Executive standard: IEC 60335-2-37-2017

# Freestanding Electric Open Fryer

## DGF-D13L/DGF-F13L/Auto-F13L

# INSTRUCTION MANUAL

Read this manual carefully prior to use.

Technology is subject to change without notice.

## Main technical parameters

| | DGF-D13L | DGF-F13L | Auto-F13L |
|---|---|---|---|
| **DIMENSIONS (WxDxH):** | 400 x 780 x 1160 mm | 790 x 780 x 1160 mm | 865 x 860 x 1210 mm |
| **CAPACITY:** | 2 x 13 L (11.6 L oil) | 4 x 13 L (11.6 L oil) | |
| **TIMER:** | 00:00 ~ 59:59 | | |
| **TEMPERATURE:** | 20 ~ 200°C | | |
| **POWER:** | 14 kW / 415 V / 50 Hz | 14 + 14 kW / 415 V / 50 Hz | |
| **WEIGHT:** | 100 | 165 | 195 |
| **MAX LOADING PER GO:** | 1.6 KG / Per pot | | |
| **CONNECTION:** | Three phase | | |

# SAFETY WARNING

In order to ensure the user's safety and prevent personal injury, electric shock, poisoning, or fire and machine malfunction, please be sure to observe and clarify the following precautions:

1. Please read the instruction manual carefully before use, and keep it safe in case of operator change, future maintenance or other reference.
2. Fully understand and familiarise yourself with the symbols, graphics and warning signs marked on the fryer before use and strictly abide by them.
3. Keep in mind the manual warnings, cautions and other signs attached to the fryer and within the manual.

## ANNOTATION:

∆ **WARNING** – Ignoring this mark and misusing, can result in personal injury or fire risk.

∆ **CAUTION** – Ignoring this mark and misusing, will cause personal injury.

∆ **ATTENTION (NOTICE)** – Ignoring this mark and misusing/mis-operation will cause the fryer to malfunction and affect the performance.

**WARNING:**

1. Please do use air-brake switch correspondent to power rate of this machine.
2. Don’t touch power cable with wet hand to avoid possible electrical shock.
3. Don’t put power cable under any table or chair or any other hard object, especially don’t put cable under any location, which might be under potential hazard of stress of being damaged by sharp corner of metal part. Please also note not to put cable on passageway.
4. Food shall not be too wet for frying as it will cause the hot oil to splash, which might result personal injury.
5. To avoid possible spill of oil by overloading with food, which might result in fire hazard, quantity of food being placed within has to be under suggested limitation.
6. Cable must be changed as soon as scratch, breakage or damage is discovered, or it may result in electrical shock or fire hazard. Replace the power cord with the same type of YCW or YZW flexible oil-resistant soft cable, and the wire diameter should meet the requirements of power consumption.
7. Power switch of all pole disconnection function, fuse shall be fixed nearby for the fryer; grounding end  has to function correctly correspondent to relevant standard and regulation to ensure personal safety. Neglecting the above instruction might result personal injury.
8. Socket, plug and cable have to be correspondent to specific requirement of power rate of this machine. Make sure that power cable is made for Maximum current stated for this machine. Fire hazard may result in working current exceeding capacity of cable fixed.
9. Cover of power unit box shall not be opened or it has to be opened by licensed technician, or it might result in personal injury.

10. The waterproof level is: IPX4. Therefore, it is strictly forbidden to wash with water or flush with jet water. Otherwise, the machine will be seriously damaged, and the risk of personal injury will occur.
11. Frying temperature shall not exceed 200℃, or it would result in fire hazard and food safety problem.
12. The power supply voltage used by the device must match the voltage on the product nameplate. Voltage fluctuations is allowed in range of +5%-10%. Ignoring this, this fryer will not work properly. 3 phases 4 cables to be connected to the machine, neutral line has to be connected correctly.
13. The power plug should be in good contact when plugged into the socket. The middle pole of the three plugs must be well grounded, otherwise risk electric shock.
14. To prevent accidents, unplug the power cord when thunderstorms occur or when it is not in use.
15. Voltage pole  of this machine is located at the bottom of the machine. It is connected with several electrical units to avoid voltage deviation.
16. Disconnect main power switch of power supply line in case connecting, dismantling or unplugging cable.
17. Check connection and control of all electrical components before start machine.
18. All electrical related parts must be installed, wired and serviced by licensed technician.

**CAUTION:**

1. Do not touch the heated unit to avoid possible injury after machine is connected to power.
2. The machine must be protected from exposure to rain and humid environments.
3. The machine shall not be placed in corrosive environment, shall be protected from vibration and shall not be put upside down.
4. Before using or energising and heating, the cooking oil must be added to the pot. The amount of oil should not exceed the maximum oil level. Disregarding this will cause equipment accidents and risk to personal safety.
5. Keep away from flammable and explosive materials, and from places with open flames.
6. Do not use old oil containing impurities, so as not to lower the boiling point. This will easily cause boiling or excessive soot.

# INSTALLATION PRECAUTIONS

Please do not install or store the device in the following locations to avoid malfunctions:

1. Unsteady table or counter.
2. Where there is explosive or flammable substance.
3. Where there is too high or too low temperature, humidity and dust.
4. Where voltage might be unsteady.
5. Where there might be no correct grounding facilities.

6. Where children or handicapped people, people with mental illness may possibly reach.
7. Pay attention to possible pollution lead by frying. Cooker hood shall be fixed wherever fryer locates.

## OPERATIONAL PRECAUTIONS

1. The machine should be operated by the designated personnel to master the correct use of equipment. This manual does not apply to persons who are vulnerable, minors or have sensory impairments.
2. The lid should be kept in place to ensure the pot is kept clean, and to preserve heat whilst in use. When adding the lid, please pay attention to ensuring there are no water droplets on the lid, that can drip into the hot oil, causing splashing and injuries.
3. When the pot is in operation, it should not come into contact with untrained users and customers. The countertop and the outer casing of the pot will have a high temperature, and the operator should also be especially careful when handling as to avoid burns.
4. Machine must be moved with care, locating error with care, don’t slam or hammer the machine.
5. Once frying is finished, operators should utilise the handle at the top of the basket to help prevent the basket from getting too hot. A hook is placed outside the pot to allow you to hang the basket above to filter out the remaining oil. The basket can be fried directly in the pot, but it is necessary to prevent the suspended matter from clogging the exhaust device.
6. The maximum working temperature of the fryer is 200°C. When the temperature control fails, or the oil temperature exceeds 230°C, the over-temperature protector (temperature limiter/high-limit thermostat) will kick in, and the heating power will automatically be cut off. This protector will need to be reset manually and is located at the bottom front of the pot. Only when the oil temperature is cooled to below 150°C, can the reset button be pressed to restart the electric heating.
7. It is recommended to wear insulated gloves when operating the machine to avoid burns and other serious injuries.

## PRECAUTIONS WHEN FAULT OR ABNORMAL CONDITIONS OCCUR

1. If the fault or abnormal situation occurs, please stop using the device, disconnect it from the power supply.
2. Please do not use the fryer when it is in an abnormal state. Do not disassemble, repair or perform maintenance as specified in the manual. Other maintenance and

debugging should be carried out by certified professionals to avoid electric shock, severe injuries and greater malfunction.

3. When the oil leak is found, cease using the device immediately, and have employ a qualified engineer to review and repair.

## CLEANING PRECAUTIONS

The pot body of the fryer is moulded by aluminium and requires cleaning every day after use. If not cleaned, the oil stains and sediments left are prone to coking, and this is very difficult to clean and remove later.

The inside of the fryer should be cleaned daily. If left, oil and breading deposits can become burnt on and be very difficult to clean.

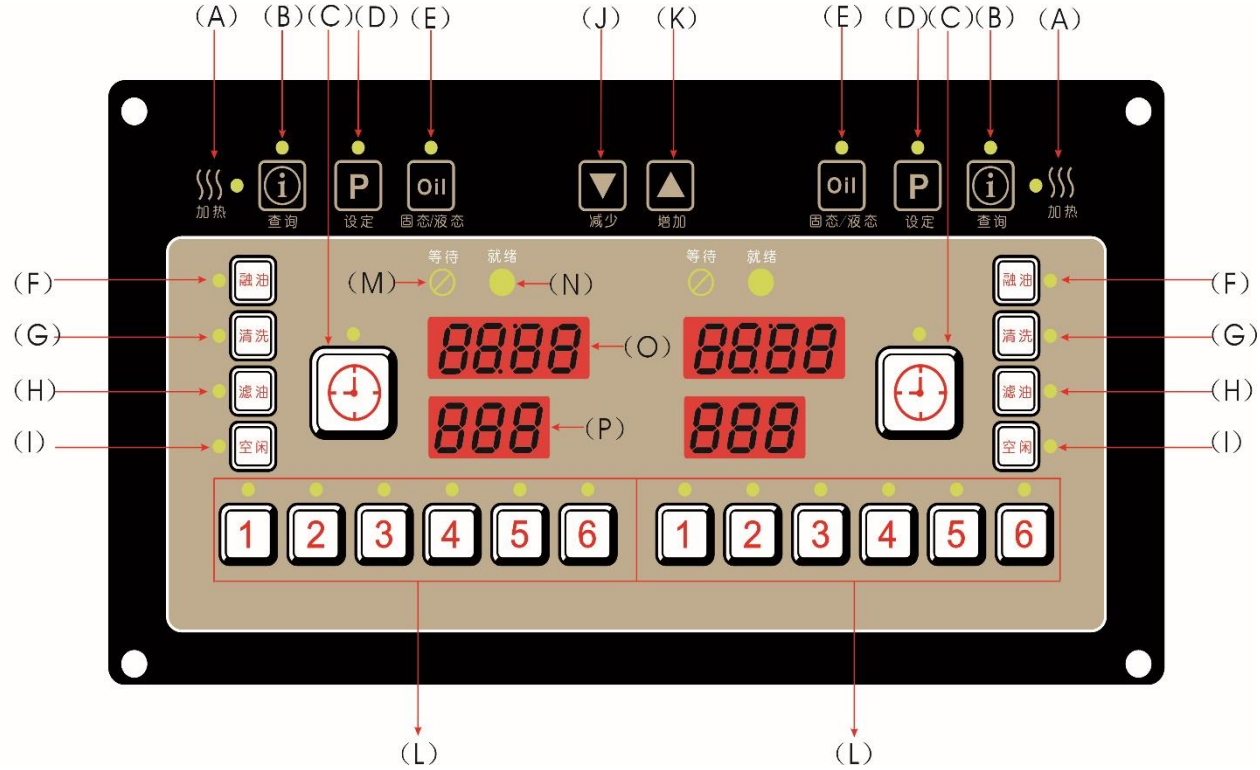
1. When cleaning the fryer, fill 3/4 way with water and add dishwashing detergent. Whilst it is still warm, use a hard bristle brush or a cleaning ball to clean the inside, but do not use hard cleaning tool (metal cleaning ball) to avoid damage to the inner pot.
2. When cleaning, be sure the unit is switched off and there is no power on, otherwise the material inside will heat up or cause the pan to overheat and get burnt.
3. Beware of using chemical cleaners that are suitable for use with aluminium. Corrosion can occur with many products. Particularly those containing caustic soda. **Hamoki cannot accept responsibility for damage caused using corrosive cleaning products.**
4. Be careful when cleaning the drainpipe and drain valve. There will be debris in the drainpipe. Before cleaning the drainpipe, the drain valve should be fully open, taking care not to damage the ball valve or its seal.
5. Be careful to remove all the water and any remains of cleaning materials before use.
6. Clean the outside of the cabinet with a damp cloth and detergent. Abrasive cleaning products such as wire wool and scouring pads will scratch the finish.
7. The fryer is designed to be splash proof. On no account should you use a water jet or a steam jet on the cabinet. If it is suspected that the control circuit has been affected by water, switch off at the control circuit has been affected by water, switch off at the mains, and leave the fryer in a warm place to dry out. Do not wash in water before cleaning.
8. Before re-energizing after damp, a qualified electrician is required to check the electrical insulation degree of the fryer, and then reopen after confirming correctness, otherwise it will be dangerous to use.

## BEFORE USE

1. Check if power is firmly connected, according to installation guide.

2. Proper height of oil level is expected during operation, oil level shall be in between “MIN” and “MAX” mark in the machine.

# CONTROL PANEL OPERATION INSTRUCTIONS




| CODE | DESCRIPTION |
|---|---|
| Heat indicator (A) | When the light is on, the heating is in progress, and when the light is off, the heating is stopped. |
| Parameter query key (B) | Press the query key repeatedly to view the set time - set temperature - quality time - oil filter times in turn. |
| Timing start key (C) | Repeatedly press the timer start button, the indicator light indicates that the timer is running; if the indicator light is off, the timer stops.。 |
| Parameter setting key (D) | Press the setting button repeatedly to set the timing time - working temperature - quality time - segmental alarm - filter oil selection - heating compensation, and modify the parameters by adding or subtracting. |
| Solid/Liquid Oil Key (E) | Press the solid/liquid oil key repeatedly, the light on means solid oil; the light off means liquid oil. |
| Melt key (F) | Press the oil melting button repeatedly, the light on means the oil melting function is activated; the light off means the oil melting function is turned off |
| Cleaning key (G) | Press the cleaning button repeatedly, the |

| | |
|---|---|
| | light on means the cleaning function is activated; when the light is off, the cleaning function is turned off. Press the P key to set the cleaning temperature and cleaning time. |
| Oil filter key (H) | Press the cleaning button repeatedly, the light on means the oil filter function is activated; the light off means the oil filter function is turned off. Press P key to set filter oil temperature |
| Idle key (I) | Press the cleaning button repeatedly, the light is on to enter the idle mode; the light is off to exit the idle mode. Press P key to set idle temperature |
| Parameter plus key (J) | |
| Parameter minus key (K) | |
| Program group key (L) | Select the program group number, the corresponding indicator light is on to indicate the selected program group. |
| Wait Indicator (M) | The indicator light flashes to indicate that the operating temperature has not been reached |
| Ready light (N) | The indicator light is on to indicate that it has reached the working temperature |
| Timing window (O) | Display working time, oil drain valve status |
| Temperature window (P) | Display temperature, shutdown status |

**FUNCTION DESCRIPTION:** The controller is mainly used in food fryer, and the operation is simple and convenient. The system adopts high-performance microcomputer control technology, which has the advantages of high temperature control accuracy and simple setting operation. The heating control adopts advanced PID algorithm control, the baking time adopts countdown control, and the complete and advanced functions meet the needs of multi-level users. The controller output is a relay switch output, and the panel has an LED light-emitting tube to cooperate with the indication when it is in action. It can indicate the working state of the machine concisely and clearly, so that the user can work more safely and conveniently.

**POWER ON**: In shutdown state, the timing window displays OFF. The left cylinder window displays LB-C(F)-XX (C means the temperature unit is Celsius; F is Fahrenheit, XX is the controller version number). The left cylinder window displays LB-C(F)-XX (C means the temperature unit is Celsius; F is Fahrenheit, XX is the controller version number). Press any program group key, the corresponding indicator light is on, and then press the P key to enter the parameter editing mode:

| **CODE** | **DESCRIPTION** |
|---|---|
| PR0~PR9 | Working time (PR0 is the total time; a total of 10 groups) |

| | |
|---|---|
| PP0~PP9 | Operating temperature |
| PQU | Quality time (starts after work is done) |
| PR1~PR4 | Alarm time (alarm reminder, a total of 4 groups) |
| PA1~PA4 | Alarm sound selection |
| PFI | Oil filter selection (0=do not count; 1=count) |
| PCO | Temperature Compensation Sensitivity |
| PRE | Temperature compensation point |
| OFF/ON | Instant heating |

# BASIC OPERATING PROCEDURES

**MELTING OIL**: Press the solid/liquid oil key to select, the solid oil timing window displays LI; the liquid oil timing window displays SO. After about 3 seconds of power on, it will automatically enter the oil melting mode, and you can press the oil melting button to manually exit the oil melting mode. When the oil temperature reaches 110℃, it will exit the oil melting mode and enter the working mode.

Liquid oil heating method: heating according to 50% of the heating cycle. Solid oil heating method: the heating cycle is 25 seconds, the fixed heating is 5 seconds, and the stop is 20 seconds. When the oil temperature reaches 80℃, it will switch to liquid oil heating mode.

**CLEANING**: Press the cleaning button to open the cleaning function, press the P button to set the cleaning parameters, and then press the timer button to start the cleaning timer.

Cleaning time range: 0~59:59.

Cleaning temperature range: 40~90℃ (104~194℉)

**IDLE**: Press the idle key to enter the idle mode, and the controller controls the temperature according to the idle mode parameters. Idle mode temperature range: 90~190 (194~374℉)

**OIL FILTER:** Press the oil filter key to turn on the oil filter function. After the number of oil filters is reached, the controller locks the oil filter working mode. The oil release valve must be opened for oil filter operation. The drain valve is opened for more than 25 seconds. The window displays OPEN and the decimal point lights up. After the oil filter is completed, the oil drain valve can be closed and the work can continue.

Oil filter temperature range: 120~190℃ (248~374℉)

**FRYING:** Select any edited program group and press the timer button to start the work. When the timing is up, the timing window will display the END buzzer alarm reminder. When working in subsections, the timing window will display P0~P9, indicating the current program section.

**ALARM:**

**END:** The frying end window displays END, and the buzzer alarms.
**FIL:** When filtering oil, the filtering oil temperature reaches the set temperature.
**HOT:** When the actual oil temperature is greater than 210 ℃, the over temperature alarm
**ERR:** Sensor burnout alarm
**Note: When an alarm occurs, the buzzer sounds intermittently to remind the operator to control the fault!**

**FACTORY PARAMETERS:** Press and hold the P key in the off state, the timing window will display 0000, enter the password 0,0,0,8 and press the P key to enter the factory parameters. Input password 0,0,1,1, press P key to initialise all parameters.

**TIMING MODE TEMPERATURE CONTROL PARAMETERS**

| NO | RANGE | FACTORY SET | FUNCTION DESCRIPTIONS |
|---|---|---|---|
| F01 | -99~+99℃ | 0℃ | Left Basket Temperature Correction |
| F02 | -99~+99℃ | 0℃ | Left Basket Temperature Correction |
| F03 | 0~99℃ | 15℃ | Left basket timing temperature proportional band (0=position heating) |
| F04 | 0~99℃ | 15℃ | Left basket timing temperature proportional band (0=position heating) |
| F05 | 0~99℃ | 40℃ | Left basket preheat temperature proportional belt (0=position heating) |
| F06 | 0~99℃ | 40℃ | Right basket preheat temperature proportional belt (0=position heating) |
| F07 | 0~9.9 | 0 | Left basket timing PID operation cycle |
| F08 | 0~9.9 | 0 | Right basket timing PID operation cycle |
| F09 | 0~9.9 | 0 | Left basket warm-up PID operation cycle |
| F10 | 0~9.9 | 0 | Right basket warm-up PID operation cycle |
| F11 | 0~99 S | 30S | Left basket timing temperature output cycle |
| F12 | 0~99 S | 30S | Right basket timing temperature output cycle |
| F13 | 0~99 S | 30S | Left basket preheat temperature output cycle |
| F14 | 0~99 S | 30S | Right Basket Preheat Temperature Output Cycle |
| F15 | 0~F11 S | 1 S | Left basket temperature output minimum |

| | | | |
|---|---|---|---|
| F16 | 0~F12 S | 1 S | Right Basket Temperature Output Minimum |
| F17 | 0~9.9℃ | 2.0℃ | Left basket temperature dead zone (valid in bit mode) |
| F18 | 0~9.9℃ | 2.0℃ | Right basket temperature dead zone (valid in bit mode) |

**INITIALISATION PARAMETERS:** Press and hold the P key in the off state, the timing window will display 0000, enter the password 0008 and press the P key to enter the factory parameters. Input password 0018, press P key to initialize all parameters.

| NO | RANGE | FACTORY SET | FUNCTION DESCRIPTIONS |
|---|---|---|---|
| U01 | 0~99 | 10 | Number of times the left basket oil filter is locked (0=not used) |
| U02 | 0~99 | 10 | Number of oil filter locks in the right basket (0=not used) |
| U03 | ℃/℉ | ℃ | temperature unit |
| U04 | 0~99 | 20S | Alarm time |
| U05 | 0/1 | 0 | Whether the left basket enters idle after the oil is melted |
| U06 | 0/1 | 0 | Whether the right basket enters idle after the oil is melted |

# OTHER INSTRUCTION FOR OPERATIONS

1. Take off lid if it is detachable, cover pot when cook finishes.
2. Cut off power when fryer is not in use to ensure safety.
3. Cut off power; wait until oil inside of fryer cools down before cleaning up oil from pot. Put oil sink under the fryer. Open oil relief valve, same when installation is processed.
4. To make sure that the fryer is safe and durable, users shall clean residual in oil and contaminations on heaters to ensure oil and heater functions correctly and in clean status. Use may set oil filtration procedure in control panel and follow the procedure when oil filtration is processed.
5. An oil filter pump is installed at the rear and bottom of the machine. If oil needs to be filtered, close the oil drain valve, press the pump oil switch on the front panel to the "I" position, and open the oil release valve handle switch to start oil filtering. In order to clean the oil and remove the dregs, the oil filter should be covered with clean oil filter paper, and a new oil filter paper should be replaced each time it is used, please refer to the " Oil filter paper placement diagram" section.
6. Power shall be cut off as soon as we find pump motor can’t be started. The reason might be pump head is clogged by oil residuals. In this case pump head shall be dissemble for cleaning, motor maybe damaged when it can’t start for a period of

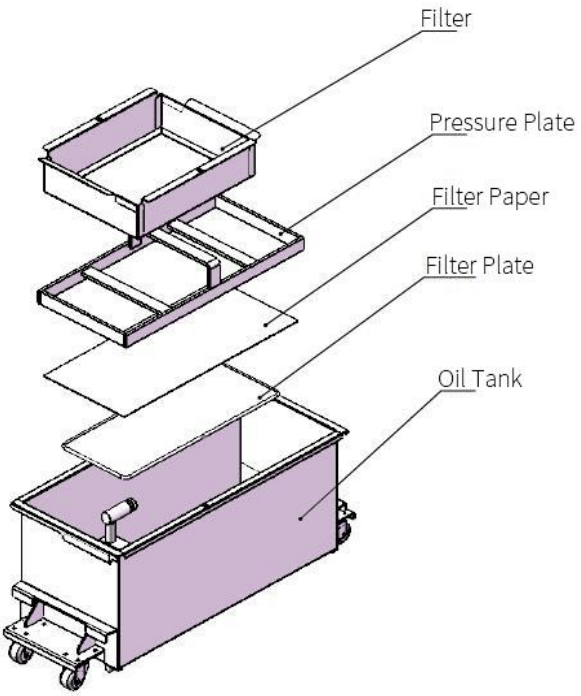
time. For the disassembly of oil pump, please refer to the "Oil pump diagram" section.

7. Pay attention to oil level when oil is filled, oil level filled shall be controlled in between top and bottom limit.
8. It is strictly forbidden to pump oil without oil filter paper installed.

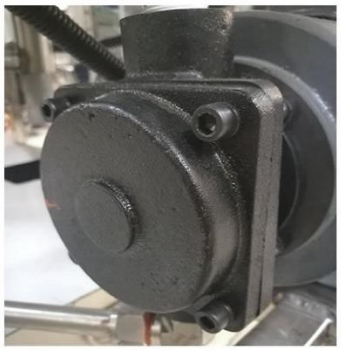
# MAINTENANCE AND UPKEEP OF THE MACHINE

1. Clean the overflow valve twice weekly, screw the screw lid, and clean the gravity block, making it jump freely and open and close flexibly. Check the general electricity and screws of power line, and joints monthly. If any are loose, fasten them.
2. Clean smear away from the electro thermal pipe in the boiler and cabinet after daily work is over, to keep clean and sanitary and enhance life span of the machine.
3. After a period of long time use, the rubber gasket will need to be replaced if aging and ineffective. Loosen the glue bar fastening screws of four sides on the cover, take out the glue bar from the groove slowly, put new sealing rings into the groove, and fasten the screws.
4. The machine is equipped with overheating protector. If the temperature controller is out of work and the oil temperature is up to 250°C, temperature limiter can cut off the heating power to make sure of the safe. Operator should check the reason for overheating and try to resolve. If needed, you should press the reset key in the temperature limiter to restart the machine.

**OIL FILTER PAPER PLACEMENT DIAGRAM**



## OIL PUMP DIAGRAM



PUMP HEAD IS THE MAIL PART FOR OIL PUMP IT NEEDS TO BE CLEANED AND KEPT MAINTENANCE DAILY.WHEN YOU DISASSEMBLE IT, FOLLOW UP THE FOLLOWING CHART

CHART2

DISASSEMBLE THE OIL PUMP COVER

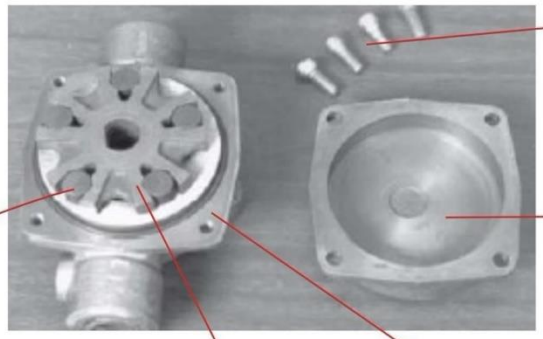



CHART3

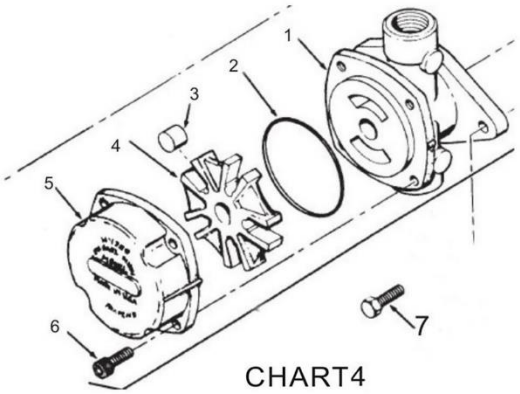
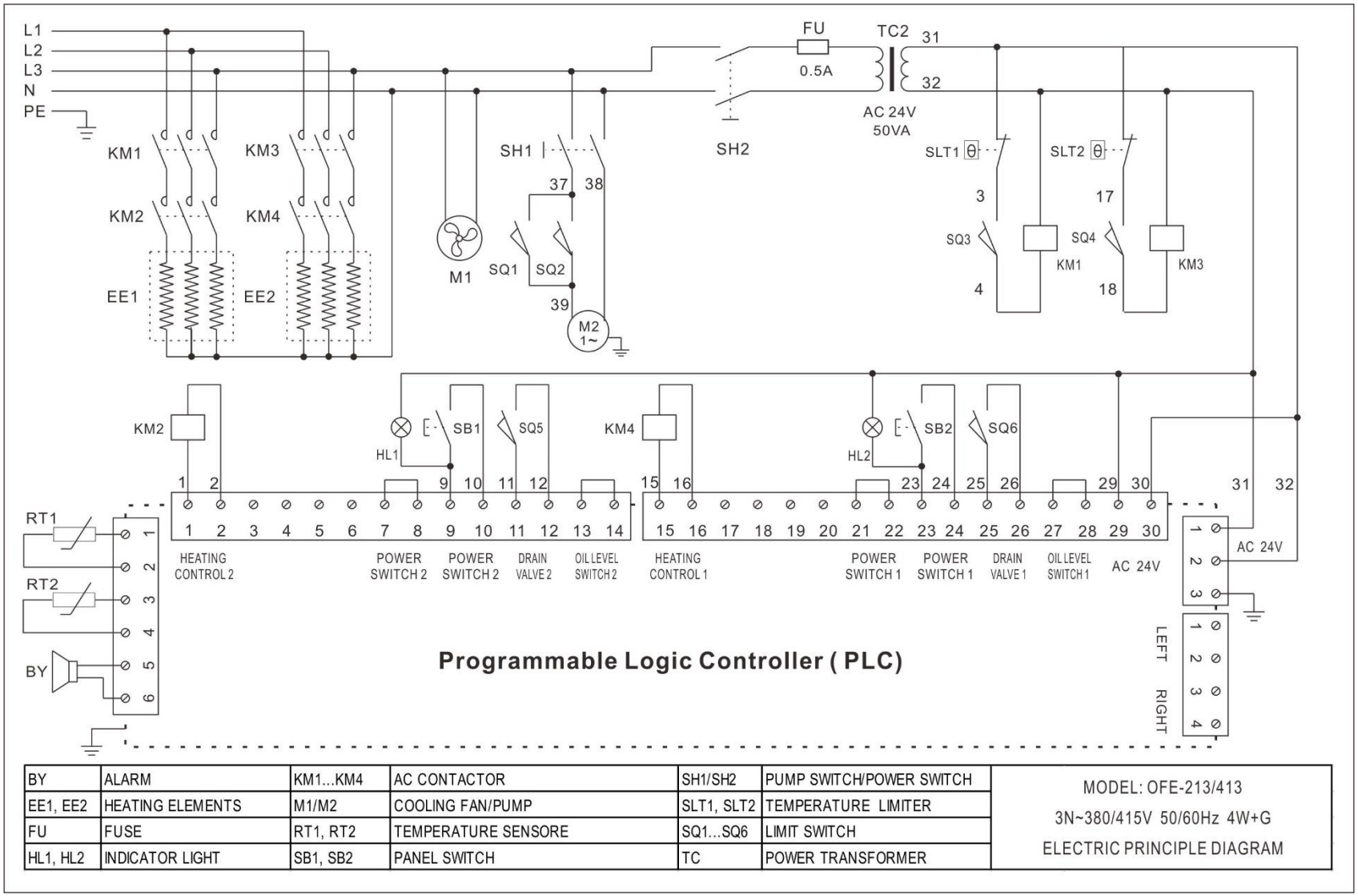



CHART4

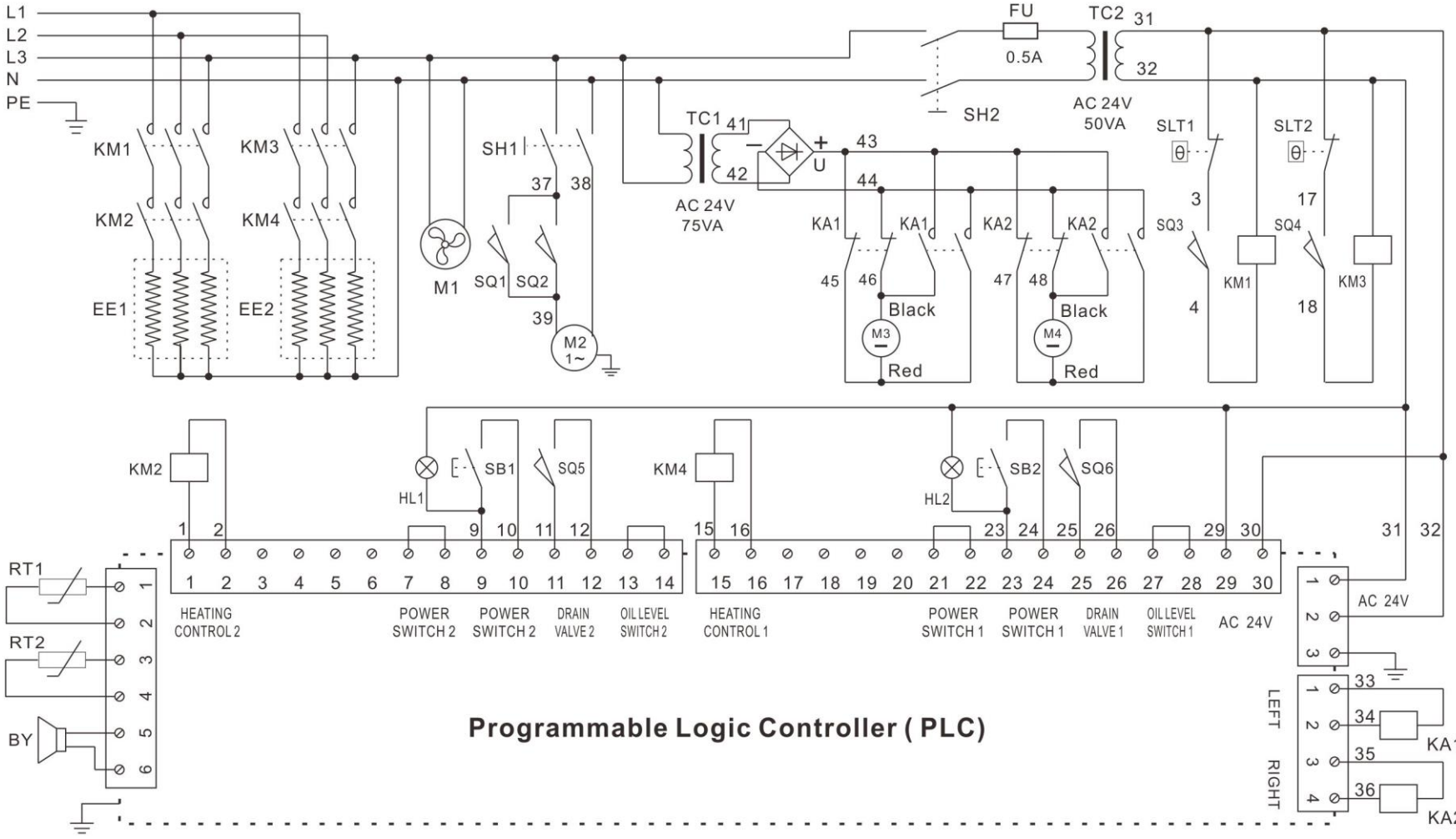
1.PUMP FOUNDATION
2. SEAL RUBBLE
3. RUNNING PULLEY
4. VANE WHEEL
5. PUMP COVER
6. FASTENING SCREW FOR PUMP
7. FIX SCREW FOR PUMP HEAD


CHART5

## ELECTRIC PRINCIPLE DIAGRAM




| | | | | | | |
|---|---|---|---|---|---|---|
| BY | ALARM | KM1...KM4 | AC CONTACTOR | SH1/SH2 | PUMP SWITCH/POWER SWITCH | MODEL: OFE-213/413<br>3N~380/415V 50/60Hz 4W+G<br>ELECTRIC PRINCIPLE DIAGRAM |
| EE1, EE2 | HEATING ELEMENTS | M1/M2 | COOLING FAN/PUMP | SLT1, SLT2 | TEMPERATURE LIMITER | |
| FU | FUSE | RT1, RT2 | TEMPERATURE SENSORE | SQ1...SQ6 | LIMIT SWITCH | |
| HL1, HL2 | INDICATOR LIGHT | SB1, SB2 | PANEL SWITCH | TC | POWER TRANSFORMER | |




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BY | ALARM | KA1, KA2 | INTERMEDIATE RELAY | SB1, SB2 | PANEL SWITCH | TC1,TC2 | POWER TRANSFORMER |
| EE1, EE2 | HEATING ELEMENTS | KM1...KM4 | AC CONTACTOR | SH1/SH2 | PUMP SWITCH/POWER SWITCH | U | RECTIFIER |
| FU | FUSE | M1/M2/M3,M4 | COOLING FAN/PUMP/ELEVATING MOTOR | SLT1, SLT2 | TEMPERATURE LIMITER | ELECTRIC PRINCIPLE DIAGRAM | |
| HL1, HL2 | INDICATOR LIGHT | RT1, RT2 | TEMPERATURE SENSORE | SQ1...SQ6 | LIMIT SWITCH | OFE-H213/H413 3N~380/415V 50/60Hz 4W+G | |