Thank you for your using “SAIKE” brand fuel dispensers

Dear customer:

Thank you very much for your using “SAIKE” brand fuel dispensers. It’s our honor that you to be one of our customers. Please read this manual carefully before operation to know more about our machine, and operate accordingly.

If you have any problems of our machine, please call to our after sale hotline 0086-21-59555699.

Thank you for your cooperation.

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NOTE

1. Please apply for certificate from your local government before installation and testing.

2. Don’t use mobile when fuel filling.

3. Don’t smoking in the petroleum station.

4. Don’t fill the fuel directly to plastic container.

5. Avoid the fuel splash everywhere from the spout after fuel filling.
Directory

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1. Brief instruction

The “SAIKE” brand fuel dispenser based on industrial controlling computer, adopt advanced computer technology, together with high precision meter. It’s a measuring device for filling fuel for cars in petroleum station. It has the character of high precision, reliable, beautiful, easy operation and so on.

The “SAIKE” brand fuel dispensers were made according to the standard as below:

1). GB/T9081-2001 Vehicle fuel dispenser
2). JJG443-2006 Fuel dispensers measuring rules

2. Main technical parameter

Flow rate: 5～50 L/M
Min. measuring: 5L

Precision: The max. volume inaccuracy no more than ±0.3%, error repeated no more than 0.15%. The max. inaccuracy for min. measuring is ±0.5%, error repeated no more than 0.25%

Noise: ≤80dB

The digits number displayed on display screen:
1) liter district: 6digits
2) amount district: 6digits
3) unit price district: 4digits

Counting range of shift totalize:
Volume or amount: 8digits (including 2 decimal digits)

Counting range of liter general totalize:
9digits (including 2 decimal digits)

Counting range of amount general totalize:
11digits (including 2 decimal digits)

Unit price setting range:
0～99.99basic currency/liter

Solenoid valve turn off setting range:
0～0.99liter

Can choose voice and printer
Can choose 7 digits for electromagnetic counter or 9 digits for Mechanical totalizer counter.
Leaves the communication ports, so it can communicate with the gas station management system.

Ambient condition:
1) Temperature: -25°C ~ +55°C
2) Humidity: 30% ~ 90%

Suction type inlet pressure and outlet pressure:
1) Inlet pressure no more than 54kpa
2) Outlet pressure no more than 0.3Mpa

Ex-proof sign: Ex dib II AT3

Power:
1) Voltage: AC220V±20% AC380V±20% AC110V±20%
2) Frequency: (50±1)Hz (60±1)Hz

3. Structure
There are two types of ‘‘SAIKE’’ brand fuel dispensers, suction type and submersible type. We’d like to show you the structure of fuel dispensers for example of suction type.

4. Working theory
The working theory of the suction type fuel dispensers is as below:
Fluid direction  Current direction

Take up the nozzle or press the button “Inject”, the start signal will be sent to the system, the system send the start command to power drive plate, start the motor and open the solenoid valve. The pump working and send the pressured fuel into the meter, and make the meter work, which will make the sensor rotate, then it will produce a pulsed signal and send to the system, after that, the system will calculator the pulsed signal, and work out the volume and amount of the passed fluid. Also, the volume, amount and unit price will display on the screen. the fluid which passed the meter will be delivered via the hose, and filled into the container by the nozzle.

When the nozzle put back to the nozzle box or press the “stop” button, the stop signal will be sent to the system, and the system will send a stop command, which will make the drive plate stop the motor and close the solenoid valve. So a filling process is finished.

After each filling, the data will be stored in the memory.
Besides, the computer device has self protect function. When the electric was cut off suddenly in a filling process, all the data can be stored too, and display the volume and amount filled this time.

5.Installation

1)Machine installation

a)The horizon distance between fuel dispenser and under ground tank no more than 30m(except submersible fuel dispenser). The vertical distance between the lowest lever of the tank and the center of the combined pump no more than 4m.

b)The base of the fuel dispenser must installed on the cement basis, and fasten by bolts. The install dimension according to the base chart(See Excursus B). After installing, make the machine steady to the ground with
cement. Please not forget the inlet pipe, cable and earth cable, and fill the hole with sand not cement.

c) There should be a 1.5” check valve at the end of the inlet pipe in the tank, the distance between the check valve and tank bottom is about 10cm.

d) Install a flange on the outlet pipe of the tank, to match with bellow of the fuel dispenser, and use oil-proof mat for sealing.

e) The fuel dispenser should have a shed to prevent the machine from the sun and rain.

2) Power connection

a) The power cable must connect with the Ex-proof connector, connection as below:

```
  Fuel dispenser cable
  Ex-proof connector
  Power cable three phase
  (This chart for reference of AC 380V only)
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b) The switch of the power should be in the room, and choose the fuse or breaker according the power and quantity of the fuel dispensers.

c) The connection of the phase must correct, to make the rotate direction same to the sign on the pump. If the direction is wrong, please change the two connections of A, B, C.
d) All the cables should be oil-proof corrosion-proof, the cable section is 2.5mm².

e) When connecting the power cable, please attention to make the diameter of the cable match the rubber seal on the connector. After connection of the power cable, screw the nut to clamp the cable, to make sure of the Ex-proof function. The metal mat is used to protect the seal and make it steady, please make sure it is not missed. Please use plug mat to seal the useless connection hole, to make sure the Ex-proof.

f) The earth cable must be reliable, 6mm² copper wire is available.

6. Operation

Keyboard layout
Price

Display board layout

When the dispenser powers on, the whole screen of displayboard are checking the field, it is in the fueling mode automatically after 3~4 seconds.

(1) fueling mode:

- Fueling without preset

  1) when the keyboard displays $L\ 0$ or $P\ 0$, pick up the nozzle or press [Inject/Price] key to start fueling.

  2) Put down the nozzle or press [STOP] key to stop fueling.

Notes: If it has number in the keyboard display, can press [Clear] key to clear.

- Fueling with preset

  1) Press [Value/Quant.] key to choose AMOUNT or LITER preset, The letter “L”(Liter)means to fuel with volume(liter) preset, the preset number can not less than 1 liter. The letter “P”(Price)means to fuel with amount preset, the preset number can not less than unit price number.

  2) Operate the keypad to input the preset number(if input the wrong number, press [Clear] key to clear, if have decimal fraction ,should input two -digit number after the decimal point).

  3) Pick up the nozzle or press [Inject/Price] key to start fueling, It will stop automatically after the preset number is reached; and the currently sales record
for the AMOUNT and LITER will be displayed in the displayboard, the keyboard will clear automatically.

- Stop fueling by integer amount

  when in the fueling, press the decimal point button, if the price reached the next integer, it will stop automatically.

Notes: When start fueling, the original display begin from 0.1 liter. The next time to start fueling must have 3 seconds later after the current fueling.

(2) querying mode:

You can query some data via the keyboard when there is no fueling in process.

In the following, the complex key \texttt{P.D.} key+$\mathbf{x}$ means: press \texttt{P.D.} key continuously, then press $\mathbf{x}$ key.

- Query currently refueling data

Press the \texttt{P.D.} key and \texttt{Value/Quant.} key, it will display the currently refueling data in the displayboard.

- Query 9 previous refueling data

Query the last refueling data, input “1” in the keyboard, then press the \texttt{P.D.} key and \texttt{Value/Quant.} key, it will display the last refueling data in the displayboard. Query the 2 previous refueling data, input the key-press $\mathbf{.}$ The rest may be deduced by analogy, so can query 9 previous refueling data.

- Query shift total

1) query the volume(liter) of shift total

1. Press the \texttt{Value/Quant.} key to make the keyboard display prompt $\mathbf{L} \ 0$.

2. Press the \texttt{Total/Cacul} key, The keyboard will display the total volume with high 4 digits and low 4 digits in turn, the prompt is “C”, it will display the liter of shift totalize counter and prompt “L” directly in the display board.
2) query the shift total of amount

1. press the Value/Quant. key, the keyboard will display the prompt P 0.
2. Press the Total/Cacul key. The keyboard will display the total amount with high 4 digits and low 4 digits in turn, the prompt also is “C”, it will display the price of shift totalize counter and prompt “P” directly in the display board.

- Clear the shift total

1) press the Total/Cacul key, it will display the liter or amount of shift total in the keyboard and display board.
2) Turn the key switch to the “Set” position, press Clear key, the shift total will be cleared. (no matter what the amount or liter reset to zero, the other will also be automatic reset to zero)
3) after clear and turn the key switch to the “Inject” position.

- Query general total

1) query the volume(liter) of general total

1. press the Value/Quant. key to make the keyboard display prompt L 0, turn the key switch to the “Set” position.
2. press the Total/Cacul key, it will display the general total in the display board, and the unit price district display prompt “L”.

2) query the amount of general total

1. press the Value/Quant. key to make the keyboard display prompt P 0, turn the key switch to the “Set” position.
2. press the Total/Cacul key, it will display the amount of shift total in the display board, and the unit price district display prompt “P”.

- Clear the liter of general total

When the liter of general total reach to 9999999.XX, the fueling stopped, the keyboard displays prompt E 05, the displayboard displays the current sales record. Should clear the general total after copy out by staff.
The method of clear the liter of general total:

1. Press the **Value/Quant.** key to make the keyboard displays prompt **L 0** turn the key switch to the “**Set**” position.
2. Press **STOP** key, the keyboard displays prompt **R 0**, input the password 7813, the keyboard displays **H 0** when the password is right.
3. Press the **P.D.** key and the **Total/Cacul** key, the displayboard displays liter of general total, and the keyboard displays prompt **n**.
4. Press the . key, the keyboard displays prompt **nnnnn**, the displayboard displays 0, namely the liter of general total reset to zero.
5. After this set, turn the key switch to the “**Inject**” position.

- Clear the amount of general total

   When the amount of general total reach to 999999999.XX, the fueling stopped, the keyboard displays prompt **E 06**, the displayboard displays the current sales record. Should clear the general total after copy out by staff.

   The method of clear the amount of general total is same as the method of clear the liter of general total, just choose the keyboard displays **P 0** state before do the operation.

- Query the currently sales record when power off suddenly

   When power off suddenly in fueling, press the **P.D.** key continuously until it displays the currently liter and amount in the displayboard.

Notes: now we cancel the **Reset** key function in the keyboard. If needed please press the small “**S1**” button in the mainboard, then the system will startup over again.

(3) **Setting mode:**

Turn the key switch to the “**Set**” position when there is no fueling in process, so can set up relevant parameters .

- Unit price setting

  1) press the **Inject/Price** key, it will display the original unit price **b 12.34** in the keyboard.
2) Operate the keyboard to input the new unit price, the decimal point is turned into automatic.

3) After set up and turn the key switch to the “Inject” position, it will display the new unit price in display board.

- Solenoid valve turn off value setting
  The system set up the original main solenoid valve turn off value is 0.3 liter.
  If have necessary can reset the value, the set up range of the value is 0—0.99 liter.
  1) Press the Value/Quant. key, it will display the original solenoid valve turn off value \[ 0.30 \] in the keyboard.
  2) Operate the keyboard to input a new solenoid valve turn off value, the decimal point is turned into automatic, does not need to input.
  3) After set up and turn the key switch to the “Inject” position.

- Setting the liter carry
  1) Press the P.D. key and Clear key, input the password 67981156, appear the preset number “AXXX”. If set the “A” as “6” in amount preset mode (P), it means do not make carry to the liter tertiary decimal fraction (not make the round). And the number “0~5,7~9” means make carry to the liter tertiary decimal fraction (make round). Restore factory settings (rounding)
  2) Operate the keyboard to set the digit for “A”.
  3) After this set, turn the key switch to the “Inject” position.

Notes: This setting is just available in the amount preset refueling.

- Setting the power down reading time
  1) Press the P.D. key and Clear key, input the password 67981156, appear the preset number “AXXX”. XXX means the power down reading time, can be setup from “015” to “999” seconds. If input the “000~014” seconds, it is the default set as power down reading time is 60 seconds. Restore factory settings (60 seconds)
  2) Operate the keyboard to set the XXX digit.
  3) After this set, turn the key switch to the “Inject” position.

- Electronic Calibration
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1) Turn the key switch to the “Set” position.
2) Press the stop key, Input the password 5168. Press the P.D. key and don’t loosen it, then press the Clear key, when the keyboard displays prompt U, please loosen the key.
3) Input the password 67981156, when input the right password the keyboard will display prompt which is the original pulse coefficient ****. If need to calibration, please input the effective coefficient, then press to confirm.
4) Turn the key switch to the fueling state when finish the setting.

(4) The check process and eliminate method of common fault:

Fault cue:

1) When the pulser has fault, pick up the nozzle and press Inject key, it can't start fueling, the keyboard displays the fault prompt E 01.

2) No delivery for 60 seconds after start fueling, stop the motor and solenoid valve, The keyboard will display prompt E 02. Pick up the nozzle, refueling, press the numeric key can clear the prompt, put down the nozzle or press STOP key can not clear the prompt.

3) No delivery for 60 seconds when in fueling, stop the motor and solenoid valve, The keyboard will display prompt E 03. Pick up the nozzle, refueling, press the numeric key can clear the prompt, put down the nozzle or press STOP key can not clear prompt.

4) While the general total of liter is reach to 99999999.99, the refueling is stopped, the keyboard displays the prompt E 05, and can not continue to fueling. The other Dispenser functions still be available. Lift nozzle or press Inject key will display the prompt.

5) While the amount is reach to 999999999.99, the refueling is stopped, the keyboard displays the prompt E 06, and can not continue fueling. The other Dispenser functions shall continue to be shown. Lift nozzle or press Inject key will display the prompt.

6) When the electromagnetism totalizer has fault, it cannot start fueling, the keyboard displays error code E 07.

7) When the batterier power has shortage, the keyboard will display the prompt E 08.

8) When the single refueling price is over 9900.xx amount, stop the motor, the keyboard displays prompt E 12, pick up the nozzle or press Inject key can clear the prompt, then continue to refueling.

9) When the single refueling liter is over 9900.xx, stop the motor, the keyboard
displays prompt E 13, pick up the nozzle or press Inject key can clear the prompt, then continue to refueling.

10) If the pre-setting amount surpasses 9900, the keyboard will display prompt EP, you can press the clear key to clear the prompt.

11) If the pre-setting amount surpasses 9900, the keyboard will display prompt EL, you can press the clear key to clear the prompt.

12) When one nozzle is in the setting status, and at the same time another nozzle is lifted to fuel, the motor can’t startup, and the keyboard will display prompt E 15, you can press the clear key and clear the prompt. Change the setting status to the fueling status to let the nozzles work properly.

7. Maintenance

1) There is a filter on the inlet of the pump for vane pump dispensers, for submersible type, a separate filter on the inlet of the dispenser (before meter)

The filter must be cleaned regularly, and clean the filter net with gasoline. If the net, seals or spring damaged, please replace it to make sure the machine work normally.

For new petroleum station, please clean the tank and all the pipeline before installing the machine. And clean the filter every 5 days in the first month, after that clean every 10 days.

For the rebuilt petroleum station, please clean the tank and all the pipeline before installing the machine too, and clean the filter every 10 days.

If the oil is not clean, clean the filter more regularly.

2) The screw of the spill valve on the vane pump, is for adjust the pressure of the pump, to adjust the flow rate of the fuel dispensers. After long time usage, if the flow rate low down, please screw it inside to enlarge the pressure.

3) The vane fuel dispensers use for under ground tank only. If for high position tank, oil will come out from the exhaust pipe. In this case, please tied up the exhaust pipe.
4) Please not knock the filled container with the nozzle or other abnormal operation. These actions will damage the nozzle. Please check and tighten the screw on the spout.

8. Note:

There must be oil-proof mat on the flange of the suction pipe;
Please cut off the power before repairing. (The person to repair the machine should be trained); When open the power controller and Ex-proof connector, please not damage the Ex-proof surface. Clean it when reassembling. Make sure the cable sealed, metal mat and seals not missed, screws not missed, to guarantee the Ex-proof.

8. Operational problems

1) Machine problems and solution

The table below is the problems always happened, reasons and solution

<table>
<thead>
<tr>
<th>Problem</th>
<th>Reason</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No oil output</td>
<td>Pump direction different to the sign;</td>
<td>Exchange two of the cable</td>
</tr>
<tr>
<td></td>
<td>Belt too loose;</td>
<td>Adjust the belt</td>
</tr>
<tr>
<td></td>
<td>Axle jammed or motor not rotate;</td>
<td>Check the pump or motor</td>
</tr>
<tr>
<td></td>
<td>Pump damaged;</td>
<td>Change the vane or the pump</td>
</tr>
<tr>
<td></td>
<td>Pump spill valve jammed;</td>
<td>Check spill valve</td>
</tr>
<tr>
<td></td>
<td>Meter jammed;</td>
<td>Repair meter</td>
</tr>
<tr>
<td></td>
<td>Delivery hose leak;</td>
<td>Repair pipeline and check seals</td>
</tr>
<tr>
<td></td>
<td>Check valve jammed or blocked;</td>
<td>Clean check valve or replace</td>
</tr>
<tr>
<td></td>
<td>Too less oil in the tank;</td>
<td>Add oil</td>
</tr>
<tr>
<td>Oil output obvious small</td>
<td>Filter blocked;</td>
<td>Clean filter net</td>
</tr>
<tr>
<td></td>
<td>Pipeline blocked;</td>
<td>Check pipeline</td>
</tr>
<tr>
<td></td>
<td>Belt too loose;</td>
<td>Adjust belt</td>
</tr>
<tr>
<td></td>
<td>Check valve blocked;</td>
<td>Clean the check valve</td>
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<table>
<thead>
<tr>
<th>Issue Description</th>
<th>Possible Causes</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bigger noise and more vibration</td>
<td>Filter blocked; Check valve blocked; Pump spill valve jammed or spring too fasten; Axle and rotor loose or axle damaged;</td>
<td>Clean filter net; Clean and repair check valve; Repair spill valve; Replace rotor or repair axle</td>
</tr>
</tbody>
</table>

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<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak precision</td>
<td>Precision migration; Parts of the meter damaged</td>
<td>Adjust meter precision; Replace meter</td>
</tr>
</tbody>
</table>

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<tr>
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<th>Possible Causes</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nozzle not shut off automatically or leak</td>
<td>Air inlet pipe blocked; Master valve can not close well; Mandril not sealed; Inlet not sealed</td>
<td>Clean inlet pipe; Adjust master valve or replace mat; Adjust or replace seals; Replace seals</td>
</tr>
</tbody>
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<th>Issue Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>The machine work well but no display</td>
<td>Pin of rotate axle on meter snapped; Pin of rotate elbow on meter breakaway; Some plugs loose</td>
<td>Replace pins; Replace pins or rotate elbow; Check plugs</td>
</tr>
</tbody>
</table>

## 2) Check the electronic problems

![Flowchart of Electronic Problems](image.png)
9. Precision adjustment for soft plunger meter

a) As the fig. showed below, open the lead sealing on the handle, take off the wire and letter pole, turn the hand clockwise or anticlockwise, clockwise for less output, anticlockwise for more output.

b) There are 21 holes on the meter, it can be turned one hole or half a hole one time. One hole is for 0.05% adjustment. The letter pole is for location. After adjustment, insert the pin and lead seal. (this action should be under the authorization of the government).
10. Packing and transportation

We can do the package according the customer’s demands
Each package has certification, operation manual, spare parts list
When transportation, the inclination of the package no more than 30°
Avoid fierce vibration, collide and rainy in transportation
The machine should stored in dry place without corrosion gas.

Excursus A  Dimension of fuel dispenser
Excursus B  Installation chart of pedestal

Excursus C  Connection of the electric (AC380V, for reference)