Shenchen Precision Pump
Manual of DF600

Baoding Shenchen Precision Pump Co., Ltd.
**Important Information**

- Please read the manual carefully before operating the product.

**Warning:**

- Tubing may have crack due to wear. It results in the overflow of fluid from tubing. In that time human body and instruments may be hurted. So user must check usually and change tubing in time.

- Connect directly the power line to the wall socket, and avoid using the extense electric line.

- If the power line or plug had wear and other damage, please hold the plug to unplug it, not hold the line.

- If following situations happened, please turn off the electric power and unplug the plug, holding the plug and not the line.
  1. Fluid splash on the pump.
  2. You think the pump need to maintain or amend.

- The user’s power socket must have ground wire, and have reliable grounding.
Catalogue

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DF600 Product Introduction:

DF600 filling system, color touch screen control, dynamic display filling status; it can extend multi group filling unit, and set the effective of the unit freely; online volume adjustment function. Wide filling volume range, the minimum filling volume is 0.1ml, can load different pump head: YZ1515x, YZ2515x and DZ25-3L.

DF600 Filling System Product Appearance:

Composition:

A——Pump Head
B——Filling Unit
C——Controller
Filling System Port Instruction:

Back of the Filling System

Side of the Filling System

Port:  
A——Power Port  
B——External Control Input Port  
C——Connect controller communication Port (H).  
D——Connect next filling unit Port D when cascade multi filling units.  
E——Connect controller Power Port (G)
F——Power Switch

Controller Port Instruction

G——Power Port, connect with Port (E) on the side of the filling unit.
H——Connect filling unit communication port (C).
I——External Control Input Port

DF600 OLED Instruction:

- **Unit No.**: Display each filling unit address no.
- **Working State**: Display running, full speed, stop and pause state.
Running Direction: Display motor running direction.

DF600 Controller Instruction:

Run/Pause Button: After set up the filling parameter, press the start/stop button, the filling unit will running according with the parameters. Press the start/stop button, pause the current state. After press the start/stop button, besides the calibration and monitor button on the main interface, other buttons turn gray, forbidden to use.

Stop Button: Press stop button, stop working. Forbidden buttons can be used on the main interface.

Emptying Button: Press this button at the stop state, the filling unit will running with 600rpm. This button is for washing tube and filling liquid rapidly.

CW/CCW Button: Press this button, the motor will change running direction.
DF600 Controller Interface Composition:

DF600 Controller Operation Interface Instruction:

1. **Boot Interface:**
   After power on the system, enter the welcome interface, choose system language, Chinese/English. If do not choose, it will enter the English main interface after 2.5 seconds automatically.

2. **Main Interface:**
   Main Interface Composition as below:

   A. **Real-time Display Filling Volume:** display the current filling volume.

   B. **Real-time Dynamic Display:** Display the filling unit working state in
real-time, dynamic display monitor results, also have alarm function. If one of the bottle appear red alarm signal, means the relevant filling unit error, please check the communication connection. Starting from the left, the first bottle filling unit number corresponding to No.1/No.5/No.9/No.13, the second bottle filling unit number corresponding to No.2/No.6/No.10/No.14, the third bottle filling unit number corresponding to No.3/No.7/No.11/No.15, the forth bottle filling unit number corresponding to No.4/No.8/No.12/No.16.

C、 Real-time Parameter Display: Display the set filling volume, countdown filling time, countdown pause time, and filling numbers.

D、 Set Parameter Display: This area display filling unit current working state, pump head, tubing size and suck-back angle.

E、 Date and Time Display: Display the current date and time, can amend it in system settings.

F、 System Setting Button: Press this button enter system setting interface, include set the pump head and tube size, set the suck-back angle, choose and set common filling mode, set effective filling unit, set current date and time.

G、 Flow Calibration Button: Press this button enter calibration interface.

H、 Real-time Monitor Button: Press this button enter monitor interface.

I、 Filling Volume Button: Press this button, the numerical keyboard come out, input the filling volume here.

J、 Filling Time Button: Press this button, the numerical keyboard come out, input the filling time. Click confirm, it will ask whether continue to input the pause time, choose ‘YES’, you can input the pause time, choose ‘NO’, back to the main interface.

K、 Filling Numbers Button: Press this button, the numerical keyboard come out, input the filling numbers. If input ‘0’, the filling number is unlimited.

3、 Flow Calibration Interface:

Flow Calibration Interface as below:
**First**, click the ‘Valid Unit’ drop-down menu, choose filling unit. The filling volume and time is same as setted.

**Calibration Process as below**:

A. Choose valid unit, filling volume and time.

B. Click **Start** button to start the test, display countdown filling time, it will stop automatically, and the numerical keyboard come out, you can input the actual filling volume. After input the actual filling volume, it will ask whether continue test (suggest 3 times), choose ‘YES’, it will test again; choose ‘NO’, back to the calibration interface.

C. After several tests, actual filling volume display area display the average volume, click ‘**Calibration**’ button, display calibrate successful.

D. Test again to check whether the filling volume meet requests. If request higher accuracy, you can use the adjust function, click ‘**Add**’ or ‘**Decrease**’ button, micro adjust the filling volume, meet high accuracy filling.

E. Click ‘**Cancel**’ button, cancel the tests, actual filling volume return to 0.

**Online Micro Adjust Filling Volume Process**:

If one of the filling unit filling volume is not correct during working, this function can micro adjust the filling volume online without affect the product line.

A. Click the Calibration button on the main interface, enter flow calibration interface.

B. Now only the ‘**Valid Unit**’, ‘**Add**’ and ‘**Decrease**’ button can be used, other
button is forbidden.

C. Choose valid unit, click add or decrease button to adjust the filling volume. If valid unit choose Broadcast, it will adjust all the filling units.

4. **Real-time Monitor Interface:**

Monitor Interface as below:

<table>
<thead>
<tr>
<th>No.</th>
<th>Status</th>
<th>CW/CCW</th>
<th>rpm</th>
<th>Directions</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Run</td>
<td>CW</td>
<td>305.25</td>
<td>OK</td>
</tr>
<tr>
<td>02</td>
<td>Run</td>
<td>CW</td>
<td>298.34</td>
<td>OK</td>
</tr>
<tr>
<td>03</td>
<td>Run</td>
<td>CW</td>
<td>315.10</td>
<td>OK</td>
</tr>
<tr>
<td>04</td>
<td>Run</td>
<td>CW</td>
<td>306.04</td>
<td>OK</td>
</tr>
<tr>
<td>01</td>
<td>Run</td>
<td>CW</td>
<td>305.25</td>
<td>OK</td>
</tr>
</tbody>
</table>

Click Monitor button on the main interface to enter the monitor interface, check the working state of the effective filling unit, include state, direction, speed and instruction. All the filling units working state cycle display on this interface, click ‘Pause’ button to pause the cycle display, click again it will continue display.

5. **Pump Head & Tubing Interface:**

Pump Head & Tubing Interface as below:

Click System Setting button on the main interface, click Pump Head & Tube
button, enter Pump Head & Tube setting interface.
Click Pump Head and Tube drop-down menu, choose pump head and tube.
Reference flow rate display the minimum and maximum flow rate of the pump head and tube.

6、Suck-back Angle Setting Interface:
Suck-back angle setting interface as below:

Click the System Setting button on the main interface, click Suck-back Angle button, enter suck-back angle setting interface. Click Set Suck-back Angle button, the numerical keyboard will come out, input the suck-back angle and click ‘Confirm’ button, all the filling unit will work with this angle. Click ‘Cancel’ button back to the system setting interface.

7、Common Mode Interface:
Common Mode Interface as below:
Click **System Setting** button on the main interface, click **Common Mode** button, enter choose common mode interface.

- **Add Button**: Click this button to add one common mode, it can save 60 modes. Add mode interface as below, click button and input parameter.

- **Delete Button**: Choose one common button, click **Delete** button, it will ask whether delete, click ‘YES’, then you can delete this mode.

- **Empty Button**: Click this button, it will ask whether empty all, click ‘YES’, then empty all the common mode.

- **Confirm Button**: Choose one of the common mode, click ‘Confirm’ button, then it will back to the main interface. The filling parameter is same as the one
you chose from the common mode.

- **Cancel Button**: Click this button back to the system setting interface.
- **ADD/DEC.**: Click this button to check the previous and next page.

**8. Choose Effective Unit Interface:**

Choose effective unit interface as below:

![Effective Unit Interface Diagram]

Click the **System Setting** button on the main interface, click **Effective Unit** button, enter Effective Unit setting interface.

You can choose the effective filling unit freely, click pump head icon to make the relevant filling unit effective or noneffective. Effective pump head icon will have green shadow, as in the above picture No.1, No.2, No.3 and No.4. When noneffective do not have shadow.

This function can turn on or turn off one or several filling unit when it working, to meet different request of the filling channel. Click **Back** button, back to the system setting interface.

**9. Date and Time Setting Interface:**

Date and Time Setting Interface as below:
Click **System Setting** button on the main interface, click **Date and Time** button, enter date and time setting interface.

You can set the current date and time, it is displayed on the top right corner on the main interface.

Click **Set Date** button, the numerical keyboard come out, input the **Year**, setting year range is 1970-2099. After input the year, click confirm to set the month and day.

Click **Set Time** button, the numerical keyboard come out, input the hour, minute and second.

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**Filling Volume Reference Parameter (media is water)**

<table>
<thead>
<tr>
<th>Controller</th>
<th>Pump Head</th>
<th>Tube</th>
<th>Filling Volume</th>
<th>Filling Time</th>
<th>Filling Precision</th>
<th>Output (pcs/min)</th>
<th>Speed (rpm)</th>
</tr>
</thead>
</table>

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### DF600 Technical Specification

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Filling Volume Range</td>
<td>0.1-9999.99ml</td>
<td>Wash Tube Speed</td>
<td>400rpm</td>
<td></td>
</tr>
<tr>
<td>Filling Time Range</td>
<td>0.5-9999.99s</td>
<td>External Control</td>
<td>Start/Stop signal</td>
<td></td>
</tr>
<tr>
<td>Pause Time Range</td>
<td>0.5-9999.99s</td>
<td>Power Consumption</td>
<td>&lt;200W</td>
<td></td>
</tr>
<tr>
<td>Filling Volume</td>
<td>0.01ml</td>
<td>Temperature</td>
<td>0-40℃</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>Time Resolution</td>
<td>Relative Humidity</td>
<td>&lt;80%</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Filling Numbers Range</td>
<td>1-9999, 0 is unlimited.</td>
<td>Dimension (L<em>W</em>H)</td>
<td>706<em>250</em>186 mm</td>
<td></td>
</tr>
<tr>
<td>Motor Speed Range</td>
<td>1-600rpm</td>
<td>Weight</td>
<td>21.8Kg</td>
<td></td>
</tr>
<tr>
<td>Suck-back Angle</td>
<td>0-360°</td>
<td>Protection Level</td>
<td>IP31</td>
<td></td>
</tr>
</tbody>
</table>

**DF600 Function and Features:**

- It can load different pump head: YZ1515x, YZ2515x, DZ25-3L.
- Accurate angle control technology, high precision filling.
- Color touch screen control, friendly interface, dynamic display filling state, also display the filling parameter and system setting.
- Intelligent calibration function, you can calibrate the filling volume before production, to ensure the filling accuracy.
- Online micro adjustment function, you can micro adjust the filling volume during production. It can avoid the filling errors because of tubing fatigue and elasticity decreased.
- Can extend filling volume on one controller, to save cost.
- Real-time monitor, dynamic display monitor results, also have alarm function, ensure produce safely.
- Effective unit setting, you can start or stop one or several of the filling units during production.
- Can save 60 common filling modes, save setting times, improve working efficiency.
- Suck-back angle setting, avoid liquid drop off when the pump stop working.
- External control start and stop.
Each channel receive missing bottle stop signal separately, to make the single channel can stop when missing bottles.

Fast filling liquid function, not only can wash the tubing, but also can fill liquid in the tubing.

304 stainless steel housing, resist corrosion, no rust, conform to GMP sanitary request.

**Product Dimension:**

![Diagram of the product]

**Filling Unit No Bottle Stop Filling Signal Interface Instruction**

The 5 pin aviation plug port on the back of filling unit, the Port B--External control input port.
This signal is opto-isolated signals, as in the above picture, when the optocoupler turns on, the no bottle stop filling signal is active. Now: the filling unit do not working. when optocoupler off, the filling unit normal working.

**Pin 1 (read wire) Signal:** Filling unit no bottle stop filling signal wire, high level active.

- Signal connect 5V, R is 0.
- Signal connect 12V, R is 1KΩ, large than 1/8W resistance.
- Signal connect 24V, R is 2KΩ, large than 1/8W resistance.

**Pin 5 (black wire) Com:** External control common port

**Controller External Control Interface Instruction:**

The green terminal on the back of the controller is the external control interface, as show in the below picture:
a. **Interior +5VDC output**

b. **External control direction, start/stop signal input port:** Active signal input (24 VDC)

If need change to 5VDC or 12VDC input, please open the controller housing, and change the jumper connection on the external control board as below:

The signal recognition is rising edge effective, the minimum duration of the high level is 200ms.
GD2: The common port of the external control signal input.

NC: External stop signal input (signal rising edge effective).

CW/CCW: External emptying signal input (signal rising edge effective).

R/S 2: External start signal input (signal rising edge effective).

c. **External control start/stop signal input port:** Passive signal input

   Can connect switch between R/S 1 and GD1, the signal is effective when
   the momentary of the switch closure, start filling.

   **Filling Status Output:**

   External connect relays diagram as below:
When the pump filling, the relays closure;
when the pump stop filling, the relays disconnect.
Maintenance

When pump is not working, please loose the cartridges of pressing the tubing for avoiding changing the shape of tubing because of longtime extrusion. Keep the rollers of pump head clean and dry, otherwise it can quicken the tubing wearing, reduce the useful life of tubing and lead the rollers to damage in earlier. Pump head can not resist super corrosive liquid. Please pay attention to it when it is using. Keep the rollers of pump head clean and dry. If the surface of rollers is not clean, it can quicken the tubing wearing, and reduce the useful life of tubing. If liquid were on the rollers, please dry it. Longtime moisture can damage the rollers.

Warranty and After Sales Service

Products have 3 years warranty (not including tubing). In the warranty, the products are damaged because of users’ wrong operation or other human damages, our company do not responsibility for warranty. Beyond the warranty, we only charge the cost of maintenance. Refer to all maintenance including in and beyond the warranty, we do not bear any freight charges because of maintenance.
MADE IN CHINA

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