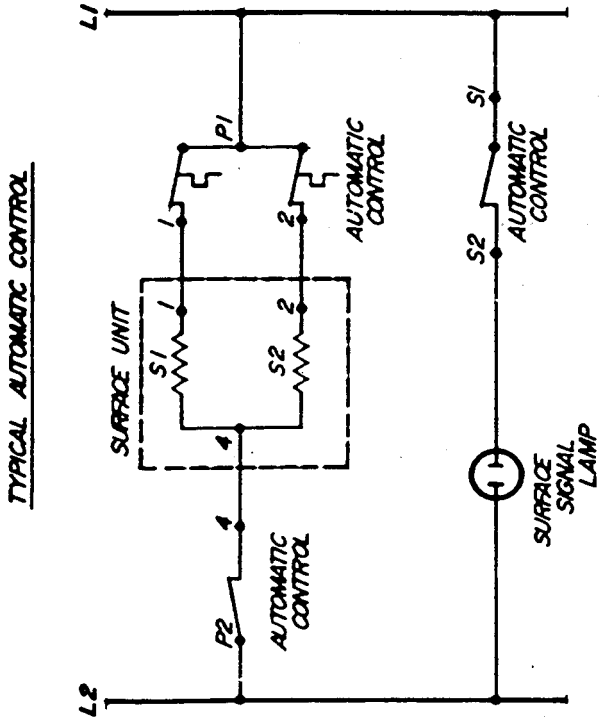
fig. 4
circuit diagram for six-heat sealed hotplates for connection to three-heat switches with signal contact

DIAGRAM EXAMPLES

EXAMPLE ONLY REFER TO THE DIAGRAM ON THE UNIT WHEN SERVICING

GLASS TOP SURFACE UNIT DIAGRAM





MAYTAG

Maytag Appliances Sales Company

Customer Service
240 Edwards St.
Cleveland, TN 37311