

SS-S1

Standard Swing-arm Robot

User Manual

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Version : VER.A(English)



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1. Safety Warning and System Installation



For the safety content of this manual, use the following logo. The content of this job safety logo is very important, so please follow it.

Note:

Moderate or monitor injuries and equipment damage due to failure to operate as required.

1.1 Precautions for Storage and Transport

Note: Do not store or place in the following environment, as this may result in fire, electric shock or damage to the machine.

- 1) A place where direct sunlight is emitted, a place where the ambient temperature exceeds the storage temperature condition, a place where the temperature difference is large, and condensation occurs.
- 2) Places close to corrosive gases, flammable gases, dust, salt and metal dust, places where water oil and chemicals drip, vibration or impact can be transmitted to the main body, do not hold the line carry the cable, otherwise it will cause damage or malfunction.
- 3) Do not stack the product too much together, as this may result in damage or malfunction.

1.2 General Considerations

Attention:

- 1) This product is a general industrial product and is not intended for use by machines and systems that are life-threatening.
- 2) If it is applied to a device that may cause a major accident or loss due to the failure of this products, please equip it with a safety device.
- 3) If it is used in a high concentration of sulfur or sulphuric gas, please be aware that the chip may be broken due to vulcanization or contact failure may occur.

- 4) If you input a voltage that is far beyond the rated range of the power supply of this product, it may cause smoke or fire due to damage of internal components. Please pay attention to the input voltage.
- 5) Please note that this product cannot be used beyond the scope of product specifications.
- 6) The company is committed to continuous improvement of its products and may change some parts.

1.3 Disabled Matter

Do not dismantle and repair work except our company personnel.

1.4 Precautions when Discarding



Note! When the product needs to be disposed of as water after normal use, please follow the legal requirements of the relevant department for the recycling and reuse of electronic information products.

1.5 System Information

- 1) Wiring work must be carried out by a professional electrician.
- 2) Confirm that the power is off before starting the job.
- 3) Install it on flame retardant such as metal and keep it away from combustibles.
- 4) It must be grounded safely when in use.
- 5) If the external power supply is abnormal, the control system will malfunction. In order to make the whole system work safely, be sure to set the safety circuit outside the control system.
- 6) Before installation, wiring, operation, maintenance, you must be familiar with the contents of this manual; you must also be familiar with the relevant machinery, electronic knowledge and all relevant safety precautions.
- 7) The electrical box in which the controller is installed shall be in a condition of good ventilation, oil and dust. If the electric box is sealed, the temperature of the controller will be too high, which will affect the normal

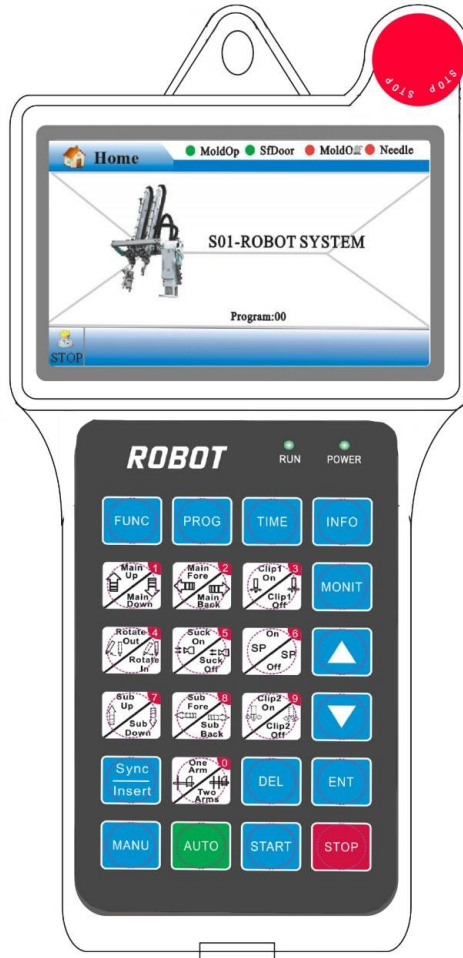
operation. A fan must be installed. The suitable temperature in the electric box is below 50°C. Disable it in condensation or freezing place.

- 8) The controller should be installed as close as possible to the AC accessories such as contractors and transformations to avoid unnecessary electromagnetic interference.

Note: Improper handling can cause danger, including personal injury or equipment accidents, etc.

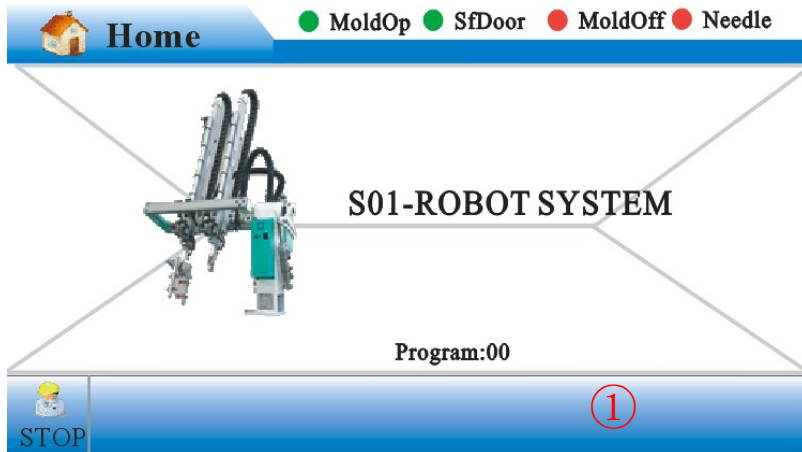
2. Operating Instructions

2.1 Appearance and Description



2.2 Standby Stop State

The system is powered on: with the upLmt, screw-in limit or screw-out limit, and no emergency stop button pressed, the system enters the normal standby main screen:




① This column is the status and alarm column, which is normally blue.

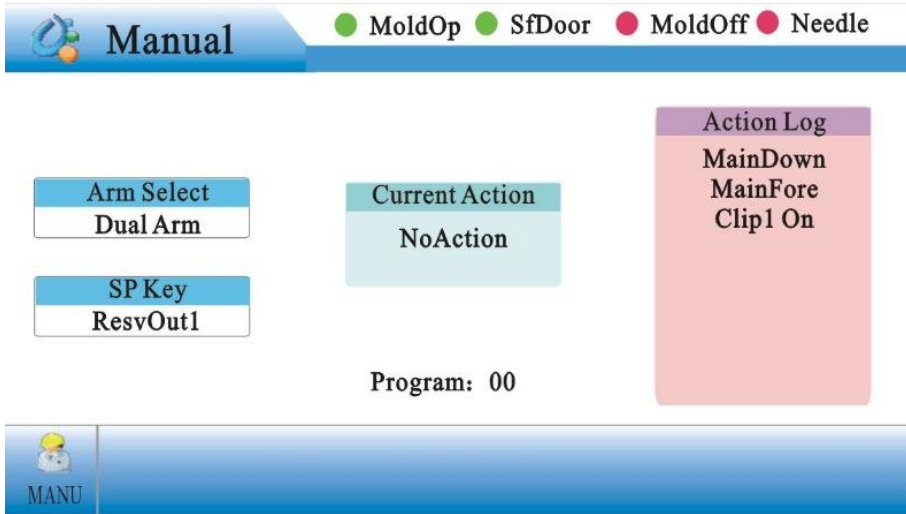
Prompt: It is in the yellow state, and a prompt message will appear at the same time.

Alarm: The alarm light will flash, and a red alarm message will appear at the same time.

Note: In any screen state, if you press  the button, it will return to this state screen.


2.3 Instructions for Manual Operation

After pressing  the button, the manual screen will be displayed, and manual operation can be performed. Prate each single action of the robot , and adjust each part of the machine. (In the screw-in state, when the operation is lowered, the mould opening completion signal can be completed, and make sure not to touch the mould).





1) Left column menu:




Sub up key: press the  button to switch single arm and double arm operation.




Reserved selection: it can press the   button to select the reversed IO output point to be used.

- 2) Current Action: Display the current action of the operation.
- 3) Action record: record the historical actions operated, and display the most recent 6 actions at most.
- 4) The description of each operation button is as follows:



 Main up/Main down action, press it again, the action will be reversed.



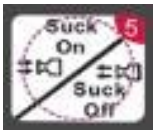
 Main Fore/Main Back action, press it again, the action will be reversed.



Clip 1 On/Off action, press it again, the action will be reversed.



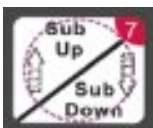
The machine rotates out/in action, press it again, the action will be reversed.



Suck on/off action, press it again, the action will be reversed.



Reserve on/off action, press it again, the action will be reversed.



Sub up/down action, press it again, the action will be reversed.



Sub Fore/Back action, press it again, the action will be reversed.



Clip 2 On/Off action, press it again, the action will be reversed.

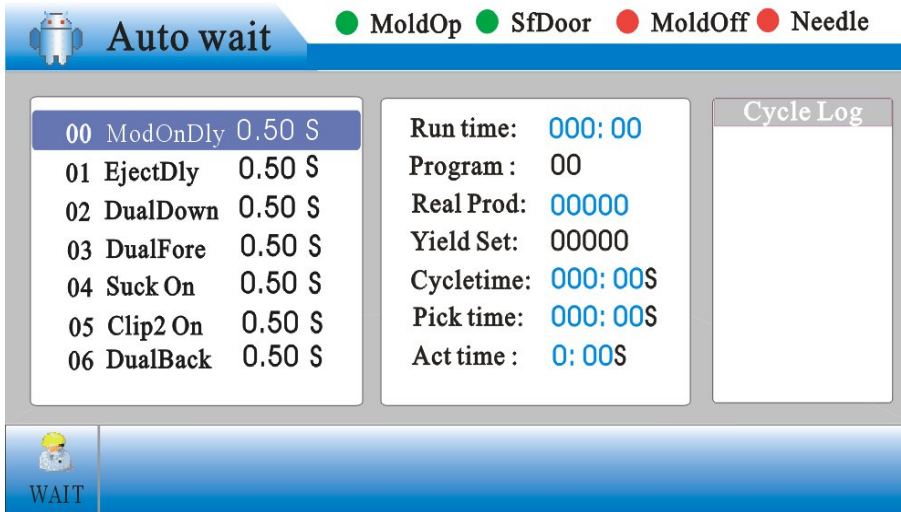


One-arm and two-arm switching action.

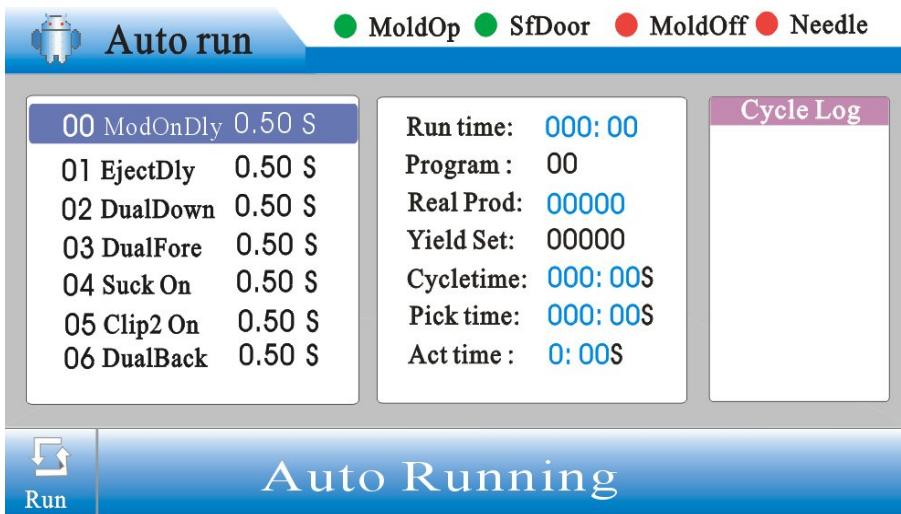
2.4 Operation Instructions in Automatic State



When the robot does not have any alarms and prompts, press the button to enter the automatic waiting screen, which is displayed as follows:



In the automatic waiting state, press  the button to enter the automatic running state. The display is as follows:



- 1) Left column menu: Current Action: The currently executed action.
- 2) Middle menu:
 - Running time: The time for automatic running from the start of pressing Auto will be cleared after each start of Auto.
 - Current program: the program number used in automatic operation.
 - Current Finished Product: Quantity actually completed.

Set output: Expected set production quantity. When the current output reaches the set output, it will alarm.

Cycle time: record the time used for one cycle of the current automatic cycle.

Retrieval time: record the time of retrieval in the mould.



Action time: the actual time used by the current action.

3) Right column menu:

Cycle record: record the historical cycle time in automatic operation state.

2.5 Functional Operation Instructions

2.5.1 Function Settings

Press  the button to enter the function selection page, press the up/down cursor keys to move to each function setting item, and then press  the button to enter the modification, if you need to enter a number, directly enter the number key. Then press enter to save. After the change is completed, press the stop key to return.

1) Language: Choose Chinese or English to display

2) Ejector control:

Disable: When the injection moulding machine is finished, the robotic arm and the ejector of the moulding machine move at the same time.

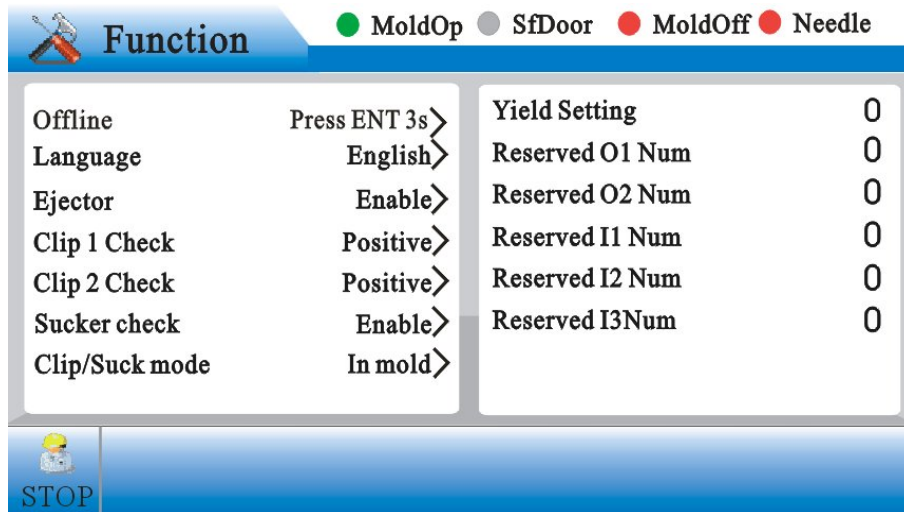
Use: After the robot arm is lowered, the ejection action of the moulding machine is allowed only when the object is ready to be picked up.

3) Main clip detection:

Positive phase: When the clip switch is detected in positive phase, when the clip is successfully operated, the fixture switch signal is ON.

Reverse phase: When the clip switch is detected in reverse phase. When the clip is successfully operated, the fixture switch signal is OFF.

Disable: The clip switch is not detected, and the confirmation switch signal detection is not performed regardless of whether the clip is successful or not during automatic operation.



4) Sub clip detection:

Same as Main clip detection.

5) Sucker detection:

Disable: The vacuum switch signal is not detected during automatic operation.

Use: In automatic operation, the vacuum suction cup is successful, and the switch signal is confirmed to be ON.

6) Clip/Suck mode detection:

In mould: In the automatic operation state, only the clip signal is detected in the mould.

The whole process: In the automatic operation state, the clip signal is detected in the whole process.

7) Yield setting:

Set the number of products to run automatically. When this number is reached, the robot will alarm and stop automatically.

8) Reserve O1, O2 modulus:


Set 00 to not use, if set the value, the reserved valve output will act as interval modulo according to the value.

9) Reserve I1, 12,13 modulus:


Set 00 as Disable, if set the value, the reserved input point will be set as the interval modulo valid according to the value.

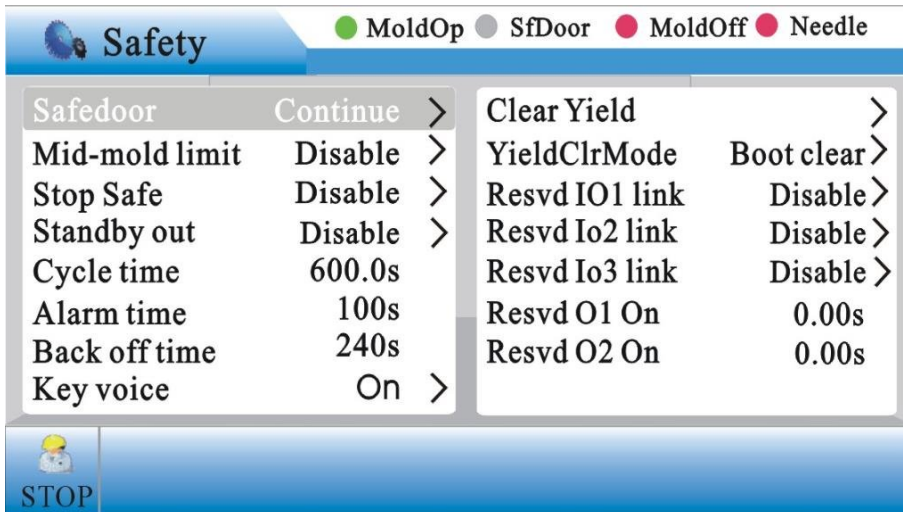
2.5.2 Security Settings



In the standby page, press  the button twice to enter the password page,



enter**** and then press  the button to enter the security setting function page. Press the up/down cursor keys to move to each function setting item.



1) Safedoor:

Disable: The safedoor signal is not detected.

Continue: When the robot is running automatically, after an alarm occurs, press the safety door once will continue to run.

Reset: When the robot is running automatically, after an alarm occurs, press the safety door once will reset.

2) Mid-mould limit:

Disable: The mid-mould limit signal is not detected.

Use: When the robot drops in the mould, it will detect the mid-mould limit signal in the injection machine.

3) Stop Safe:

Disable: The robot outputs the MouldOff safety and MouldOff signals in the stop-standby state.

Use: The robot doesn't output the MouldOff safety and MouldOff signals in the stop-standby state. The robot can only output these two signals after pressing safedoor once.

4) Standby out:

Disable: During automatic operation, the robot waits on the screw-in side and operates according to the module program.

Use: During automatic operation, the robot waits on the screw-out side. After the mould opening of the injection moulding machine is completed, the machine is screwed in, and then the module is executed.

5) Cycle time: Robot action monitoring time. After the manipulator action is completed, wait for the injection moulding machine to output no mould open signal signal again. If the time exceeds the period set value, it will alarm.

6) Alarm time:

Set the alarm time, when the time expires, the alarm will be stopped, but the alarm screen will remain.

7) Back off time:

Set the time to turn off the screen and start timing without any operation. The minimum value is 15S.

8) Key voice:

Off: No key tone when key s pressed.

On: There is a key tone when you press a key.

9) Clear Yield:

Press the input key in this menu, the value displayed by the current output will be cleared to zero, and the count will be restarted after entering automatic.

Disable: When the unloader descends to pick up the object, it will detect the safety door signal of the ejector.

10) Yield Clear Mode:

Auto clear: The output starts counting from 0 each time the automatic key is pressed to enter the automatic state.

Boot clear: The output is reset at each boot, and the auto key is pressed to accumulate.

11) Reserved IO link:

Positive: The input corresponding to the reserved IO output is positive detection. If the reserved signal is output during automatic operation, the corresponding reserved input signal is required to be on, otherwise it will alarm.

Negative: The input corresponding to the reserved IO output is negative detection. If the reserved signal is output during automatic operation, the corresponding reserved input signal is required to be off, otherwise it will alarm.

Disable: After the output is reserved, it is not necessary to detect the corresponding reserved input limit signal.

12) Reserved output time:

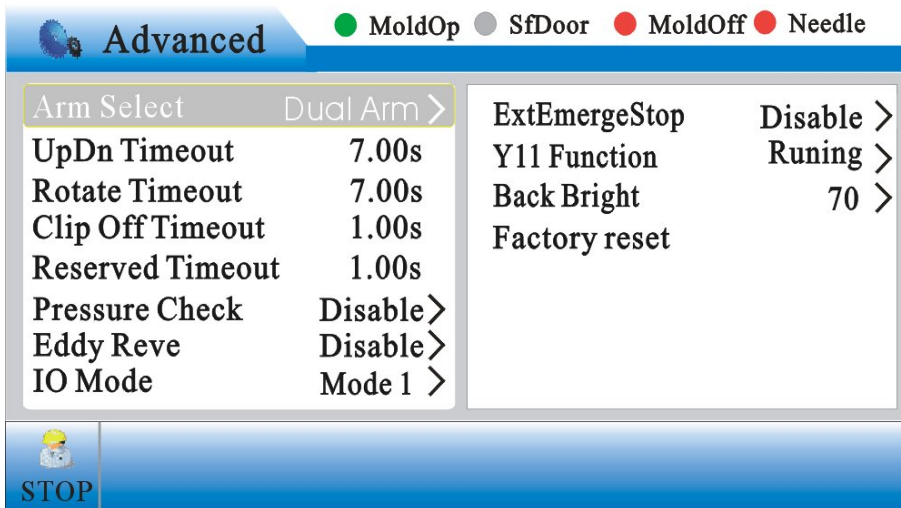
When the 11th item above is set to positive or negative phase, signal detection time will be delayed accordingly.

2.5.3 Advanced Settings

In the standby page, press  the key twice to enter the password

page, enter ****and then press  the key to enter the advanced

setting function page, you can press the up/down cursor keys to move to each function setting item.



1) Arm Select

Single Arm: Set the standard motion program as the signal arm program.

Dual Arm: Set the standard motion program as the dual arm program.

2) Up/Down Timeout

Modify the input time of the rising limit sensing signal when the arm rises and falls, and an alarm will be issued if the time exceeds this time.

3) Rotate Timeout

When modifying the arm screw in and out, the input time of the sensor signal of the screw in and out limit is modified, and an alarm will be issued if the time exceeds this time.

4) Clip Off Timeout

When modifying the clamp suction action, the input time of the clamp limit suction limit signals will alarm when the time exceeds this time.

5) Reserved Timeout

When modifying the reserved action, the input time of the reserved limit signal will alarmed when the exceeds this time.

6) Manual Mould Closing

Use: In teaching program, it is necessary to edit mould closing action manually.

Disable: In teaching program, it is unnecessary to edit mould closing action manually. The system is customized to output the mould closing action after the arm is raised in the screw in state.

7) Back Bright Setting

Adjust the brightness of the display.

8) Factory Reset

When the cursor moves to this state, enter the number key ***** and then press the enter key, this is, the system is reset.

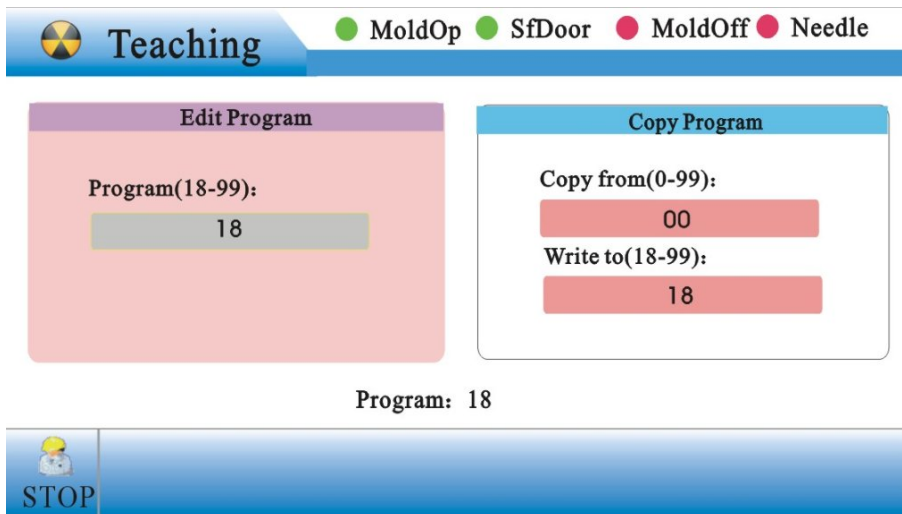
9) Air Pressure Detection

Set whether the user uses the air pressure detection function.

2.5.4 Program Teaching and Selection



In the standby page, press the key twice to enter the program teaching page.



- 1) Move the cursor to the edit program column, enter the program to be edited, and press the Enter key to enter the following screen:

ProgEdit ● MoldOp ● SfDoor ● MoldOff ● Needle

Arm Select Main	00 ModOnDly 0.50 s	Action Log MainDown MainFore Clip1 On
SP Key ResvOut1	01 EjectDly 0.50 s	
	02 NoAction 0.50 s	

Program: 18

Tip: 'FUNC' key to change reserved
PROG

Operation: In the non-action column, you can directly press the action key to input the action, then press the input key to output the current action, and at the same time move the cursor to the next column.

Press the time key: the cursor can be moved to the time column to modify the time.

Press the function key: move the cursor to the left menu bar, then press the single and double arms selection keys to select the single and double arms mode, and press the cursor up and down keys to select the reserved out point.

- 2) Move the cursor to the copy program column, enter the program to be copied and edited, and press the Enter key to enter the following screen:

ProgEdit ● MoldOp ● SfDoor ● MoldOff ● Needle

Arm Select Main	00 ModOnDly 0.50 s	Action Log MainDown MainFore Clip1 On
SP Key ResvOut1	01 EjectDly 0.50 s	
	02 NoAction 0.50 s	

Program: 18

Tip: 'FUNC' key to change reserved
PROG

You can refer to the standard action program (group 0-17), read in the program group 0-99, and then change the program content and store it in the the group 18-99.

In the teaching step sequence area, you can press the up/down key to modify the action in each step sequence. After the modification is completed, press the input key to save the current modified action.

After the same time, the robot arm executes the action and jumps to the next step sequence. Let the operator understand the content of the program action.

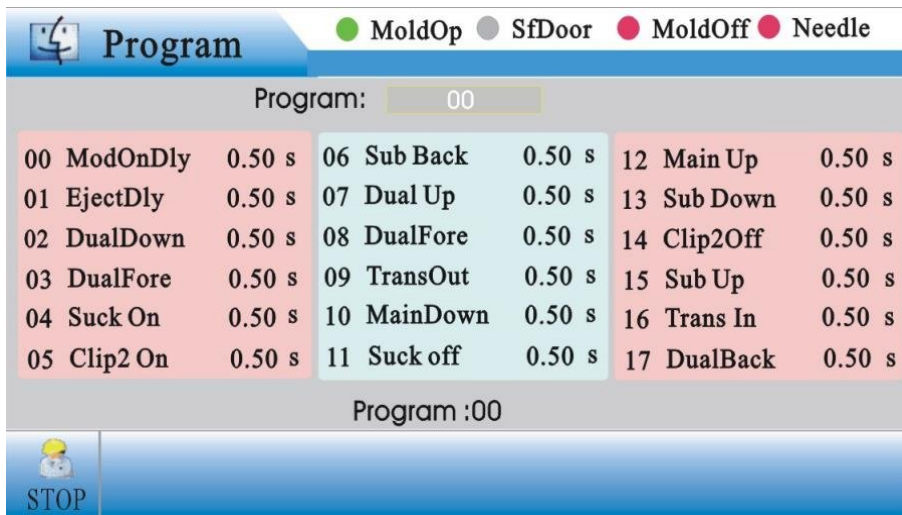


Insert a line of no action instruction in the teaching.

Delete a line of action instructions in teaching.




- 3) Under the standby page, press the button once to enter the program selection page.



After inputting the program to be selected, press the input key to call up the action flow of the current program. Automatic operation is to run with the currently selected program number.

2.5.5 Time



In the standby page or in the automatic operation state, press  the button to enter the time modification page.




On this page, you can press the up and down cursor keys to move to the time position to be modified, input the value and then press the Enter key to complete the time modification.

Note 1: The time after the step sequence action is the delay time of executing the action, and the current step sequence action will be executed when the delay time expires.

Note 2: If the current step sequence action is switch confirmation, the action time is also counted. If the actual action time exceeds the time limit, after the timing is completed, the next step sequence action can be continued after the action switch is confirmed.



Press  the button, and the 04 column state as shown above will appear. It means that the vacuum suction and the jib clamp are output at the same time. There is no delay time.

2.5.6 I/O Monitor



In stand-by or auto page, press key to enter into the I/O monitor page.

Monitor		● MoldOp	● SfDoor	● MoldOff	● Needle
Input		Output			
X01 MainUp	●	X09 ResvI1	●	Y01 MainDn	●
X02 MainNp	●	X10 ResvI2	●	Y02 MnFore	●
X03 VacLmt	●	X11 ResvI3	●	Y03 Clip 1	●
X04 EddyIn	●	X12 MidMod	●	Y04 RotaIn	●
X05 EddyOt	●	Auto	●	Y05 RotaOt	●
X06 Sub Up	●	Stop	●	Y06 Sucker	●
X07 Sub Np	●			Y07 SubDn	●
X08 Press	●			Y08 SbFore	●
				Y09 Clip 2	●
				Y10 ResvO1	●
				Y11 ResvO2	●
				Y12 Alarm	●
				Recycle	●
				OpMldEn	●
				Needle	●
				MoldOff	●

STOP

2.5.7 Information




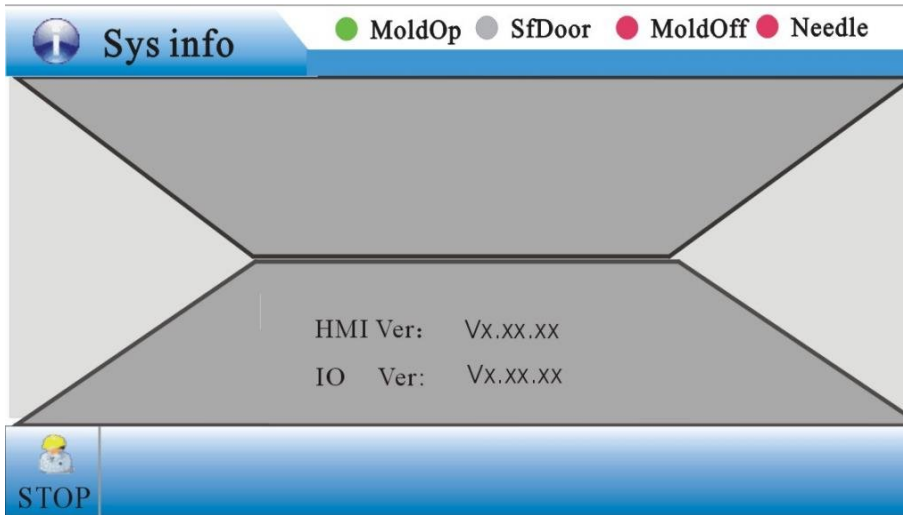
- 1) In any state, press the key to enter the alarm record screen, the screen is as follows:

Alarm log		● MoldOp	● SfDoor	● MoldOff	● Needle
No..	Falut				
01	Fault [46]	X11 ON, ResvdO3 on status but ResvdI3 exists			
02	Fault [49]	X11 ON, ResvdO3 on action overtime			
03	Fault [40]	X10 ON, ResvdO2 on status but ResvdI2 exists			


STOP


This page records the latest 7 alarm records, which is convenient for users to check the machine.

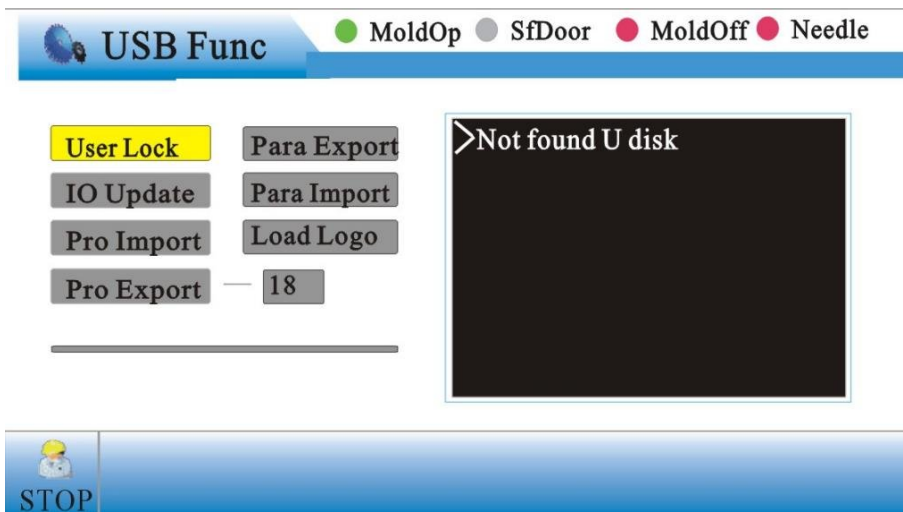
- 2) In any state, press  the button twice to enter the system information screen, the screen is as follows:



2.5.8 User Information Update

In the standby page, press  the button twice to enter the password page,

enter **** and then press  the button to enter the USB setting function page.



After inserting the USB, the system will detect the USB, then move the cursor to

the selected position, and press  the button to perform the corresponding operation.

3. Standard Action Programs

3.1 One-Arm Program

Program 0: Clip1 On

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 MainFore ⇨ 04 Clip1 On
⇨ 05 MainBack ⇨ 06 Main Up ⇨ 07 TransOut ⇨ 08 MainDown ⇨ 09 Clip1Off
⇨ 10 Main Up ⇨ 11 Trans In

Program 1: Clip1 On

00 MainFore ⇨ 01 ModOnDly ⇨ 02 EjectDly ⇨ 03 MainDown ⇨ 04 MainBack
⇨ 05 Clip1 On ⇨ 06 MainFore ⇨ 07 Main Up ⇨ 08 TransOut ⇨ 09 MainDown
⇨ 10 Clip1Off ⇨ 11 Main Up ⇨ 12 Trans In

Program 2: Clip1 On

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 Clip1 On ⇨ 04 MainFore
⇨ 05 Main Up ⇨ 06 MainBack ⇨ 07 TransOut ⇨ 08 MainDown ⇨ 09 Clip1Off
⇨ 10 Main Up ⇨ 11 Trans In

Program 3: Clip1 On

00 MainFore ⇨ 01 ModOnDly ⇨ 02 EjectDly ⇨ 03 MainDown ⇨ 04 Clip1 On
⇨ 05 MainBack ⇨ 06 Main Up ⇨ 07 MainFore ⇨ 08 TransOut ⇨ 09 MainDown
⇨ 10 Clip1Off ⇨ 11 Main Up ⇨ 12 Trans In

Program 4: Main Arm Suction

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 MainFore ⇨ 04 Suck On
⇨ 05 MainBack ⇨ 06 Main Up ⇨ 07 TransOut ⇨ 08 MainDown ⇨ 09 Suck Off
⇨ 10 Main Up ⇨ 11 Trans In

Program 5: Main Arm Clamping Suction

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 MainFore ⇨ 04 Suck On
⇨ 05 Clip1 On ⇨ 06 MainBack ⇨ 07 Main Up ⇨ 08 TransOut ⇨ 09 MainDown
⇨ 10 Suck Off ⇨ 11 Main Up ⇨ 12 MainDown ⇨ 13 Clip1Off ⇨ 14 Main Up
⇨ 15 Trans In

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 MainFore ⇨ 04 Clip1 On
 ⇨ 05 MainBack ⇨ 06 Clip1Off ⇨ 07 Main Up

Program 7 : In-mold placement

00 MainFore ⇨ 01 ModOnDly ⇨ 02 EjectDly ⇨ 03 MainDown ⇨ 04 MainBack
 ⇨ 05 Clip1 On ⇨ 06 MainFore ⇨ 07 Clip1Off ⇨ 08 Main boom up

3.2 Two-Arms Program

Arms:

Program 0: Main arm suction Clip2 On

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 DualDown ⇨ 03 DualFore ⇨ 04 Suck On
 ⇨ 05 Clip2 On ⇨ 06 DualBack ⇨ 07 Dual Up ⇨ 08 DualFore ⇨ 09 TransOut
 ⇨ 10 MainDown ⇨ 11 Suck Off ⇨ 12 Main Up ⇨ 13 Sub Down ⇨ 14 Clip2Off
 ⇨ 15 Sub Up ⇨ 16 Trans In ⇨ 17 DualBack

Program 1: Clip1 On Clip2 On

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 DualDown ⇨ 03 DualFore ⇨ 04 DualClip
 ⇨ 05 DualBack ⇨ 06 Dual Up ⇨ 07 DualFore ⇨ 08 TransOut ⇨ 09 MainDown
 ⇨ 10 Clip1Off ⇨ 11 Main Up ⇨ 12 Sub Down ⇨ 14 Clip2Off ⇨ 15 Sub Up
 ⇨ 16 Trans In ⇨ 17 DualBack

Single Arm:

Program 2: Clip1 On

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 MainFore ⇨ 04 Clip1 On
 ⇨ 05 MainBack ⇨ 06 Main Up ⇨ 07 TransOut ⇨ 08 MainDown ⇨ 09 Clip1Off
 ⇨ 10 Main Up ⇨ 11 Trans In

Program 3: Clip1 On

00 MainFore ⇨ 01 ModOnDly ⇨ 02 EjectDly ⇨ 03 MainDown ⇨ 04 MainBack
 ⇨ 05 Clip1 On ⇨ 06 MainFore ⇨ 07 Main Up ⇨ 08 TransOut ⇨ 09 MainDown
 ⇨ 10 Clip1Off ⇨ 11 Main Up ⇨ 12 Trans In

Program 4: Clip1 On

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 Clip1 On ⇨ 04 Main arm
 ⇨ 05 Main Up ⇨ 06 MainBack ⇨ 07 TransOut ⇨ 08 MainDown ⇨ 09 Clip1Off
 ⇨ 10 Main Up ⇨ 11 Trans In

Program 5: Clip1 On

00 MainFore ⇨ 01 ModOnDly ⇨ 02 EjectDly ⇨ 03 MainDown ⇨ 04 Clip1 On
⇨ 05 MainBack ⇨ 06 Main Up ⇨ 07 Main arm ⇨ 08 TransOut ⇨ 09 MainDown
⇨ 10 Clip1Off ⇨ 11 Main Up ⇨ 12 Trans In

Program 6: Main Arm Suction

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 MainFore ⇨ 04 Suck On
⇨ 05 MainBack ⇨ 06 Main Up ⇨ 07 TransOut ⇨ 08 MainDown ⇨ 09 Suck On
⇨ 10 Main Up ⇨ 11 Trans In

Program 7 : Main Arm Clamping Suction

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 MainFore ⇨ 04 Suck On
⇨ 05 Clip1 On ⇨ 06 MainBack ⇨ 07 Main Up ⇨ 08 TransOut ⇨ 09 MainDown
⇨ 10 Suck On ⇨ 11 Main Up ⇨ 12 MainDown ⇨ 13 Clip1Off ⇨ 14 Main Up
⇨ 15 Trans In

Program 8: Put the main arm into the mold

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 MainDown ⇨ 03 MainFore ⇨ 04 Clip1 On
⇨ 05 MainBack ⇨ 06 Clip1Off ⇨ 07 Main Up

Program 9: Put the main arm into the mold

00 MainFore ⇨ 01 ModOnDly ⇨ 02 EjectDly ⇨ 03 MainDown ⇨ 04 MainBack
⇨ 05 Clip1 On ⇨ 06 MainFore ⇨ 07 Clip1Off ⇨ 08 Main Up

Secondary Arm:

Program 10: Clip2 On

00 Sub Fore ⇨ 01 ModOnDly ⇨ 02 EjectDly ⇨ 03 Sub Down ⇨ 04 Sub Back
⇨ 05 Clip2 On ⇨ 06 Sub Fore ⇨ 07 Sub Up ⇨ 08 TransOut ⇨ 09 Sub Down
⇨ 10 Clip2Off ⇨ 11 Sub Up ⇨ 12 Trans In

Program 11: Clip2 On

00 ModOnDly ⇨ 01 EjectDly ⇨ 02 Sub Down ⇨ 03 Sub Fore ⇨ 04 Clip2 On
⇨ 05 Sub Back ⇨ 06 Sub Up ⇨ 07 TransOut ⇨ 08 Sub Down ⇨ 09 Clip2Off
⇨ 10 Sub Up ⇨ 11 Trans In

Program 12: Clip2 On

00 Sub Fore ⇨01 ModOnDly ⇨02 EjectDly ⇨03 Sub Down ⇨04 Clip2 On
⇨05 Sub Back ⇨06 Sub Up ⇨07 Sub Fore ⇨08 TransOut ⇨09 Sub Down
⇨10 Clip2Off ⇨11 Sub Up ⇨12 Trans In

Program 13: Clip2 On

00 ModOnDly ⇨01 EjectDly ⇨02 Sub Down ⇨03 Jib clamp ⇨04 Sub Fore
⇨05 Sub Up ⇨06 Sub Back ⇨07 TransOut ⇨08 Sub Down ⇨09 Clip2Off
⇨10 Sub Up ⇨11 Trans In

Program 14: Put the jib into the mold

00 Sub Fore ⇨01 ModOnDly ⇨02 EjectDly ⇨03 Sub Down ⇨04 Sub Back
⇨05 Clip2 On ⇨06 Sub Fore ⇨07 Clip2Off ⇨08 Sub Up

Program 15: Put the jib into the mold

00 ModOnDly ⇨01 EjectDly ⇨02 Sub Down ⇨03 Sub Fore ⇨04 Clip2 On
⇨05 Sub Back ⇨06 Clip2Off ⇨07 Sub Up

Program 16: Main Boom Clamp Jib Clamp

00 ModOnDly ⇨01 EjectDly ⇨02 DualDown ⇨03 DualFore ⇨04 Suck On
⇨05 Clip2 On ⇨06 DualBack ⇨07 Dual Up ⇨08 DualFore ⇨09 TransOut
⇨10 DualDown ⇨11 Suck Off ⇨12 Clip2Off ⇨13 Dual Up ⇨14 Trans In
⇨15 DualBack

Program 17: Main Boom Clamp Jib Clamp

00 ModOnDly ⇨01 EjectDly ⇨02 DualDown ⇨03 DualFore ⇨04 DualClip
⇨05 DualBack ⇨06 Dual Up ⇨07 DualFore ⇨08 TransOut ⇨09 DualDown
⇨10 DuClipOf ⇨11 Dual Up ⇨12 Trans In ⇨13 DualBack

4. Fault Alarm and Troubleshooting

Error number	Error content	Solution
Fault [01]	Emergency stop signal OFF events	1.Check if emergency button pressed.
		2.Check cables.
		3.Unscrew the emergency stop switch and press the stop key to cancel the alarm.
Fault [02]	X01 OFF, main up status but limit loss	1.Check if main is up status.
		2.Check main up limit.
		3.Check signal connections, press the stop key.
Fault[03]	X01 OFF, main rise action overtime	1.Check if main is up status.
		2.Check main up limit.
		3.Check signal connections, press the stop key.
Fault[04]	The main upper limit of X01 is ON< and the main upper limit signal is present in the descending state of the main arm	1.Check whether the main boom is descending.
		2.Check whether the main upper limit signal is normal.
		3.After checking whether the signal connection line is correct, press the stop key to cancel the alarm.
Fault[05]	X01 ON, main down status but up limit exists	1.Check if main is down status.
		2.Check main up limit.
		3.Check signal connection, press the stop key.
Fault[06]	X02 Main nip OFF, main nip state no Main Nip Limit	1.Check main nip things.
		2.Check main nip limit is OK.
		3.Main nip setup is right.
		4.Check the connection.
Fault[07]	X02 Main nip OFF, main nip action overtime	1.Check main nip things.
		2.Check main nip limit is OK.
		3.Main nip setup is right.
		4.Check the connection.
Fault[08]	X02 Main nip ON, main nip state has main nip limit	1.Check main nip things.
		2.Check main nip limit is OK.
		3.Main nip setup is right.

		4.Check the connection.
Fault[09]	X02 main nip ON, main nip action overtime	1.Check main nip things.
		2.Check main nip limit is OK.
		3.Main nip setup is right.
		4.Check the connection.
Fault[10]	X02 main nip ON, main put state has main nip limit signal	1.Check main nip things.
		2.Check main nip limit is OK.
		3.Main nip setup is right.
		4.Check the connection.
Fault[11]	X02 main nip ON, main put action overtime	1.Check main nip things.
		2.Check main nip limit is OK.
		3.Main nip setup is right.
		4.Check the connection.
Fault[12]	X03 OFF, suction on status but limit loss	1.Check if product is sucked.
		2.Check suction limit.
		3.Check suction setting.
		4.Check signal connection.
Fault[13]	X03 OFF, suction on action overtime	1.Check if product is sucked.
		2.Check suction limit.
		3.Check suction setting.
		4.Check signal connection.
Fault[14]	X03 ON, suction off status but limit exists	1.Check if product is sucked.
		2.Check suction limit.
		3.Check suction setting.
		4.Check signal connection.
Fault[15]	X03 ON, suction off action overtime	1.Check if product is sucked.
		2.Check suction limit.
		3.Check suction setting.
		4.Check signal connection.
Fault[16]	X04 OFF, rotate in status but limit loss	1.Check rotate in status.
		2.Check rotate in limit.
		3.Check signal connection, press the stop key.
Fault[17]	X04 OFF, rotate in action overtime	1.Check rotate in status.

		2.Check rotate in limit.
		3.Check signal connection, press the stop key.
Fault[18]	X04 ON, rotate out status but in limit exist	1.Check rotate out status.
		2.Check rotate in limit.
		3.Check signal connection, press the stop key.
Fault[19]	X05 OFF, rotate out status but limit loss	1.Check rotate out status.
		2.Check rotate in limit.
		3.Check signal connection, press the stop key.
Fault[20]	X05 OFF, rotate out action overtime	1.Check rotate out status.
		2.Check rotate in limit.
		3.Check signal connection, press the stop key.
Fault[21]	X05 ON, rotate in status but out limit exists	1.Check rotate in status.
		2.Check rotate out limit.
		3.Check signal connection, press the stop key.
Fault[22]	X06 OFF, sub up status but limit signal loss	1.Check if sub is up status.
		2.Check sub up limit.
		3.Check signal connection, press the stop key.
Fault[23]	X06 OFF, sub up action overtime	1.Check if sub is up status.
		2.Check sub up limit.
		3.Check signal connection, press the stop key.
Fault[24]	X06 ON, sub down status but up limit exists	1.Check if sub is down status.
		2.Check sub up limit.
		3.Check signal connection, press the stop key.
Fault[25]	X06 ON, sub fall action overtime	1.Check sub is down.
		2.Check sub up limit is OK.
		3.Check signal connection, press the stop key.
Fault[26]	X06 OFF, clip 2 on status but limit signal loss	1.Check if product is clipped.
		2.Check clip 2 limit.
		3.Check clip 2 setting.
		4.Check signal connection.
Fault[27]	X07 OFF, clip 2 on action overtime	1.Check if product is clipped.
		2.Check clip 2 limit.
		3.Check clip 2 setting.

		4.Check signal connection.
Fault[28]	X07 ON, clip 2 on status but limit exists	1 .Check if product is clipped.
		2.Check clip 2 limit.
		3.Check clip 2 setting.
		4.Check signal connection.
Fault[29]	X07 ON, clip 2 on action overtime	1 .Check if product is clipped.
		2.Check clip 2 limit.
		3.Check clip 2 setting.
		4.Check signal connection.
Fault[30]	X07 ON, clip 2 off status but limit exists	1 .Check if product is clipped.
		2.Check clip 2 limit.
		3.Check clip 2 setting.
		4.Check signal connection.
Fault[31]	X07 ON, clip 2 off action overtime	1 .Check if product is clipped.
		2.Check clip 2 limit.
		3.Check clip 2 setting.
		4.Check signal connection.
Fault[32]	X09 reserved I1 OFF, reserved O1 on state without reserved I1 signal	1 .Check if reserved O1 is on.
		2.Check if reserved I1 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[33]	X09 OFF, reserved O1 on action overtime	1 .Check if reserved O1 is on.
		2.Check if reserved I1 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[34]	X09 ON, reserved O1 on status but reserved I1 exists	1 .Check if reserved O1 is on.
		2.Check if reserved I1 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[35]	X09 ON, reserved O1 off action overtime	1 .Check if reserved O1 is off.
		2.Check if reserved I1 is OK.
		3.Check reserved link setting.
		4.Check signal connection.

Fault[36]	X09 ON, reserved O1 off status but reserved I1 exists	1.Check if reserved O1 is off.
		2.Check if reserved I1 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[37]	X09 ON, reserved O1 on action overtime r	1.Check if reserved O1 is off.
		2.Check if reserved I1 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[38]	X10 OFF, reserved O2 on status but reserved I2 loss	1.Check if reserved O2 is on.
		2.Check if reserved I2 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[39]	X10 OFF, reserved O2 on action overtime	1.Check if reserved O2 is on.
		2.Check if reserved I2 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[40]	X10 ON, reserved O2 on status but reserved I2 exists	1.Check if reserved O2 is on.
		2.Check if reserved I2 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[41]	X10 ON, reserved O2 off action overtime	1.Check if reserved O2 is on.
		2.Check if reserved I2 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[42]	X10 ON, reserved O2 off status but reserved I2 exists	1.Check if reserved O2 is on.
		2.Check if reserved I2 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[43]	X10 ON, reserved O2 on action overtime	1.Check if reserved O2 is on.
		2.Check if reserved I2 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[44]	X11 OFF, reserved O3 on status but	1.Check if reserved O3 is on.

	reserved I3 loss	2.Check if reserved I3 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[45]	X11 reserved I3 OFF, reserved O3 on action overtime	1.Check if reserved O3 is on.
		2.Check if reserved I3 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[46]	X11 reserved I3 ON, reserved O3 on but reserved I3 exists	1.Check if reserved O3 is on.
		2.Check if reserved I3 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[47]	X11 ON, reserved O3 off action overtime	1.Check if reserved O3 is on.
		2.Check if reserved I3 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[48]	X11 reserved I3 ON, reserved O3 off status but reserved I3 exists	1.Check if reserved O3 is on.
		2.Check if reserved O3 is on.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[49]	X11 reserved I3 ON, reserved O3 on action overtime	1.Check if reserved O3 is on.
		2.Check if reserved I3 is OK.
		3.Check reserved link setting.
		4.Check signal connection.
Fault[50]	X14 mould open finished OFF, arm down status but mould open loss	1.Check injection moulding machine.
		2.Check mould open signal.
		3. Check signal connection, press the stop key.
Fault[51]	X14 finished mould open OFF, arm cannot fall without mould open	1.Check injection moulding machine.
		2.Check mould open signal.
		3. Check signal connection, press the stop key.
Fault[52]	X14 finished mould open OFF, rotate in status but mould open loss	1.Check injection moulding machine.
		2.Check mould open signal.
		3. Check the connection is OK, press the stop key.

Fault[53]	X14 finished mould open OFF, not rotate in without mould open	1.Check injection moulding machine.
		2.Check mould open signal.
		3. Check signal connection, press the stop key.
Fault[54]	X12 mid mould limit OFF, arm down and no mid-mould limit	1.Check injection moulding machine.
		2.Check mid- mould signal.
		3. Check signal connection, press the stop key.
Fault[55]	X12 mid mould limit OFF, arm cannot fall without mid-mould	1.Check injection moulding machine.
		2.Check mid- mould signal.
		3. Check signal connection, press the stop key.
Fault[56]	X12 mid mould limit OFF, rotate in status but mid-mould loss	1.Check injection moulding machine.
		2.Check mid- mould signal.
		3.Check signal connection.
		4.Check mid- mould signal.
Fault[57]	X12 mid mould limit OFF, cannot rotate in without mid-mould	1.Check injection moulding machine.
		2.Check mid- mould signal.
		3.Check signal connection.
		4.Check mid- mould signal.
Fault[58]	X01 main upper limit OFF, cannot rotate without main up limit	1.Check main up out status.
		2.Check main up limit.
		3. Check signal connection, press the stop key.
Fault[59]	X06 sub upper limit OFF, cannot rotate without sub up limit	1.Check sub up out status.
		2.Check sub up limit.
		3. Check signal connection, press the stop key.
Fault[60]	X02 main clip limit ON, arm cannot fall with clip 1 limit	1.Check if product is clipped.
		2.Check clip 1 limit.
		3. Check clip 1 setting, press the stop key.
Fault[61]	X07 sub clip limit ON, arm cannot fall with clip 2 limit	1.Check if product is clipped.
		2.Check clip 2 limit.
		3.Check clip 2 setting, press the stop key.
Fault[62]	X03 ON, arm cannot fall with sucker limit	1.Check if product is sucked.
		2.Check sucker limit.

		3.Check sucker setting, press the stop key.
Fault[63]	X01 OFF, no main up limit, cannot close mould	1.Check main up out status.
		2.Check main up limit.
		3. Check signal connection, press the stop key.
Fault[64]	X06 OFF, no sub up limit, cannot close mould	1.Check sub up out status.
		2.Check sub up limit.
		3. Check signal connection, press the stop key.
Fault[65]	X04 ON, no rotate in limit, cannot close mould	1.Check rotate out status.
		2.Check rotate in limit.
		3. Check signal connection, press the stop key.
Fault[66]	X05 OFF, no rotate out limit, cannot close mould	1.Check rotate out status.
		2.Check rotate out limit.
		3. Check signal connection, press the stop key.
Fault[67]	Automatic cycle overtime	1. Auto cycle time should be less than cycle time set.
		2.Add cycle time set.
		3.Press the stop key.
Fault[68]	Wait mould open overtime	1.Check injection moulding machine.
		2.Check mould open signal.
		3.Change cycle time more than mould open cycle set.
Fault[69]	Plan production complete	1.Add production set.
		2.Reset the production.
		3.Press the stop key.
Fault[70]	New use right is authorized.	1.Press the stop key.
Fault[71]	Pressure limit alarm	1.Check air pressure.
		2.Check pressure limit.
		3.Press the stop key.
Fault[72]	X09 reserved I1 action overtime	1.Check reserved I1 signal.
		2.Press the stop key.
Fault[73]	X10 reserved I2 action overtime	1.Check reserved I2 signal.
		2.Press the stop key.
Fault[74]	X11 reserved I3 action overtime	1.Check reserved I3 signal.
		2.Press the stop key.

Fault[75]	Eeprom error	1.Check function setting.
		2.Power on again.
Fault[76]	X09 OFF, horizontal status but limit loss	1.Check arm status.
		2.Check arm status.
		3. Check signal connection, press the stop key.
		4.
Fault[77]	X09 OFF, horizontal action overtime	1.Check arm status.
		2.Check horizontal limit.
		3. Check signal connection, press the stop key.
Fault[78]	X09 ON, arm vertical but horizontal limit OK	1.Check arm status.
		2.Check horizontal limit.
		3. Check signal connection, press the stop key.
Fault[79]	X10 OFF, vertical status but limit loss	1.Check arm status.
		2.Check vertical limit.
		3.Check signal connection, press the stop key.
Fault[80]	X10 OFF, vertical action overtime	1.Check arm status.
		2.Check vertical limit.
		3.Check signal connection, press the stop key.
Fault[81]	X10 ON, arm horizontal but vertical limit OK	1.Check arm status.
		2.Check vertical limit.
		3.Check signal connection, press the stop key.
Fault[82]	X01 OFF, cannot pose without main up limit	1.Check main arm status.
		2.Check main up limit.
		3.Check signal connection, press the stop key.
Fault[83]	X09 ON, horizontal status and cannot cross	1.Check cross pose set.
		2.Check cross pose of program.
		3.Check signal connection, press the stop key.
Fault[84]	X10 ON, vertical status and cannot cross	1.Check cross pose set.
		2. Check whether the program is vertical and horizontal.

		3.Check signal connection, press the stop key.
Fault[85]	X09 ON, horizontal status and cannot fall	1.Check fall pose set.
		2.Check fall pose of program.
		3.Check signal connection, press the stop key.
Fault[86]	X10 ON, vertical status and cannot fall	1.Check fall pose set.
		2.Check fall pose of program.
		3.Check signal connection, press the stop key.
Fault[87]	X04 OFF, X05 OFF, cannot fall	1.Check transverse in/out limit.
		2.Check signal connection, press the stop key.
Fault[88]	X08 main forward action overtime	1.Check main back limit.
		2.Press the stop key.
Fault[89]	X08 main back action timed out	1.Check main back limit.
		2.Press the stop key.
Fault[90]	X08 ON, main forward status but back limit OK	1.Check main forward valve.
		2.Check main back limit.
		3.Check signal connection, press the stop key.
Fault[91]	X08 OFF, main back status but back limit loss	1.Check main forward valve.
		2.Check main back limit.
		3.Check signal connection, press the stop key.

5. Maintenance

5.1 General


Please observe the prescribed maintenance intervals. Proper maintenance ensures trouble-free functioning of the robot. Proper maintenance is necessary in order that the warranty be fully enforceable.

Maintenance should be performed by qualified personnel only.



Maintenance and responsibility for safety equipment becomes the responsibility of the system operator once he accepts the robot.



Please note, in particular, that safety instructions marked with a  must be observed according to regulations so that full functionality of this equipment can be guaranteed.

Turn off the main switch and air compressor before maintenance work and entering the robot safety area, and exhaust the air compressor system.

Especially for this robot arm, clean the used valve and air compressor regularly.



If the product has been repaired, replaced or added parts, it's necessary to inspect the machine comprehensively before operation.

5.2 Lubrication

Use a cloth to remove the grease from the axle rail and bearing oil guard ring. Then, use a brush to apply new grease. The rolling bearing grease must comply with DIN 51825 standard, and the lubrication series NGL12 must comply with DIN 51818 standard.

Recommended grease:

Manufacturer	Model
SHELL	ALVANIA G2 DARINA GREASE 2
MOBIL	MOLYKOTE LONG TERM 2PLUS MOBILGREASE 28 MOBILUX 3
ESSO	UNIREX N3
KLUBER	ISOFLEX NBU 15 ISOFILEX NCA 15

5.3 Maintenance

Performance the following maintenance according to the period to maintain the best working condition of the machine.

Daily Check and Maintenance	Monthly Check and Maintenance	Yearly Check and Maintenance
<ol style="list-style-type: none"> 1. Wipe 2. Filter exhaust 3. Check air source pressure. 4. Check the tightness of bolts between the robot and the injection moulding machine. 5. Check the tightness of set bolts in each travel control block. 	<ol style="list-style-type: none"> 1. Clean the filter with an air gun. 2. Check the bolt tightness of all rotating parts. 3. Confirm the pipeline or the connection. 4. Check and adjust the working speed. 	<ol style="list-style-type: none"> 1. Brush lubricating oil onto the axle rail.