PXA255_Q7
Operation Manual
Of Plastics Injection Molding Machine

Techmation Co., Ltd.
9F, No.529 Chung Cheng Road
Hsin-Tien City, Taipei Hsien
Taiwan, R.O.C.

Telephone : 886-2-22181686
Fax : 886-2-22181766
E-mail : techmation@techmation.com.tw

Ningbo center
Telephone : 86-574-87801426
Fax : 86-574-87807389
E-mail : technbsevice@techmation.com.tw

Hu men center
Telephone : 86-769-85182585
Fax : 86-769-85182587
E-mail : techhm@techmation.com.tw
Preface

This book is the operation manual of **PXA270/PXA255 (standard version)** system software & hardware made by Techmation. It includes two parts: operation modes and operation menus. It will explain how to setup and preset the clamping unit, injection unit, product inspection, list files and network.

About the HMI panel, including every key function and HMI display, please refer to the part of operation menus.

⚠️ **Warning:** Considering the operation safety and normal operation, please refer to the operating modes of the machine as required by the manufacturer of the machine in order to prevent injuries from the machine and damages to the machine. Damages will be induced without enough caution and professional understanding towards the setup of the machine.

Responsibility: Techmation bear no responsibility for any safety of all systems of the injection molding machine. Regarding to the guarantee of the safety of the machine’s operation is the responsibility of our company. Any person who wants to operate the injection molding machine must be professional or well trained. Any operator must read this manual and the manual of the injection molding machine before operate the machine.

Please note: Any information in this manual is not allowed to be modified without any notice.

If you need any further informations, spare parts, services, or any latest information related to the computer etc, please contact us by the following address:

*Techmation Co., Ltd.*
*9F, No. 529, Chung Cheng Road*
*Hsin-Tien City, Taipei*
*Taiwan, R.O.C.*
*Phone: +886-2-2218 1686*
*Fax: +886-2-2218 1766*
*E-mail: techt@techmation.com.tw*

We sincerely hope that this manual will be a good helper due to the operation for our machine. Meanwhile, in order to improve our product, we kindly hope to receive your feedbacks.

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1. Operations Manuals

The instruction in the operation manual can help to familiarize and understand HMI panel keys and the various HMI display screens. If you cannot find what you need or any other further informations about the panel keys or display screens, please refer to the correlative section of operation display.

1.1 Clamping Unit Setup

When changing the mold follows the machine manufacturer’s instruction at all times to avoid the possibility of serious injuries to the machine operators. After you fix the mold on the machine, please ensure that all the parameters for the mold and the injection unit had been properly aligned to avoid damage to the machine. In addition, you must make sure that the barrel/mold platen units are properly connected, and mold had been mounted securely.

1.1.1 Mold height adjustment

During the installation of the mold, please use the Mold Adjustment keys to adjust for mold thickness. Press the Reduced Mold Height Adjustment key to roughly reduce the mold height (reduce distance between moving and static platen), or press the Increased Mold Height Adjustment key to increase the mold height (the distance between the moving and static platen).

For continuous platen movement press and hold the key. The platen will move slightly and stop. Keep the key pressed and after one-second delay the platen will start to move continuously. If you press the key and release it immediately, the platen will move slightly and stop, allowing for micro adjustment. You can repeat such operation until the moving platen had reached the required position.

Caution: Regarding to the safety issue, please stop the motor from operating and turn OFF the machine while installing the new mold.

Once you have finished the installation of the new mold, close the safety gate, then turn the machine ON and press the Manual Mold Height Adjustment ON/OFF key once to activate the Manual Mold Height Adjustment mode. After the adjustment of the mold, you could change the mold height speed and pressure setting by using the

Adjust the mold height

Turn the machine OFF

Install the new mold

Turn the machine ON

Switch to Manual Mold Height Adjustment mode, if necessary, change the speed and pressure setting or load the mold set data

Activate the automatic mold height adjustment function.
If necessary, you could either set a mold date for your new mold or load on the mold set data. After the adjustment setting, press the Manual Mold Height Adjustment ON/OFF key again to switch to the automatic Manual Operation mode. While closing the mold the controller will execute an automatic mold height adjustment until the new settings are reached. Once the automatic adjustment has finished all machine operations will stop and the alarm will sound. This indicates that you can now switch back to manual or automatic operation modes.

**Warning:** For the safety reasons, you have to switch the machine into Manual Operation mode by pressing Manual key before you use the Mold Height Adjustment key or Manual key. If you wish to use any other mode, please change to the Manual mode before switching to the mode you required.

If you encounter any problems during the mold height adjustment, press the Manual key or the emergency stop key to stop the operation.
1.1.2 Mold closing and mold protection

There are 5 stages of pressure & speed controlled for mold closing: Mold Close Stage 1, Mold Close Stage 2, Low Pressure Mold Protection and High Pressure. For optimum productivity mold closing should be executed as fast as possible. However, it is important to preset correct data to ensure the protection of the mold. For this reason pay particular attention to the Low Pressure Close mold part.

Press the Manual key to activate the Manual mode. Switch the HMI display to the Clamp Setting screen by pressing F2 mold platen key.

Check and set the Max. Mold opening stroke and ensure that it will not exceed this stroke.

Next, enter the desired speed and pressure for the 4 stages of mold closing. You have to ensure that the settings to allow for a smooth, jerk-free movement of the mold.

Set the speed low enough for the stage of Low Pressure Mold Protection to avoid any damage or jammed part remained in the mold. Therefore, set the lowest pressure possible.

The transition point for Mold Close Stage 2 switching into the stage of Low Pressure Mold Protection must be set before the position where the mold could possibility contact with a jammed part.

The transition point for the stage of Low Pressure Mold Protection switching into the stage of High Pressure must be at the position where the mold stationary and mold moving platen are able to touch together.

In order to accelerate the mold closing speed, you can activate the differential high-speed mold closing option for the High speed closing phase.
After set all the parameters for mold closing including the pressure, speed and position, please check the machine in Manual mode for optimum machine performance. If you encounter any problems during the testing of mold closing, please press the Manual key to stop the machine from operating.
1.1.3 Mold Opening

Mold closing is executed in four phases: Mold Open Stage 1, Mold Open Stage 2, Mold Open Stage 3, and Mold Open Stage 4.

- Switch into Manual Mode.
- Verify the Mold Opening Stroke and adjust if necessary.
- Set the mold open 4 stages pressure and speed.
- Set the transition position for switching from the 1 stage phase to the 2 stage phase.
- Set the transition position for switching from the 2 stage phase to the 3 stage phase.
- Set the transition position for switching from the 3 stage phase to the 4 stage phase.
- Set Auto Cycle Delay Time for robot use if necessary.

Then, enter the desired hydraulic speed and pressure setting for the 4 mold opening stages. You have to ensure that those settings allow for a smooth, jerk-free movement of the mold.

Set the hydraulic speed for the Mold Open Stage 1 in order to separate the mold platen smoothly.

Adjust the transition point for switching from Mold Opening Stage 1 to Mold Opening Stage 2 according to your requirement. The transition point setting of switching from Mold Open Stage 3 to Mold Open Stage 4 would allow the mold to slow down sufficiently before reaching the end of position of the Mold Opening Stroke.

If you use any robot to pick the parts out of mold, you have to set the Auto Cycle Delay time (mold platen function). Recycle time is calculated from the time of last cycle to the time before mold close for the next cycle.

After setting all mold opening parameters including the speed, pressure and position, please operate the mold close in Manual mode to clarify your requirements of your presettings. If you encounter any problems during the operation, please press Manual key to stop the machine from operating.
1.1.4 Ejector

The ejector can be operated in three different modes to knock the finished product out of the mold at the end of mold opening. You can choose between the Hold, Count Number and the Vibration modes.

**Eject Mode**: Hold, Count Number, Vibration

**Warning**: Hold mode can be used only in semi-automatic operation.

Hold Mode: The ejector moves forward according to the ejector settings and the product is dropped or taken out. After the safety gate has been opened and closed the next cycle will start.

Count Number mode: The ejector is activated according to the Ejector and Ejection Count settings. This mode is usually used for automatic machine operation. It does not require the opening and closing of the safety door to continue the production cycle.

Vibration mode: The ejector movement is controlled by the Ejector and Ejection Count settings with the ejector vibrating at the end of the forward movement according to the Vibration setting set (Vibrating distance is regarding to the ejection parameter screen timing controller.)

Press the Manual key to activate the Manual mode. Switch the HMI display to the Ejection setting screen by pressing F5.

Press the Manual key to activate the Manual mode. Switch the HMI display to the Ejection setting screen by pressing F5.

The set the Ejection Mode and Count. Please note, if you don’t need the ejection, you can just set the Ejection Count to “0”.

Press again to return to the previous screen.
If the mold product has not been knocked out successfully while in Photo Sensor auto operation mode and the Eject Try Again function is not activated, the alarm will sound and the machine will stop for ejection trouble shooting.

The machine is not running under the Photo-sensor Automatic operation mode and without Re-Ejection function activated, when the final molding part cannot be knocked out of mold completely, the machine will give an alarm and stop from troubleshooting. If the product was sent out by the machine then will continue the normal operation. If there is no rejection then will enter ejection failure alarm system.

If the product in the mold platen has not been knocked out successfully while in Photo Sensor auto operation mode and the Eject Try Again function is not activated, the alarm will sound and the machine will stop for ejection trouble shooting.

For the first Ejection, there are two stages which can be set with separate pressure, speed and transition position for each stage.

![Diagram](image)

Then, please set the pressure and speed for the ejection retract. The Backward Delay time allows you to set the time the ejector will stay in the forward end position before it is retracted. (But will not maintain ejector forward, pressure, speed and electromagnetic valve).

![Diagram](image)

If after the mold open, and you want to have more time to cool the final molding part, please set the delay time before ejector forward. After setting all ejection parameters, please try to test all the presetting under Manual mode to check for optimum machine performance. If you encounter any problems during the operation, please press Manual key to stop the machine from operating.
1.1.5 Air Blast

The machine provides an air blast ejection option for the moving platen (the moving platen) as well as for the stationary platen (the fixed platen).

Switch into **Manual Mode**.

Press the Manual key to activate the Manual mode. Switch the HMI display to the Ejection setting screen by pressing F5 (Ejector).

Set the duration of air blast for each platen. Set the mold opening position at which you want to activate the air blast. If required, please set the Delay Time to activate the air blast.

After setting all parameters for air blast, please try to test all the presetting under Manual mode to check for optimum machine performance, if you encounter any problems during the operation, please press Manual key to stop the machine from operating.

<table>
<thead>
<tr>
<th></th>
<th>Act Time</th>
<th>Position</th>
<th>Dly.Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Air Set</td>
<td>0.00</td>
<td>0.0</td>
<td>0.00</td>
</tr>
<tr>
<td>B Air Set</td>
<td>0.00</td>
<td>0.0</td>
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</tr>
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</table>

Activate the air blast in **Manual Mode** to verify the settings and to check for optimum performance.
1.1.6 Core(s)

Press the Manual key to activate the Manual mode. Switch the HMI display to the Core setting screen by pressing F6 (Cores).

Depending on your setup your machine may be equipped with up to 3 cores (A, B and C). Each core is controlled separately.

⚠️ **Warning:** When setting up the core(s), you need pay close attention to make sure the settings will not cause damage to the core(s) and/or the mold. Since the cores are freely programmable it is impossible for the controller to prevent all possible settings errors.

First, choose to select the ABC core mode. Use key to select the core mode, if the cores are required just for core in or out control or Unscrew mode which is used to drive the core to rotate to make the threads on the parts, please select the standard core. If the core is not required, please set the Core mode to “Not Function”. After the selection of the core press to ensure.

Next, please use to select the desired Control Mode to control the core movement. In Core Mode you can use either Cycle Control or Time Control. In Unscrew Mode you can use Time Control or Count Control.

Using Cycle Control allows you to control the core movements by limit switches for end-position control (for insertion and retraction). At the pre-set point during
the production cycle the core(s) will move in/out until the limit switch controlled end-position is reached. Please make sure the limit switches are activated since deactivated switches will cause the machine to stop (if Cycle Control is selected).

Time Control uses time settings for core insertion and retraction. At the pre-set position during the production cycle the core(s) are moved in/out for the set period of time. Therefore core movement (travel) is not controlled by end-position but by time. As a result you will not be able to rely on the protection of limit switches.

In Unscrew mode, the unscrew function is controlled by time by the preset time.

If you want to control the unscrew by Unscrew count when the mold opens to the preset opening stroke for unscrew function, you must have a photo-sensor to count the revolutions installed on the core driving gear on the mold. Please note that Count Control allows for higher precision than Time control.

Set the Pressure, Speed, Activation Time, Unscrew Count (if used) and Position values for moving in and retracting each core according to your needs.

After setting all parameters for Core(s), please try to test all the presetting under Manual mode to ensure the satisfaction according to your requirements.

⚠️⚠️ Warning: If you encounter any problems during the operation, please press Manual key to stop the machine from operating.
1.2 Injection Unit Setup

1.2.1 Nozzle Unit

Depends on your requirements you can set up the nozzle/injection unit to retract after injection has finished. The controller offers you 3 different modes to choose from if nozzle/injection unit retraction is needed.

Press manual key to activate the Manual mode. 
Switch the HMI display to the Nozzle setting screen by pressing F7(Nozzle).

First step please click to set the nozzle retraction mode. After Charge mode: retract the nozzle /Injection unit after charge (plasticizing) is finished.Before Mold Opening mode: retract the nozzle /Injection unit before mold opening start.After Injection mode: retract the nozzle /injection unit after injection has finished.

If the setting is “not necessary” then the nozzle is not operating.

Second step please set the pressure and speed for nozzle/injection unit forward. Its speed can devide into 2 stages, high speed and low speed. During the nozzle/injection unit forward, the high speed is used until the preset end-position is reached. Thereafter the nozzle /Injection unit will move forward in low speed until the nozzle touches the mold sprue gate.

When the Nozzle/Injection Unit moves forward near to the end position, the speed will be changed into low speed. It is important to allow for a safety margin of at least 20mm between the set End Position and the actual contact point of nozzle and mold. If the End position is set too close to the contact point of nozzle and mold, the nozzle might not slow enough before touching the mold that may damage the mold and shut off.

If you set the retract end position to “0”, the Nozzle/Injection unit will retract to the end, so please set the value of forward end position greater than “0”.

After setting all parameters for Nozzle/Injection Unit, please try to test all the presetting under
Manual mode if they are satisfied according to your requirements
1.2.2 Injection and hold pressure

The controller can be divided into 1-4 stages of injection and 1-3 stages of hold pressure. You can press $\text{F3}$ to enter into the injection setting screen.

Press Manual key $\text{MANUAL}$ to enter into Manual mode.

First, choose the Hold Pressure Transition mode. Use the key to choose the Hold Pressure Transition including position/time/pressure. If the Time mode is used, the controller will switch into Hold Pressure after the set injection time had been reached. If the Position mode is used, the controller will switch into Hold Pressure after the preset end injection position had been reached. However, the set time is used as a backup to activate the Hold Pressure stage if sometimes the set transition position cannot be reached.

**Notice**: Your preset movement timing must be longer than the injection time in order to prevent the low flow which will caused a failure product. Every stages of hold pressure transfer according to the movement timing and it is not effected by the hold pressure transfer mode.

You can control injection and hold pressure by joining Time and Position mode together. If the end position of injection cannot be reached, change into Time control. Anyway, you can get more information about injection status from the Monitor 1 screen.

Now you can set the hydraulic pressure and speed for each of Injection and Hold Pressure stages. Enter the Position setting for each injection stage and the time settings for each of the Hold Pressure stages.

At $\text{F3function}$ page:
Injection increase pressure function: When you are using Accumulator, you can reach a fast injection pressure which is able to execute a high speed injection speed.

Injection fast set function: You may choose the execution of fast speed injection; choosing one more direction will reach a high speed injection.

Injection shut off: Used only when the machines has Shut Off equipment.

After set all parameters for Injection and Hold Pressure, please try to test all the presets under Manual mode for optimum machine performance. If you encounter any problems during the operation, please press Manual key to stop the machine from operating.
1.2.3 Charging(plasticizing) and suck-back

Press the Manual key \[\text{MANUAL}\] to activate the Manual mode. Switch the HMI display to the Charge setting screen by pressing F4(Charge) \[\text{F4}\].

- Switch into Manual Mode.
- Set the Charge (Plasticizing) values for Backpressure and Speed.
- Set the Positions for the transition between the three Charge stages.
- Set the Suck-Back mode and Speed and Position/Time values.
- If needed set the Delay Time before Charge and/or Cooling Time values.
- Activate Charge (Plasticizing)/Suck-Back in Manual Mode to verify the settings and to check for optimum performance.

Charge (Plasticizing) is divided into 3 stages. You can set the speed and pressure separately. If it is necessary, you can also execute the suck-back after the charge. Press the manual key and ensure it is under the manual mode. Please press the \[\text{F2}\] on the panel to enter the charging screen. Next, insert the position to transfer the 3 stages charging movement.

If there is a control back pressure with the setting value of pressure function, you can set the back pressure in order to raise the density of the plastic in the barrel.

You can choose suck back mode at the \[\text{F2 charging}\] page. Suck back mode has the option of suck back after injection and suck back after cooling.

If the suck back movement is not necessary, you can set the pressure speed value to “0”.
If cooling is needed after the injection hold pressure, please set the cooling before charging time.

Cooling timing: In case mold cooling is needed after completion of Charge/Suck-Back, please set the cooling time as required.
After set all parameters for Charge and Suck-Back, please try to test all the presets under Manual mode for optimum machine performance. If you encounter any problems during the operation, please press Manual key to stop the machine from operating.
1.2.4 Heater

Press the Manual key \( \text{MANUAL} \) to activate the Manual mode \( \text{F8} \). Switch the HMI display to the Temperature setting screen by pressing F8(Temperature).

There are maximum 6 zones barrel heating zones to be controlled as the machine’s specifications. The temperature can be controlled separately for each zone of barrel heating. The current and preset temperature for each barrel heating zone will be displayed in the right side of screen.

First, set the Temperature Mode(Half Warm): Choose “Not neccessary” if you want to keep the temperature always in the preset range regardless of the machine operation. Choose “Use” if you want to keep the barrel temperature at the half warm temperature.

Then, set the temperature for the different barrel heating zones. On the screen it will show each heating zone status with different colors:

- **Dark Green**: The real temperature is in the range of the temperature cushion.(injection movement is available)
- **Yellow**: Heating is activating(Injection is not available)
- **Red**: The real temperature is out of the range of the temperature cushion and over the uplimit.

**Notice**: Please note the heaters will be turned off immediately once the current temperature exceeds the set value.

If you want to adjust the Temperature cushion,
please press F4 to enter the Parameter screen. If you want to activate the first zone, just enter “1” for the first zone.

If you want to use Timer to control the barrel heating, please select Temperature Timer mode. Choose the date according to the day and setup the starting time. The computer will then adjust the temperature according to the time you set. Select the setting 0 if you are not using.

If some troubles happened to the barrel heating, there are some messages showed on the screen, like “977”, “988”, “999”.

“977” message: means a disconnection or malfunctioning D/A temperature card.
“988” message: means thermocouple malfunction
“999” message: means the current temperature is out of normal temperature range.

After set all parameters for Heater, please try to test all the presets under Manual mode for optimum machine performance. If you encounter any problems during the operation, please press Manual key to stop the machine from operating as an emergency stop.
1.3 Production Monitor Setup

Switch into Automatic Mode.

Activate the Automatic Alarm Mode by setting it to “1”.

Set the Delta Values (% and/or absolute) for the production parameter control.

Switch to the Parameter 2 screen and set the Auto Alarm Unit Count.

Switch to the Product Data screen to set the Target Shot Count and the Pack Count (if necessary).

Use the mold data to use as the auto alarm monitor.

In order to enter the automatic alarm screen, please select the next stage, then press production monitoring and finally press to enter the monitor 1 screen.
At the beginning of each operation, the Automatic alarm is OFF until the machine runs and reach the cycles as preset to activate the automatic alarm function, and the controller will use the achieved parameters values of the last production cycle as reference for alarm. If any real value of production parameters exceed the down or up limits, the controller will give an alarm and stop the machine.

After the stable of the production cycle, then the auto alarm system is executed. Before the normal operating of the machine is execute, the parameters of the production will be corrected. Therefore, you should take into consideration the auto alarm system will only execute after the stable production.

You can press key to select use, not use or resampling.

Next, set the Delta Value (% and/or absolute) for the production parameter control. See below for a more detailed explanation for the calculation of maximum and minimum limit based on the Delta Values.

You can use the actual production parameter value with the delta value(%) in order to built a deviation value, then use the deviation value and the reference value to build a up and down limit, if you need a group delta value(%) and delta value to get the maximum and minimum limit please use the formula under:

\[
\text{Upper Limit} = \text{RV} + \left( \frac{\text{RV} \times X}{100} \right) + Y
\]

\[
\text{Lower Limit} = \text{RV} - \left( \frac{\text{RV} \times X}{100} \right) - Y
\]

Since the Reference Values are not fixed and vary from one cycle to the next, the reference Value will disappear when the machine is turn off. They will be re-estiblished at the beginning of the next operation cycle by using the current parameter values to determine the new reference points for the upper and lower limits. If the reference value is already build but the actual parameter had been corrected, then you can choose the resampling of the auto monitoring system by using the new parameters value to replace the previous one. Besides, your computer will select the previous figure with the auto alarm system to take as the reference value.

Under the Auto Alarm mode, if the Auto Alarm had already been activated (mode 1) or if the necessary number of production cycle for establishing the reference values has not yet been reached (mode 0), you can adjust the cycle numbers for Auto Alarm mode please press F7, enter into the parameters screen and insert the data you required.
Run the machine in automatic mode after setting all parameters until the activation of the Auto Alarm mode to verify the setting and to check for optimum performance. In case of improved production results after the activation of the Auto Alarm mode re-establish the Reference Value in Monitor 1 screen.

<table>
<thead>
<tr>
<th></th>
<th>Real</th>
<th>Delta%</th>
<th>Delta</th>
</tr>
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<tbody>
<tr>
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<td>0.05</td>
</tr>
<tr>
<td>Cls H.Prs</td>
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<td>0.05</td>
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<tr>
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<tr>
<td>Cushion</td>
<td>0.0</td>
<td>0</td>
<td>10.0</td>
</tr>
<tr>
<td>Charge</td>
<td>0.00</td>
<td>25</td>
<td>0.00</td>
</tr>
<tr>
<td>SkBk Time</td>
<td>0.00</td>
<td>100</td>
<td>0.00</td>
</tr>
</tbody>
</table>
1.4 Other functions and settings

Press the Manual key to activate the Manual mode.

Switch the HMI display to the Others setting screen by pressing F5, ejector then F3 function which is used according to the equipment of the machine. (If there is no robot equipment then this function screen will not exist.)

Auto Power Door mode: Press to enter the selection mode. After charge, the power door will open automatically. But before next cycle, you have to press the button to close the door to activate the next cycle. If this function is disabled, the safety door will not close or open automatically, even under the Manual operation mode.

**Warning**: When operating large size machine, you need more strength to open the power door.

Next, press to enter the Robot mode, robot can be used to pick the final molding parts out of mold.

After set all parameters, please try to test all the presets under Manual mode if they are satisfied according to your requirements. If you have any problems during the operation, please press Manual key to stop the machine from operating as an emergency stop.
2. Control panel (HMI)
2.1 Control panel and keys

The Control Panel is covered with a protective Mylar layer to make the panel water, dirt and abrasion resistant. All keys are operated through type A mechanical contact switches to provide for reliability and a long service life. On each key, it is printed with key name and its corresponding draft. At the read side of panel, there is an electronic board which has Type A mechanical contact switches to provide for reliability and a long server life for several million switches. If you have any trouble with the switches, you can use the backup switches instead of the damaged switch.

2.1.1 Control panels and keys

![Control panel diagram]

The machine control panel keys allow you to switch between different machine operating modes and to manually control the operation of the machine. Nevertheless, even most manual commands will be executed using the stored machine settings. It is therefore important that you verify the settings first to ensure safe machine operation.
2.1.2 Machine operation mode keys

![Machine Operation Modes]

**Manual Key:** This key has several functions. It can used to change from Auto Mode into Manual mode as well as a reset key for that and alarm settings.

**Semi-Auto Key:** Press this key to run the machine in Semi-auto mode. At the end of each cycle, the operator shall open and then close the safety door to activate the next cycle running.

**Sensor Auto Key:** Press this key to run the machine in *Auto Operation* mode with the Photo Sensor activated. At the end of each cycle, the photo sensor will verify whether the product has been properly ejected from the mold within 4 seconds. If the product is still in the mold, the machine will automatically stop and the alarm will sound. The control display will show an ‘Ejection Failure’ error message.

**Time Auto Key:** Press this key to run the machine in *Auto Operation* mode. Use this operation mode to let the machine execute each cycle automatically. The controller will stop the machine and the alarm will sound in case an error occurs. In this mode, the photo sensor is not activated.

Warning: Every selection into auto operating under manual mode, you have to open and close the power door once, in order to ensure the mold is clear with remain items, then you can enter the mold close.

2.1.3 Mold Height adjustment key

![Mold Height Adjustment]

**Mold Adjustment:** This key provides two options of function, the first press is thick mold adjustment, the screen will display a transfer from the manual to thick mold, under this situation, mold distract and forward is able to move, meanwhile to provide convenient and safety to the mold platen. At the same time operating the open close mold, injection, charge, suck back, nozzle in and out pressure and speed eventually use the internal low pressure slow speed, the position of pressure speed will not change while operating, however mold open, charge and injection distract will stop when they reach the position. Therefore, please use the thick mold which setting the mold platen. The second selection will be the automatic mold adjustment, when the operator had done fixing with the mold platen, please set the pressure, speed, position and any other parameters etc, then close the safety door, press the Manual Mold Height Adjustment key again to execute an automatic mold height adjustment until all preset parameters and conditions had been reached. When the machine gives an alarm, it means the work had been finished, and you can continue to do the next step.
operation. Just press Manual key to turn back to Manual mode. It is not allowed to change into Auto mode from any Mold Height Adjustment mode directly.

**Increased Mold Height Adjustment key**: same to the function of the above key, only the direction is opposite. The mold adjustment is moving backward. When the mold height is adjusted to the maximum position, the limit switch will be activated and mold height increase will stop.

**Reduced Mold Height Adjustment key**: Under the Manual Mold Height Adjustment mode, you can press this key to reduce mold height roughly; If you press this key and release immediately, the platen will move slightly and stop, allowing for micro mold height adjustment. The reduced mold height will depend on how many times you press this key. If you press this key and hold it for one second, the mold plate will move continuously, release the key to stop the movement.

2.1.4 Manual operating keys

**Open Mold Key**: While in Manual Operation mode, press key to open the mold according to the data set. If core(s) are used they will be interlocked and moved according to the settings, open mold will stop operating once the hand is lift up.

**Close Mold Key**: While in Manual Operation mode, press key to close the mold as preset parameters. If core(s) are used they will be interlocked and moved according to the settings. If robot is required, robot will return to the orginal point, and if ejector is in knock out position, it will retract to the end. Once you release the Close Mold key mold closing will stop.

**Ejector Retraction Key**: Use this key in Manual Operation mode to retract the ejector. Ejector movement will stop once the key has been released or the back limit has been reached.

**Ejector Activation Key**: This key can be activated if after mold open to the end and cores has
retracted already. Pressing this key will allow the ejector to activate the movement continuously according to the frequency.

**Air Blast on Moving Plate:** Under the Manual operation mode, press this key for air blast on moving plate, by blast time at any position of mold open stroke as preset.

**Air Blast Static Platen Key:** Use this key in Manual Operation mode to activate the air blast for the moving platen. You could activate the air blast platen at any position of the open and close mold according to the timing set.

**Core A In** and **Core A Out Keys:** Press the Core A In key to enter the core function option. Press the core in or core out key under the manual mode any core movement will be executed according to the current settings at any position of the open and close mold.

**Core B In** and **Core B Out:** Selection of the function of Core B, press the core in or core out key under the manual mode any core movement will be executed according to the current settings at any position of the open and close mold.

**Core C In** and **Core C Out:** Selection of the function of Core C, press the core in or core out key under the manual mode any core movement will be executed according to the current settings at any position of the open and close mold.

**Injection Key:** Under the manual mode, when the temperature is “ON”, the barrel’s temperature had reached and had also reach the preset temperature value. Press this key to inject and during the movement, the set value will enter into pressure protection according to different stages then enter into the end of the pressure protection pressure and speed. Once u release this key then the injection will stop.

**Suck back Key:** Press this key to retract the ejector. Ejector movement will stop once the key has been released or the back limit has been reached.

**Charge key:** Under the manual mode, the conditions to activate the charge and injection are the same, when the injection position is before the charge end, press this key and release, this key will maintain automatically until the charge is done. Press again this key to stop the movement in the middle.

**Auto purge key:** If the operator is willing to clean the remain items in the barrel, press this key to activate the cleaning process according to the number of times set in the charge page.
Nozzle forward: Under the manual mode, any nozzle position forward is available. However when the nozzle reach the end of the nozzle it will change to a slow speed forward in order to avoid the impact of mold platen and nozzle to protect the mold platen.

Nozzle Retraction: Under the manual mode, press this key to activate the retraction of the nozzle, it will not stop when it reach the end of the nozzle to convenient the cleaning of the barrel and mold platen.

 Hydraulic Pump Motor On/Off Key: Under the manual mode, press this key to activate the motor and press once again to stop the operation. This key is not available under the automatic mode, the motor figure will be display on the condition display screen.

Heater ON/OFF: Under the manual mode, the barrel will start heating. Press once again the key to stop heating (not available under the auto mode), the figure of the heater will be shown on the condition display screen.

Lubrication: Under the manual mode, press this key to activate the lubrication movement.
2.1.5 Data entry key

The keys described in this section are used for numerical and text input.

**Important:** In order to avoid any loss of data and/or settings make sure you have saved the current mold set again before loading a new mold. If you fail to do so any settings changes you may have made will be lost.

When you turn off the controller/machine the current settings will be saved as the working mold set. Nevertheless, you need to save the mold set again before loading any new mold set since any changes you made have not been saved in the mold set database, only as the working mold set settings.

If you are unsure if the current settings have been saved always enter the mold platen setup database to clarify.

**Numerical Keys**

When you are inserting the data numeric, press the `key or move the cursor to ensure the insert. If you are using the numeric key, you must turn on the `Num. Lock Key` at the back of the panel in order to insert. Provide the user to setup numeric values, due to the different define of the maximum value of every set value, therefore when the number is exceeded and is unable to insert, the monitor will display a value exceeding screen.

If an insert of English character is needed, such as: A then press the `key twice, then A will be inserted. B then press the `key three times, then B will be inserted, and so on…

**Screen Saving Key**

**The movement under should be activating under manual mode:**

1. inserts the SD card or USB to the machine

2. turn to the screen of printing, press this button twice

   Next, “**ER:loading MMC card**” will appear at the left bottom column, it means the printing is in the process.
3 A screen will pop up from the window in about 2 or 3 seconds which means that the printing is in process and will be save into SD/MMC card, after that press to confirm.

4 insert SD/MMC card and connected to the pc machine, enter print file, in side the file it include the screen that after printing.

ATTN: user can use different language to process the actions above

Conversations enter and cancel key

**Enter key**:
After the insert of the value, press this enter key to indicate the saving other data, press once the enter key to move the cursors to the other position. This key is able to represent the direction key.

**Warning**: Before you renew the mold platen, if you want to change any set documents, you have to resave the mold data again. If you did not do so, the new data will disappear.

**Cancel key**:
Pressing this key cancels the changes you may have made within the current field and resets the current value to “0”.

Arrow Keys
Arrow Keys: Use the arrow keys to change the current field selection and to move the cursor. Please note that the arrow keys move the cursor only within the current column (up/down) or line (left/right). If the field you are trying to select does not overlap with the currently selected column or line using the arrow keys will not allow you to jump to the desired field unless you use a combination of left/right and up/down movements you can use the enter key to reach the desired position.

Notice: After you change the data and willing to move the cursors to another position, the original data after corrections will be saved.

Screen selection key

The Machine Settings Panel provides 10 keys (F1 – F10) for screen selection. The entire set of keys has two different menus (A and B). A group included 8 groups of vice menu (mold platen, injection, charge, nozzle, core, ejector, temperature and fast set)

B group including 7 groups of vice menu (production monitor setup, correction, IO, mold platen others, system, install and version)

You can choose the display screen you needed from the screen below and you can use F10 key to transfer between two main options, and also to return from the vice option to the main option.

When choosing any of the display screen, if the vice menu is not display, then the option will turn white and display the above situation. On the other hand, if the display screen appears vice menu then the display screen will change into another display screen.

If the option you select includes a vice menu, the display screen and option will change together.

For example: Press F2 mold platen, then the mold platen screen and the display screen below will appear in chorus.
## HMI Display

### 2.1.6 Screen selection

To access any of the screens described in this section please use this graphic as a reference:

<table>
<thead>
<tr>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>F7</th>
<th>F8</th>
<th>F9</th>
<th>F10</th>
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<td>view</td>
</tr>
</tbody>
</table>

If you want to know further about the usage of the monitor selection key, (F1~F10), please refer to the screen selection key part in the operation manual.
2.2 Operation menu

- **Machine view display**
- **Barrel current temperature and heating condition**
- **Screen & Mold Name** (Mold platen name is display at the back)
- **Open mold total amount display after the auto cycle completed.**
- **Total time display during the auto cycle.**
- **Total amount of charging**
- **Date and time**
- **Display of the pressure, speed when the machine is operating.**
- **Display the position of the open and close mold.**
- **Alarm display and to point out words, numeric or decimal point and the limits explanation**
- **Oil temperature will be displayed. If not suing then the display will be 0.**
- **The motor icon will appear here if the hydraulic motor is turned on.**

Warning: Situation display above, mold platen name, motor movement situation, open mold total amount timing and at the below part had point out the date, time of display key will be shown in any of the screen

After switching on the computer, please insert the password and code according to your operation. If there is no competence to correct the data, please press to cancel.
2.3 Mold Open/Close setup

Including F2 mold platen, F3 function, F4 parameters and F5 parameters

2.3.1 Mold open/close mold platen setup

Path – screen → F2 mold platen → F2 mold platen

**F2 mold platen**

![Image of F2 mold platen settings]

Open mold stroke: The maximum stroke of the open mold.

**Open close mold data settings:** Open and close mold movement are divided into 4 stages. The pressure, speed, could be adjust separately. The pressure and speed is transfer according to the open close mold position.

**Mold platen position:** Display mold platen current position.
2.3.2 Open close mold function setting

Path– screen → F2 mold platen → F3 function

F3 function

Re-cycle timing: Remain time after a cycle is done and between the time entering into another new cycle.

Open mold continuous moving: You can either choose use or not use the ejector or core (A/B/C).

Continuous moving position: The position of the movement starting point.
2.3.3 Open close mold parameters settings

Path – screen → F2 mold platen → F4 parameters

**F4 parameters**

![F4 parameters screen](image)

Path – screen → F2 mold platen → F5 parameters

**F5 parameters**

![F5 parameters screen](image)

The above screen includes open mold setting and all corressponsible parameters (Please refer to the parameters index for further informations)
2.4 **Injection settings**

Including F2 injection, F3 function, F4 curve and F5 parameters

2.4.1 **Injection settings**

Path – screen ➔ F3 injection ➔ F2 injection

**F2 injection**

Injection and hold pressure: Due to the injection control, it is divided into injection and hold pressure, injection is divided into 4 stages, each stages has its own pressure and speed setup, transition of each stages is used according to the position distance to transit the pressure and speed, it’s is suitable for different kinds of complicated, high precision mold platen, however injection hold pressure is available to transit by time, or by using position transit or both, the perform is due to the consideration of the mold platen’s formation, the flowing and efficiency of the raw materials, there are many different ways to modulate but all the modulation are basically included.

Hold pressure used three stages of pressure, speed, transition is function according to the position of time or pressure, until the last timing was done, it means that the injection procedure is completed and continues by the next step.

The user can also use the permanent injection timing to inject by setting the hold pressure position to zero, to prevent the hold pressure to reach the transition point, the manual injection time is equal to the actual injection time however the sensor function will be lost, and the low quality products will be hard to discover and lack of immediate modulation.

Due to the difference of flowing of every mold barrel, the smaller the variation is the higher the products quality will be, therefore the computer will check during the starting point of the injection, the injection movement timing and the sensor part. Please take notice that the alarm will be alert when the limit is overtaken.

Hold pressure transform: Pressure protection after the injection is mainly divided in to 3 types.

Position selection will be made after the hold pressure reach the position; times selection will be made when the injection time reach the transformed hold pressure; pressure selection is made when the hold pressure pressure reach the transformed hold pressure.
Hold pressure pressure: The transformation way selection: Under the pressure condition this setup is available.

Injection time: The injection time is normally longer than the actual time, it is because when the hold pressure reached its transit point the computer will stop the injection time, therefore when the raw material flowing is not in the best condition, the actual timing will be longer, and the transit point will reach later, however during the good condition of the raw material flowing the transit point will reach efficiently, at the moment the actual timing will be shorter. In order to differentiate both of these, we provide a highest and lowest limit, it means that the actual timing of injection should not overtake the limit it is because the production out of this scope will be considered as bad quality products.

When the hold pressure transform is using the injection position controller, when the injection of 6 stages position ends when the screw is reached, it is transform to the hold pressure, if the point is not reached, then the transform will happen when the upper limit time is reached. Therefore, this time setting value will normally be longer then the injection timing, when the transform timing is selected the 4 stages end position will not be displayed, and the upper limit 000.0mm will change to movement000.0sec, at the moment the injection will activate according to the time set.

2.4.2 Injection function settings

Path– screen \(\rightarrow\) **F3 injection \(\rightarrow\) F3 function**

**F3 function**

![F3 function settings](image)

Hold pressure and injection function could choose use or not use.

Injection pressure increase function: When you are using the accumlator, you could reach a fast speed injection pressure which a high speed injection speed will be activated.

Injection fast speed function: The activation of fast speed injection is selective, choosing another direction valve will reach a high speed injection.

Injection shut off: Select when the machine consists a shut off equipment.
2.4.3 Injection curve settings

Path – screen → **F3 injection** → **F4 curve**

![F4 curve](image)

Pressure curve: Injection set and a chart of the injection / pressure loop during the implementation of value. In practice, the value of time will be shown. Injection refers to the conditions set value of the curve and the injection / pressure moves during the actual value of the curve, will be displayed in real-time injection curve on the screen.

**Setting speed**: This refers to the Green Line out Radio and the pressure to set the pace.

**Setting pressure**: This refers to the blue line and the injection pressure of the pressure settings.

**Injection speed**: This red line refers to the injection cycle during the actual speed.

**Injection pressure**: This refers to the yellow line injection / pressure cycle during the actual pressure.
2.4.4 Injection parameters settings

Path – screen → **F3 injection** → **F5 parameters**

**F5 parameters**

This screen consists of the corresponding parameters of injection and hold pressure settings. (please refer to the parameters index for further information.)
2.5 Charge (plasticizing) and suck-back settings

Including F2 charge, F3 cleaning, F4 function and F5 parameters

2.5.1 Charge and suck-back settings

Path—screen → F4 charge → F2 charge

F2 charge

Charge setting: Charging process, a total of 3 stages of pressure, speed control, are free to set its start, the necessary pressure and the speed and location at the last and middle paragraph.

Suck back setting: Suck back setting of pressure speed is divided into position or time. If position is selected you only need to insert the suck back distance, if you are not using the suck back please set the time and position to 0.

Suck back distance before reserve: Suck back distance is made before charging.

Charging once again: Activate the charging movement before the injection.

Cooling before Reserve: Reserve before the cooling time can also be done before the reservoir is expected to use the cooling function.

Cooling timing: After injection began cooling time
2.5.2 Automatic barrel clean-up settings

Path– screen \( \rightarrow \) F4 charge \( \rightarrow \) F3 cleaning

**F3 cleaning**

Auto cleaning: Under the manual mode, if the operator is willing to clean the storage in the barrel, you can use the setup cleaning frequency and the time of each cleaning by pressing the automatic cleaning key to operate (the prerequisite condition is the frequency and timing should not be 0).

Cleaning frequency: According to the actual demand to setup the cleaning frequency, the maximum setup is 99 times.

Cleaning time: Cleaning timing could be set according to the actual situation.

**Notice**: When the machine is activating the production normally, if the screw last position is too big (current location) after the product is completed. When the operator is willing to correct the value, changing of the corresponsible data is according to the charging and injection. However this function could simplify the operation if only to insert the final position of the injection at the correction column and select use at the “remain storage corrections” column to complete the auto correction of all the charging injection position.
2.5.3 Charge function settings

Path– screen → **F4 charge** → **F4 function**

**F4 function**

Suck back control mode: When the selection of the suck back time control is selected, the suck back position settings column unit will change to time which means suck back movement timing settings are available.

Charge back pressure valve: You can either choose output or not output during the charge back pressure valve.

Suck back control before charging: Selection of time and position control is available during the suck back movement before charging.

Back pressure proportion: If the machine consists of this function, you can either choose use or not use.

Charging control once again: Selection of position and time control is available during charging before injection.
2.5.4 Charging parameters settings

Path – screen → F4 charging → F5 parameters

F5 parameters

This screen consists of all corresponding parameters during charging settings. (Please refer to the parameters index for further information.)
2.6 Ejector settings

Including F2 ejector, F3 function and F4 parameters

2.6.1 Ejector settings

Path– screen → F5 ejector → F2 ejector

**F2 ejector**

**Ejector mode**: Ejector mode consists of 3 different kind of options;

- **Stop**: Use this function when ejector stop, uniformly used under semi auto mode, automatic mode is not available, the thimble will push then stop to await for the extraction of the production, the thimble will only move backward after the power door is closed. After the thimble movement then the close mold will activate.

- **Frequency**: The ejector frequency is count according to the setup value of the ejector frequency.

- **Vibration**: It is the ejector vibration, the thimble will rely on the frequency set and will activate a short term high speed backward and forward ejection when the forward ejector reach the end which will cause a vibration and a fall off of the production (the vibration time please refer to the ejector column)

Ejector setting: The ejector frequency of the forward and backward needed.

**Ejector frequency**: The ejector frequency of the forward and backward needed.

**Blast move/Blast stationary**: We provide fixed-blowing activities template (optional), which included blast move and blast stationary, C group, D group blasting to control the position of the action point, timing delay of the blasting time. If the ejection is done, mold close will only be activated after the blasting is completed.
2.6.2 Ejector function settings

Path – screen → **F5 ejector** → **F3 function**

F3 function

Robot: In order to operate with the automatic production of the production department, therefore robot is used to replace the workers to extract the injection products. Therefore after every completion of open mold the robot will automatically extract the products. Besides, in order to protect the mold platen and the robot the computer of our company will ensure that the robot has returned to its position in reserve before the close mold then close mold will be activate.

Automatic power door: If there is an installment of pneumatic or oil pressure power door, selection of this function should be set if not the power door key on the operating panel will be insufficient.

Reject once again : 0 means not available. Under the sensor situation, after the ejection of the products without the drop off of the products, after 4 seconds, if the sensor has not discovered about the dropping of the products, ejection movement will be continued. If the sensor had discovered the dropping then the alarm will be siren. During the first time of ejection, controller of two stages is used. The ejector position move forward from the position 0 under the high pressure slow speed which will reject the products above the surface, the rejection after the transit of the final position and enter the final point in a high speed will prevent the products being damaged.
2.6.3 Ejector parameters settings

Path – screen → F5 ejector → F4 parameters

F4 parameters

This screen consists of all corressponsible parameters of the ejector settings (Please refer to the parameters index for further informations)
2.7 Core(s) Settings

Including F2 core 1, F3 core 2, F4 function and F5 parameters

2.7.1 Core 1, core 2 settings

Path– screen → F6 core → F2 core 1/F3 core 2

**F2 core 1**

CoreAPos: MoUse
ModeOpt: A In → AOut
Press: 50 → 45
Speed: 50 → 45
Act.Time: 3.00 → 3.00
UnScuCnt: 0 → 0
2nd UScu Cnt: 0 → 0
Act.Pt: ClsS → OpnE
Act Posn: Hold

**F3 core 2**

CoreCPos: MoUse
ModeOpt: C In → COut
Press: 50 → 45
Speed: 50 → 45
Act.Time: 3.00 → 3.00
UnScuCnt: 0 → 0
2nd UScu Cnt: 0 → 0
Act.Pt: ClsS → OpnE
Act Posn: Hold

Core means core in and core out movement, its also a injection of a core when mold platen needs a mold close procedure, while during the open mold procedure the core was suck out and return to its original form, this function basically is used for a cannular mold platen. Under a auto mode condition injection and core move forward at the same time to prevent the core from being contracted when injection. Therefore core and screw is not allow to use for the same function.

**Function**: Selecting core mode, it is a core in movement, selecting screw mode it means the products need manufacture with grains, with the help of oil pressure motor to activate turning and position fixing control. (When you are using the function above, please check the motor if there is a oil
passage switch, it is because this function is a non-standardize equipment.

Core setting: The computer can provide at least 6 groups of core control which depends on the motor oil passage equipment, every group of core can be set separately according to your requirements including the pressure, speed, movement time, movement position setup.

Control: If a core mode is selected, you can either choose the distance control or the time control. If a screw mode is selected, you can either choose counting control or time control.

2.7.2 Core function setup

Path – screen ➔ F6 core ➔ F4 function

Value is set according to the actual production demand.
2.7.3 Core parameters settings

Path→ screen → **F6 core → F5 parameters**

**F5 parameters**

This screen consists of all.corresponsible parameters of the core settings(please refer to the parameters index for further informations.)
2.8 Nozzle settings

Including F2 nozzle, F3 parameters

2.8.1 Nozzle settings

Path– screen → F7 nozzle → F2 nozzle

F2 nozzle

Pressure: Set here the hydraulic pressure for Nozzle advance and retraction.

Speed: Set up suitable nozzle high speed and slow speed action, when the nozzle move in a high speed to the final position, nozzle forward will change to a slow speed movement until the slow speed timing is done.

Position: Nozzle move forward to the final position will change the speed from high speed to low speed, considering changing to slow speed before 20 mm of the final position to allow the shut off to reach the mold platen by using the rotation power which is very important. It is because if the position setting is not accurate, the nozzle will not decrease the speed, the mold platen and shut off will damage because of the strength while they contact.

**Warning:** Nozzle position, the forward the figure is the bigger the figure will be. If the nozzle distract position is 0, the nozzle will distract to the end.

Nozzle distraction mode:
- not necessary = means the nozzle is not operating
- After the charge = Nozzle distract after the charge ends
- Before mold open = Nozzle distract before the mold open (means the cooling time has reached)
- After the injection = Nozzle distract after the injection.
2.8.2 Nozzle parameters settings

Path – screen → **F7 nozzle** → **F3 parameters**

**F3 parameters**

This screen consists of all correspondible parameters of the nozzle and mold adjustment. (Please refer to the parameters index for further informations)
2.9 **Temperature settings**

Including F2 temperature, F3 timing and F4 parameters

2.9.1 Temperature settings

Path→ screen → **F8 temperature → F2 temperature**

**F2 temperature**

**Maximum temperature preset value 450°C**

Keep warm function : Use [ Fellowship ] to select “not use”. When it shows“use”then the actual temperature is set according to the preset warming temperature.

Keep warm temperature : When the temperature reached the preset keep warm temperature the computer will automatically switch on the heater to activate the keep warm function.

You can choose the heating starting time according to this screen.

Anti-cold start time: this time on the actual temperature reached the set temperature of minus deviation of the temperature after the next time. Allow time after the end of the action.

Electric heat diagram colour explanation

- Dark Green: Means the actual temperature is within the limit range.(injection movement is available)
- Yellow: Heating condition.(injection is not available)
- Red: Means the actual temperature has overtake the temperature range which is exceeding the upper limit.

※ Note: If the actual temperature than the original set of temperature alarm, the lower limit will be ‘temperature deviations' message, but so will be able to reduce the heating next time.

When the temperature is damage the screen will display "977" , "988" , "999" -

977 means the temperature board is not connected or damaged

988 means the temperature wire or temperature induction is damaged.

999 means the temperature is exceeding the normal range limit or the temperature wire is damaged.
2.9.2 Temperature timing settings

Path – screen → **F8 temperature → F3 timing**

**F3 timing**

Heating on time: When you are using the heating on time function, please setup the heating time and select use, when it reach the heating time the computer will automatically activate the heater switch.

2.9.3 Temperature parameters settings

Path – screen → **F8 temperature → F4 parameters**

**F4 parameters**

This screen consists of all corressponsible parameters of the temperature settings. (Please refer to the parameters index for further informations)
2.10 Fast set settings

Including F2 fast set, F3 mold adjustment and F4 parameters

2.10.1 Fast set
Path – screen → F9 fast set → F2 fast set

F2 fast set

This screen is available for open mold, close mold, ejector, injection, hold pressure, charging and suck back fast set settings.

2.10.2 Fast set mold adjustment settings
Path – screen → F9 fast set → F3 mold adjustment

F3 mold adjustment

Mold adjustment setting: Mold forward and backward speed usage by using slow speed, once the mold plate start timing, then it will change into high speed. The computer will activate automatic timing, setting is not needed.
2.10.3 Fast set mold adjustment parameters settings

Path – screen ➔ F9 fast set ➔ F4 parameters

F4 parameters

This screen consists of all corressponsible parameters of the mold adjustment. (Please refer to the parameters index for further informations)
2.11 Monitor Settings

Including F2 alarm, F3 test 1, F4 test 2, F5 test 3, F6 counting and F7 parameters

2.11.1 Alarm display

Path– F10 next ➔ F2 monitor ➔ F2 alarm

F2 alarm

Display Start No: The screen displays 8 error messages at a time. If you want to refer to the previous recorded errors you can enter here the error number for the first error to be displayed on the screen. But this system is only allow to record 100 errors in maximum and the datas will be save when the electricity is OFF.

Total Error Count: The total number of errors is recorded.

Reset: Set this value to “1” if you want to reset the error log.

Code: The error code display is from 0 to 100

Alarm Explanation: Including brief Chinese explanation to assist you to find the error.

Str.Tim. (Start Time): The time when the error occurred

Reset Tim (Reset Time): The time when the error is eliminated.
2.11.2 Monitoring setting 1

Path – F10 next → F2 monitor → F3 test 1

F3 test 1

The HMI and controller provide you with an automatic monitoring and alarm system. The system allows you to set a desired operating range with upper and lower limits (Delta Values) for each production parameter. Once the current parameter value exceeded the pre-set range the machine will stop operation and the alarm will siren. For later analysis the monitoring system will record the time and the type of error that caused the alarm.

At the beginning of each operation, the automatic alarm is turned off until the machine has finished the pre-set number of production cycles in Auto Operation mode. After the number of pre-set production cycles the automatic alarm will be activated and the achieved parameter values of the last production cycle will be used as reference points for the upper and lower limits (Delta Values) of each production parameter. Should any of the current production parameters during the next production cycle and thereafter be outside the pre-set upper and lower limits (Delta Values) the alarm will sound and machine operation will stop for trouble shooting.

The activation of the automatic alarm function is delayed to allow for a stabilization of the production cycles. At the start of machine operation it is normal that the current production parameters vary considerably from one cycle to the next before they begin to stabilize. You should consider this when setting the number of production cycles before automatic alarm activation to allow a smooth operation without interruptions.

You can adjust the automatic alarm starting in the parameters.

To set the upper and lower limits for current production parameters you can use % values and/or absolute values. These Delta Values are then used in connection with the established Reference Value to determine the upper and lower limits. If you use a combination of % and absolute values the upper/lower limits will be calculated according to the following formula:
### Upper Limit

<table>
<thead>
<tr>
<th>RV+ (RV*X/100) + Y</th>
<th>RV=Reference Value</th>
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</thead>
<tbody>
<tr>
<td>RV- (RV*X/100) - Y</td>
<td>Y=Delta Absolute Upper Limit</td>
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</tbody>
</table>

Since the reference values are not fixed and vary from one machine operation cycle to the next the values are lost once the machine is turned off. They will be re-established at the beginning of the next operation cycle by using the current parameter values to determine the new reference points for the upper and lower limits (Delta Values).

If at some point after establishing the reference values you want to replace them with the currently achieved parameter values you can set the **Auto Alarm** mode. The controller will then use the parameter values of the last production cycle as the new reference values.

When the auto alarm system display use: auto alarm is open

Display not use: auto alarm is close

Explaination of each monitoring value:

- **Cls Mold (Close Mold):** Total mold closing time.
  - Low pressure: Total mold closing low pressure time
  - High pressure: Total mold closing high pressure time
  - Open mold: Total mold opening time.
  - Open mold final position: The position when mold opening ends.
  - cycle: Total production cycle time in auto mode
  - **Eject:** Total ejection time
- **Inj Time (Injection Time):** Total injection time.
  - **V->P SW:** The position achieved at time of transition from injection to hold pressure.
  - **V->P SW:** The injection time elapsed at time of transition from injection to hold pressure.
  - **V->P SW:** The injection pressure achieved at time of transition from injection to hold pressure.
    - Injection monitor: The position where injection and pressure protection end
- **Inj Start (Injection Start):** The position reached at start of injection.
- **Charge (Plasticizing):** Total charge (plasticizing) time.
  - Retraction time: Total time of retraction.
2.11.3 Monitoring 2/3 settings

Path – F10 next → F2 monitor → F4 test 2/F5 test 3

**F4 test 2**

This monitoring screen allows you to compare the most important production cycle parameters. Use this screen to compare production parameter deviation during machine operation. The parameter comparison of different production cycles allows you to adjust the relevant machine settings to improve overall the product quality.

The controller automatically saves the parameters of the last 500 production cycles, displaying 8 records at a time.

**Display Start No:** Enter the number of the record you want to be displayed first.

**Sampling Interval (Cyc):** Enter the sampling interval you would like to use

**Reset (0/1):** If you want to reset this monitor screen at any time enter here the value “1” and press enter.

**F5 test 3**
Production code: Serial code of the products

Cycle (Cycle Time): Total duration of this production cycle.

Chg.Tim. (Charge Time): Total charging time.


Inj Start (Injection Start): The position reached at start of injection.

Hld.Str. (Hold Start): The position reached at beginning of hold pressure.

Injection monitoring: The position reached when the charging is transfer after the injection and hold pressure end.
2.11.4 Monitoring counting settings

Path– F10 next → F2 monitor → F6 counting

**F6 counting**

Total amount of mold open zero-mode: If you want to enter a zero mode after the opening mold, please select “use”, then press key to clear and recount the total.

Total amount of target production: Setup the production amount you required, when the opening mold amount preset value has reached, the computer will alarmed opening mold to stop the machines from operating unless the opening mold is in zero mode, if not the machine is not able to operate.

Total amount of current production: Means the actual amount of current production.

Total amount of target packaging: Setup the package you required if the preset package amount had reached the alarm will siren and will be shown on the display screen to inform the customer, however the machine will not stop while continue the next movement.

Total amount of current packaging: Means the current packaging amount, but if the preset value and the current value is the same the current value will be cleared to 0.
2.11.5 Monitor parameters settings
Path – F10 next → F2 monitor → F7 parameters

F7 parameters

The value could be set according to the actual production demand.
2.12 Monitor adjustment

Including F2 AD, F3 DA1, F4 DA2, F5 DA3 and F6 DA4

2.12.1 AD adjustment settings

Path– F10 next ➔ F3 adjustment ➔ F2AD

F2 AD

The replacement of foot position or modify some of the mechanical parts, so re-location of the zero correction is needed (in manual mode only):

1. Please insert the password
2. Please switch the part to zero according to the requirement before operating.
3. Please set the value to 1 then press enter key to complete the zero mode movement.
2.12.2 DA1 adjustment settings

Path– F10 next  →  F3 adjustment  →  F3 DA1

F3 DA1

DA2, DA3, DA4 and DA1 picture and function are similar

Output force: DA correction during the test output, the corresponding channel's output continued to the timing, when the timing has reach the limit, the output will automatically be cut off.

Test : During testing, insert the pressure and flowing preset value as required.

Output : The corresponding value of the host computer

Reference value : Preset value of the DA curve by the system

Actual value : Value after adjustment according to the actual demand of the DA curve.

Example of the operation: (the first group of proportional valve):
Select the node point from 0 to 140 for the testing such as 60. Then, enter 60 into the testing point, the system will immediately respond to the feedback output value of 60. Then, by observing the machine pressure gauge of their own systems or external pressure test tools, the real pressure is assumed to be 58. In the corresponding node, change 60 to 58! If the actual pressure is 58.5, while at the corresponding node, 60 will be changed to 58 or 59, then adjust the figures for the corresponding binary output value to achieve the adjustment.

If you need other options of adjustment please contact Techmation for further requirements!
2.13 I/O Channel reassignment

Including F2 PB, F3 PC, F4 test PA 及 F5 diagnose

2.13.1 Input channel diagnostics (PB)

Path – F10 next → F4 IO → F2 PB1

F2 PB1

PB2、PB3、PB4 and PB1 picture and function are similar.

You can use this display screen to ensure the connection between the controller and the corresponding input signal, if you reach INPUT sign during operating, you can ensure the connection between the controller and the signal through this display screen.

If the PB signal display red it means normal while if the signal is yellow it means the signal is not received yet.

If the INPUT signal of the I/O board is malfunction, use PB REASSIGN to solve PCB board malfunction problems. Operating procedure please refer to I/O Channel Index section for a list and description of all I/O channels are available.
2.13.2 Output channel diagnostics (PB)

**Setting input PB**

Path – F10 next → F4 IO → F2 PB → F6 set PB

F6 set PB

![Setting input PB diagram](image)

假若 If the PCB board is malfunctioning, you can transfer the malfunction point to the unused input point. Please consult the producer for the password.
2.13.3 Output Channel Diagnostics (PC)

Path – F10 next ➔ F4 IO ➔ F3 PC ➔ F2 PC1

F2 PC1

PC2, PC3, PC4 and PC1 picture and function are similar.

When there is an output during the output valve, the signal light will be yellow while when there is no output the signal light will be in red.

Under the manual mode motor close condition, press “OK” key and the signal light will turn yellow, at this moment there will be an output force, press”C” cancel key, the signal light will turn red to cancel the output force.
2.13.4 Output diagnostics screen (PC)

Setting output PC

Path – F10 next → F4 IO → F3 PC → F6 set PC

F6 set PC

If the PCB board is malfunctioning, you can transfer the malfunction point to the unused output point. Please consult the producer for the password.
2.13.5 Control Panel operating screen (PA)

Path—  **F10 next → F4 IO → F4 Test PA**

**F4 Test PA**

This screen is used to testify all the key on the control panel, when you press on any key on the panel the key on the screen will correspondingly turn yellow.

The graph below is the changes after F1 is selected:

If the screen display has changes without accordance to the key you press it means that the panel is malfunctioning, at this moment please check the panel or change a control panel.

Press “C” cancel key twice to exit from this screen.
2.13.6 System diagnostics screen

Path – F10 next → F4 IO → F5 diagnose

F5 diagnose

Notice: This screen is specializing for engineer to diagnose the system, please do not enter the correction.
2.14 Mold database settings

Including F2 save, F3 read, F4 copy, F5 cancel, F6 machine and F7 records

2.14.1 Mold save

Path – F10 next \(\rightarrow\) F5 mold platen \(\rightarrow\) F2 save

**F2 save**

<table>
<thead>
<tr>
<th>No.</th>
<th>MoldCode</th>
<th>SaveDate</th>
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</tbody>
</table>

Max. Count: 299 Remain Count: 199

Target: Panel or memory card.

Saving mode: Replace or save

Replace: Replace the mold platen data to another existing mold platen.

Resave: Copy the mold platen name data to another inexistence mold platen, setting of “mold platen name”+“material”+“colour” is needed at the menu number, the saving date will appear automatically, self insert by oneself is not necessary.

Sequencing mode: Date or name

Pages switching request: You may request for the next or previous page data confirm: Cancel confirm

cancel: Delete the saved mold platen data

Maximum saving amount: The maximize amount to save the mold platen data.

Remain saving amount: Remain amount to save the mold platen data.
2.14.2 Mold read

Path – F10 next → F5 mold platen → F3 read

F3r read

2.14.3 Mold copy

Path – F10 next → F5 mold platen → F4 copy

F4 copy

Mold copy: Insert the mold platen code you want to save at this edit box in order to copy the data.
2.14.4 Mold cancel
Path– F10 next → F5 mold platen → F5 cancel

F5 cancel

This screen allows machine parameters/version data to save in MMC card or external data input.

2.14.5 Machine Settings
Path– F10 next → F5 mold platen → F6 machine

F6 machine
2.14.6 Records Settings

Path – F10 next → F5 mold platen → F7 records

F7 records

This screen is the reference page of the parameters data correction records.

2.15 Other special parameters settings

Path – F10 next → F6 others

F6 others

This screen consists of all corresponding parameters of the other settings. (Please refer to the parameters index for further informations)
2.16 System settings

Including F2 system, F3 control F4 privilege, F5 data, F6 reset and F7 install

2.16.1 System parameters settings

Path – F10 next → F7 system → F2 syste,

F2 system

Monitor protection installment: Protect LCD screen and increase its exercise life span according to your data set.

Language display: Basically is Chinese or English screen, include optional choice of other languages.

Time and date: Time and date setup of the system.
2.16.2 System control screen

Path – F10 next → F7 system → F3 control

**F3 control**

You can only adjust the electron ruler stroke, machine stroke and current position system data in this screen.
2.16.3 Internal data

Path – F10 next → F7 system → F4 data

F4 data

This is specializing for software engineer for data correction, please do not use.
2.16.4 System reset

Path – F10 next → F7 system → F5 reset

**F5 reset**

![System reset interface]

You can either reset the panel or the computer host.

Regarding to the abnormal movement of the controller, you can use this screen to reset the system, by pressing confirm(Y), the system will reset. In order to prevent data lost, insert the password before entering the system reset screen, please consult the supplier.

**Warning**: System reset is the last option, after the system reset all the mold data and parameters data will disappear. After your system reset please switch off the power supply and restart the computer.
2.16.5 System privilege screen

Path – F10 next → F7 system → F6 privilege

F6 privilege

Customer can use this to change the original preset password.
2.16.6 Install screen

Path – F10 next → F7 system → F7 install → F2 install/ F3 install

**F2 install**

Insert the value in the machine serial number and the production date column then work out the F3 install screen machine turn on password.

**F3 install**

Insert the password and press enter, the contents below will be shown:

Machine consignment date: The date when the machine is sent to the customers, which is also the date when the down time function activated.

Installment: Represent the total installment of the customers’ payment, the current installment represent the total installment of the payment prepaid.

Parking day of single installment: Represent the interval day of the payment of every installment.

Parking date of next installment: When the parking date is activation, please insert again the
year/month/day as insert once is ineffective.

Parking warning day number：The advance day number before the parking date expired

Next warning date：While using the parking timing function, the warning time before the parking timing.

Running timing：This is the accumulated running time after the activating of the motor; it is only available for display.

Running condition：When the setup is “1” the function above will start operating,”0”means not using.

Interval minute：When the alarm is activating, there will be an alarm message pop out during every internal period.

**Important items:**

- Please insert once again if there is a changes of month/day during the down time function year/month/day.
- When the down time function is operating, the current date and time can only enter the correction with the turn on password.
- Customer machine serial number and turn on password, detail records are needed for the panel control board serial number, once the turn on password is set our company is unable to disentangle from the screen.
- When the down time function is able to change with the control panel, the maintainence board of the machine under the down time function then is able to insert, your company should report the serial number record of the down time function usage to our company in order to prevent customers sending directly for maintainence or our company provide maintainence support.(turn on password is not needed)

If your company is willing to unlock the password function the only way is to replace the hardware, spareparts should be charge for your company.
2.17 Version data

2.17.1 Version screen

Path– F10 next → F8 version

Maintenance personnel could take more notice against the system data and version by this record in order to facile the usage communication in the future.
3. I/O Channel Index

Please use this list to enter the label and description of the relevant I/O channels as supplied by the machine manufacturer. If necessary this list allows you to track any changes of I/O channel assignments.

Input channel

<table>
<thead>
<tr>
<th>Channel</th>
<th>Label</th>
<th>Description</th>
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### 4. Parameters Index

#### 4.1 Open mold parameters

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<tr>
<th>No.</th>
<th>Close mold-other Ramp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 stage</td>
<td><strong>Close mold at the start Ramp maximum counting</strong> – The initial pressure/speed increase time is the maximum value.</td>
</tr>
<tr>
<td>2 stage</td>
<td></td>
</tr>
<tr>
<td>3 stage</td>
<td></td>
</tr>
<tr>
<td>Low pressure</td>
<td><strong>Close mold pressure Ramp</strong></td>
</tr>
<tr>
<td>High pressure</td>
<td><strong>Close mold flowing Ramp</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Close mold- Pressure Ramp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 stage</td>
<td><strong>Close mold 1 stage pressure Ramp</strong> – The increase slope of Close Mold 1 stage pressure buildup time.</td>
</tr>
<tr>
<td>2 stage</td>
<td><strong>Close mold 2 stage pressure Ramp</strong> – The increase slope of Close Mold 1 stage pressure buildup time.</td>
</tr>
<tr>
<td>Low pressure</td>
<td><strong>Close mold 3 stage pressure Ramp</strong> – The increase slope of Close Mold 1 stage pressure buildup time.</td>
</tr>
<tr>
<td>High pressure</td>
<td><strong>Close mold 4 stage pressure Ramp</strong> – The increase slope of Close Mold 1 stage pressure buildup time.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Close mold- Flow Ramp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 stage</td>
<td><strong>Close mold 1 stage pressure Ramp</strong> – The increase slope of Close Mold 1 stage speed buildup time.</td>
</tr>
<tr>
<td>2 stage</td>
<td><strong>Close mold 2 stage pressure Ramp</strong> – The increase slope of Close Mold 1 stage speed buildup time.</td>
</tr>
<tr>
<td>Low pressure</td>
<td><strong>Close mold 3 stage pressure Ramp</strong> – The increase slope of Close Mold 1 stage speed buildup time.</td>
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<tr>
<td>High pressure</td>
<td><strong>Close mold 4 stage pressure Ramp</strong> – The increase slope of Close Mold 1 stage speed buildup time.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Open mold- Pressure Ramp</th>
</tr>
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<tbody>
<tr>
<td>1 stage</td>
<td><strong>Open mold 1 stage pressure Ramp</strong> – The increase slope of Open Mold 1 stage pressure buildup time.</td>
</tr>
<tr>
<td>2 stage</td>
<td><strong>Open mold 2 stage pressure Ramp</strong> – The increase slope of Open Mold 1 stage pressure buildup time.</td>
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<tr>
<td>3 stage</td>
<td><strong>Open mold 3 stage pressure Ramp</strong> – The increase slope of Open Mold 1 stage pressure buildup time.</td>
</tr>
<tr>
<td>4 stage</td>
<td><strong>Open mold 4 stage pressure Ramp</strong> – The increase slope of Open Mold 1 stage pressure buildup time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Open Mold- Flow Ramp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 stage</td>
<td><strong>Open mold 1 stage pressure Ramp</strong> – The increase slope of Open Mold 1 stage speed buildup time.</td>
</tr>
<tr>
<td>2 stage</td>
<td><strong>Open mold 2 stage pressure Ramp</strong> – The increase slope of Open Mold 1 stage speed buildup time.</td>
</tr>
<tr>
<td>No.</td>
<td>Close mold-pressure/flow</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------------</td>
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<tr>
<td>0</td>
<td>Close mold setup pressure – Close mold pressure during mold height adjustment</td>
</tr>
<tr>
<td>1</td>
<td>Close mold setup flow – Close mold speed during mold height adjustment</td>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Open mold-pressure/flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Open mold setup pressure – Open mold pressure during mold height adjustment</td>
</tr>
<tr>
<td>1</td>
<td>Open mold setup flow – Open mold speed during mold height adjustment</td>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Movement time 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Close mold deviation valve open delayed time– Time delay of the opening of the close mold deviation valve</td>
</tr>
<tr>
<td>1</td>
<td>Close mold deviation valve open delayed time– Time delay to stop the close mold deviation valve.</td>
</tr>
<tr>
<td>2</td>
<td>Close mold low pressure forward time delay – Close mold low pressure pressure, speed delay sent.</td>
</tr>
<tr>
<td>3</td>
<td>Close mold low pressure valve delayed time–Close mold low pressure valve delay sent.</td>
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<tr>
<td>4</td>
<td>Auto mold adjustment low pressure time- Auto mold adjustment timing at 1 stage.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Movement time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Close mold high pressure forward time delay – Close mold high pressure pressure, speed delay sent.</td>
</tr>
<tr>
<td>1</td>
<td>Close mold high pressure maintains time – After close mold, maintain valve, pressure speed, delay stop.</td>
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<tr>
<td>2</td>
<td>Delay the stop time of the close mold done valve– After the close mold, close mold valve stop delayed.</td>
</tr>
<tr>
<td>3</td>
<td>Close mold done delay timing –After close mold, pressure speed stop delayed.</td>
</tr>
<tr>
<td>4</td>
<td>Open mold 1 delay sent slower then the low pressure valve– Open mold 1 delay sent slower then PC22 valve</td>
</tr>
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<table>
<thead>
<tr>
<th>No.</th>
<th>Movement time 3</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>Open mold 2 delay sent slower then low pressure valve –Open mold 2 delay sent slower then PC22 valve</td>
</tr>
<tr>
<td>1</td>
<td>Open mold done stop delay valve timing–After open mold done, valve delay stop</td>
</tr>
<tr>
<td>2</td>
<td>Open mold done delay timing–After the open mold done, pressure speed stop delay.</td>
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<tr>
<td>3</td>
<td>Open mold vent pressure timing- Vent pressure movement time</td>
</tr>
<tr>
<td>4</td>
<td>Open mold position effective zon–Open mold complete position positive and negative effective zon.</td>
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</tbody>
</table>
### 4.1 Injection Parameters

<table>
<thead>
<tr>
<th>No.</th>
<th>Injection-Pressure Ramp</th>
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<tbody>
<tr>
<td>1 stage</td>
<td><strong>Injection 1 pressure Ramp</strong> – The increase slope of injection pressure buildup time.</td>
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<tr>
<td>2 stage</td>
<td><strong>Injection 2 pressure Ramp</strong> – The increase slope of injection pressure buildup time.</td>
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<td>3 stage</td>
<td><strong>Injection 3 pressure Ramp</strong> – The increase slope of injection pressure buildup time.</td>
</tr>
<tr>
<td>4 stage</td>
<td><strong>Injection 4 pressure Ramp</strong> – The increase slope of injection pressure buildup time.</td>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Injection-Flow Ramp</th>
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</thead>
<tbody>
<tr>
<td>1 stage</td>
<td><strong>Injection 1 flow Ramp</strong> – The increase slope of injection pressure buildup time.</td>
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<tr>
<td>2 stage</td>
<td><strong>Injection 2 flow Ramp</strong> – The increase slope of injection pressure buildup time.</td>
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<tr>
<td>3 stage</td>
<td><strong>Injection 3 flow Ramp</strong> – The increase slope of injection pressure buildup time.</td>
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<td>4 stage</td>
<td><strong>Injection 4 flow Ramp</strong> – The increase slope of injection pressure buildup time.</td>
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<table>
<thead>
<tr>
<th>No.</th>
<th>Injection-Pressure</th>
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<tr>
<td>1 stage</td>
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<tr>
<td>2 stage</td>
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</tr>
<tr>
<td>3 stage</td>
<td><strong>Injection mold setup flow</strong> – Speed during mold adjustment mold height adjustment</td>
</tr>
<tr>
<td>4 stage</td>
<td><strong>Injection mold setup pressure</strong> – Pressure during mold adjustment</td>
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<table>
<thead>
<tr>
<th>No.</th>
<th>Injection-Movement timing</th>
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<tbody>
<tr>
<td>1 stage</td>
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<tr>
<td>2 stage</td>
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<tr>
<td>3 stage</td>
<td><strong>Injection pressure increase timing delayed</strong></td>
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<tr>
<td>4 stage</td>
<td><strong>Injection done valve stop delayed timing</strong> – Injection valve stop delayed after injection done</td>
</tr>
<tr>
<td></td>
<td><strong>Injection timing delayed</strong> – Delay after the nozzle input, before the injection</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Hold pressure – Pressure Ramp</th>
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<tbody>
<tr>
<td>1 stage</td>
<td><strong>Hold pressure 1 pressure Ramp</strong> – The increase slope of hold pressure1 pressure buildup time.</td>
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<tr>
<td>2 stage</td>
<td><strong>Hold pressure 2 pressure Ramp</strong> – The increase slope of hold pressure2 pressure buildup time.</td>
</tr>
<tr>
<td>3 stage</td>
<td><strong>Hold pressure 3 pressure Ramp</strong> – The increase slope of hold pressure3 pressure buildup time.</td>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Hold pressure-Flow Ramp</th>
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<tbody>
<tr>
<td>1 stage</td>
<td><strong>Hold pressure 1 pressure Ramp</strong> – The increase slope of hold pressure1 speed buildup time.</td>
</tr>
<tr>
<td>2 stage</td>
<td><strong>Hold pressure 2 pressure Ramp</strong> – The increase slope of hold pressure2 speed buildup time.</td>
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<tr>
<td>3 stage</td>
<td><strong>Hold pressure 3 pressure Ramp</strong> – The increase slope of hold pressure3 speed buildup time.</td>
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### 4.2 Charge parameters

<table>
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<th>Charge-Pressure Ramp</th>
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<tbody>
<tr>
<td>1 stage</td>
<td><strong>Charge 1 stage pressure Ramp</strong> – The increase slope of charge pressure buildup time.</td>
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</table>
### 2stage Charge 2 stage pressure Ramp
The increase slope of charge pressure buildup time

### 3stage Charge 3 stage pressure Ramp
The increase slope of charge pressure buildup time

### Suckback Suck back pressure Ramp
The increase slope of suck back buildup time

<table>
<thead>
<tr>
<th>No.</th>
<th>Charge-Flow Ramp</th>
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<tbody>
<tr>
<td>1st</td>
<td>Charge 1 stage flow Ramp – The increase slope of charge 1 speed buildup time.</td>
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<tr>
<td>2st</td>
<td>Charge 2 stage flow Ramp – The increase slope of charge 2 speed buildup time.</td>
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<tr>
<td>3st</td>
<td>Charge 3 stage flow Ramp – The increase slope of charge 3 speed buildup time.</td>
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<tr>
<td>S</td>
<td>Suck back flow Ramp – The increase slope of suck back buildup time.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Charge-pressure/flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Charge mold setup pressure – Charge pressure during mold height adjustment</td>
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<tr>
<td>2st</td>
<td>Charge mold setup flow – Charge speed during mold height adjustment</td>
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<table>
<thead>
<tr>
<th>No.</th>
<th>Charge –Movement time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Charge done valve stop delayed timing – Charge done, charge valve stop delayed</td>
</tr>
<tr>
<td>2st</td>
<td>Suck back done valve stop delayed timing – Suck back done, suck back stop delayed</td>
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</table>

### 4.3 Ejector parameters

<table>
<thead>
<tr>
<th>No.</th>
<th>Ejector- Pressure Ramp</th>
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</thead>
<tbody>
<tr>
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<td>Ejector forward 1 stage pressure Ramp – The increase slope of ejector forward pressure buildup time.</td>
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<tr>
<td>2st</td>
<td>Ejector forward 2 stage pressure Ramp – The increase slope of ejector forward pressure buildup time.</td>
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<tr>
<td>2st</td>
<td>Ejector backward 2 stage pressure Ramp – The increase slope of ejector backward pressure buildup time.</td>
</tr>
<tr>
<td>1st</td>
<td>Ejector backward 1 stage pressure Ramp – The increase slope of ejector backward pressure buildup time.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Ejector-Flow Ramp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Ejector forward 1 stage flow Ramp – The increase slope of ejector forward speed buildup time.</td>
</tr>
<tr>
<td>2st</td>
<td>Ejector forward 2 stage flow Ramp – The increase slope of ejector forward speed buildup time.</td>
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<tr>
<td>2st</td>
<td>Ejector backward 2 stage flow Ramp – The increase slope of ejector backward speed buildup time.</td>
</tr>
<tr>
<td>1st</td>
<td>Ejector backward 1 stage flow Ramp – The increase slope of ejector backward speed buildup time.</td>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Ejector-pressure</th>
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<tbody>
<tr>
<td>1st</td>
<td>Ejector setup pressure – Pressure settings for mold height adjustment</td>
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<tr>
<td>2st</td>
<td>Ejector Setup Flow – Speed settings for mold height adjustment</td>
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<thead>
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<th>Ejector-Movement time 1</th>
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<td>Ejector vibration time – Ejector vibration total timing</td>
</tr>
<tr>
<td>No.</td>
<td>Ejector-Movement position</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------</td>
</tr>
<tr>
<td>1 stage</td>
<td>Ejector position operative zone -- Before mold closing, check ejection backward position allow inaccuracy value.</td>
</tr>
<tr>
<td>2 stage</td>
<td>Ejector backward position upper limit value</td>
</tr>
</tbody>
</table>

4.4 Core parameters

<table>
<thead>
<tr>
<th>No.</th>
<th>Core-Pressure Ramp1</th>
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</thead>
<tbody>
<tr>
<td>Core A In</td>
<td>Core A In Pressure Ramp -- The increase slope of core A in pressure buildup time.</td>
</tr>
<tr>
<td>Core B In</td>
<td>Core B In Pressure Ramp -- The increase slope of core B in pressure buildup time.</td>
</tr>
<tr>
<td>Core A Out</td>
<td>Core A Out Pressure Ramp -- The increase slope of core A Out pressure buildup time.</td>
</tr>
<tr>
<td>Core B Out</td>
<td>Core B Out Pressure Ramp -- The increase slope of core B Out pressure buildup time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Core-Flow Ramp1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core A In</td>
<td>Core A In Pressure Ramp -- The increase slope of core A in speed buildup time.</td>
</tr>
<tr>
<td>Core B In</td>
<td>Core B In Pressure Ramp -- The increase slope of core B in speed buildup time.</td>
</tr>
<tr>
<td>Core A Out</td>
<td>Core A Out Pressure Ramp -- The increase slope of core A Out speed buildup time.</td>
</tr>
<tr>
<td>Core B Out</td>
<td>Core B Out Pressure Ramp -- The increase slope of core B Out speed buildup time.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>No.</th>
<th>Core-Pressure Ramp2</th>
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</thead>
<tbody>
<tr>
<td>Core C In</td>
<td>Core C In Pressure Ramp -- The increase slope of Core C in pressure buildup time.</td>
</tr>
<tr>
<td>Core C Out</td>
<td>Core C Out Pressure Ramp -- The increase slope of Core C Out pressure buildup time.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Core-Flow Ramp2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core C In</td>
<td>Core C In Pressure Ramp -- The increase slope of Core C in speed buildup time.</td>
</tr>
<tr>
<td>Core C Out</td>
<td>Core C Out Pressure Ramp -- The increase slope of Core C Out speed buildup time.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>No.</th>
<th>Core-Movement time 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core A In</td>
<td>Core forward time delayed -- Core forward time is slower than the output time.</td>
</tr>
<tr>
<td>Core B In</td>
<td>Core backward time delayed -- Core backward time is slower than the output time.</td>
</tr>
<tr>
<td>Core A out</td>
<td>Core forward starting scale valve delay open -- The pressure and speed after the core in movement start is slower than the output time.</td>
</tr>
<tr>
<td>Core B out</td>
<td>Core forward end direction valve delay stop -- Stop the pressure flow of the core in movement first then delay the stop time if the direction valve.</td>
</tr>
</tbody>
</table>
| Core E | Core backward starting scale valve delay open -- The pressure and flow after the
4.5 Nozzle parameters

<table>
<thead>
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<th>No.</th>
<th>Nozzle-Pressure Ramp</th>
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<tbody>
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<td>2 stage</td>
<td>Nozzle forward slow speed pressure Ramp – Increase slope of the nozzle forward slow speed pressure buildup time.</td>
</tr>
<tr>
<td>1 stage</td>
<td>Nozzle forward pressure Ramp – Increase slope of the nozzle forward pressure buildup time.</td>
</tr>
<tr>
<td>1 stage</td>
<td>Nozzle backward pressure Ramp – Increase slope of the nozzle backward pressure buildup time.</td>
</tr>
<tr>
<td>2 stage</td>
<td>Nozzle backward slow speed pressure Ramp – Increase slope of the nozzle backward slow speed pressure buildup time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Nozzle - flow Ramp</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 stage</td>
<td>Nozzle forward slow speed flow Ramp – Increase slope of the nozzle forward slow speed buildup time.</td>
</tr>
<tr>
<td>1 stage</td>
<td>Nozzle forward flow Ramp – Increase slope of the nozzle forward speed buildup time.</td>
</tr>
<tr>
<td>1 stage</td>
<td>Nozzle backward flow Ramp – Increase slope of the nozzle backward speed buildup time.</td>
</tr>
<tr>
<td>2 stage</td>
<td>Nozzle backward slow speed flow Ramp – Increase slope of the nozzle backward slow speed buildup time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Nozzle-Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 stage</td>
<td>Nozzle setup pressure – Nozzle pressure for mold height adjustment</td>
</tr>
<tr>
<td>1 stage</td>
<td>Nozzle setup flow – Nozzle speed for mold height adjustment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Nozzle-Movement time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 stage</td>
<td>First nozzle slow speed time - nozzle slow speed forward timing.</td>
</tr>
</tbody>
</table>

4.6 Temperature parameters

| No. | Temperature-Exercise selection 1 |
1 stage temperature exercise – Temperature is not use when the setting is 0 during the 1 stage warming buffering zon.

2 stage temperature exercise – Temperature is not use when the setting is 0 during the 2 stage warming buffering zon.

3 stage temperature exercise – Temperature is not use when the setting is 0 during the 3 stage warming buffering zon.

4 stage temperature exercise – Temperature is not use when the setting is 0 during the 4 stage warming buffering zon.

5 stage temperature exercise – Temperature is not use when the setting is 0 during the 5 stage warming buffering zon.

<table>
<thead>
<tr>
<th>No.</th>
<th>Temperature-Barrel temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Barrel temperature upper limit alarm value – Barrel temperature temperature alarm upper limit</td>
</tr>
<tr>
<td>1</td>
<td>Barrel temperature lower limit alarm value – Barrel temperature temperature alarm lower limit</td>
</tr>
<tr>
<td>2</td>
<td>Cooler On Deviate – Hydraulic oil cooler activation temperature</td>
</tr>
<tr>
<td>3</td>
<td>Cooler Off Deviate – Hydraulic oil cooler deactivation temperature</td>
</tr>
<tr>
<td>4</td>
<td>Temperature Not Up – Setting for temperature warning (°C increase per 3 minutes)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Temperature-Oil temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Oil Temp Up Limit – Hydraulic oil temperature upper limit</td>
</tr>
<tr>
<td>1</td>
<td>Oil Temp Low Limit – Hydraulic oil temperature lower limit</td>
</tr>
<tr>
<td>2</td>
<td>Temp Cooler On – Barrel cooler activation temperature</td>
</tr>
<tr>
<td>3</td>
<td>Temp Cooler Off – Barrel cooler deactivation temperature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Temperature-Oil temperature preheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Oil temperature preheat usage – Oil temperature preheat for usage.</td>
</tr>
<tr>
<td>1</td>
<td>Oil temperature preheat pressure – Oil temperature preheat pressure</td>
</tr>
<tr>
<td>2</td>
<td>Oil temperature preheat speed – Oil temperature preheat speed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Temperature-Setting percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Manual mode preheat percentage(0=not use 1=use)</td>
</tr>
</tbody>
</table>

### 4.7 Fast set parameters

<table>
<thead>
<tr>
<th>No.</th>
<th>Fast set-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Motor protection time – Motor activate done, timing maintained</td>
</tr>
<tr>
<td>1</td>
<td>Motor protection time – Motor Y starting time</td>
</tr>
<tr>
<td>2</td>
<td>Motor rest time – Y turn△, intermediate timing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Fast set-Lubricating 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>After power ON lubricating will not activate among the 1 and 2 mold – The 1 and 2 mold will not activate lubricating movement after power ON.</td>
</tr>
<tr>
<td>1</td>
<td>Auto lubrication mold number – Lubrication counting after few circular numbers.</td>
</tr>
<tr>
<td>2</td>
<td>Auto lubrication timing – The usage of the data of lubrication movement time and mode are different according to current period.</td>
</tr>
<tr>
<td>3</td>
<td>Auto lubrication delay – Lubrication movement interval time</td>
</tr>
</tbody>
</table>
5. Alarm/Error Message Display Screen

In case of an error the corresponding alarm message will be displayed in the status bar in the lower left part of your screen just above the F1 – F10 keys (please refer to the Overview section for exact location of the status bar). You can see the alarm messages regardless of the screen you are currently using. In case of multiple alarms the status bar will display the most important alarm.

For a more detailed description and analysis of the error(s) that caused the alarm you can switch to the Error Messages Display Screen by pressing the (F6) Alarm key. In case of multiple alarms this screen allows you to verify any error/alarm messages the status bar might not have displayed.

Please refer to the Error Messages Display Screen section for more information.

Alarm/Error Message Explanation:

1 - "Temperature Error" – Indicates a barrel heating temperature problem/possible malfunction. Check the settings and current temperature. Please refer to the Temperature Control section of this manual for additional information.

2 - "Please Close Door" – Prompt in Semi-auto mode to close the door to start the next production cycle. Please refer to the Machine Control Panel Keys section of this manual for additional information.

3 - "Please Open Door" – Prompt in Semi-auto mode to open the door at the end of the production cycle. Please refer to the Machine Control Panel Keys section of this manual for additional information.
4 - "Off Man./Emerg. Key" – Indicates the machine has been stopped as a result of pressing either the Manual key or the Emergency button. Release the Emergency key if necessary to resume machine operation.

5 - "Oil Temp. Over" – Indicates the hydraulic oil temperature is too low or too high. Check the parameter settings and adjust if necessary. In case of overheating make sure the cooling system is turned on. In case of low temperature make sure the hydraulic motor is turned on and wait until the motor has warmed up the hydraulic oil sufficiently.

6 - "Cycle Time Exceeded" – Indicates the production cycle time during the last cycle has been outside the preset limits. Check Monitor 1 for more details. Please refer to the Monitoring Settings 1 (Automatic Alarm) section of this manual for more information.

7 - Reserved (not used)

8 - "Eject Position Error" – Indicates an ejector position problem. Check the ejector position as well as the relevant potentiometer.

9 - "Inject Cushion Error" – Indicates the injection parameters during the last production cycle have been outside the preset limits. Check Monitor 1 for more details. Please refer to the Monitoring Settings 1 (Automatic Alarm) section of this manual for more information.

10 - "Purge Guard Opened" – Indicates that the injection unit cover is open. Please close the cover to resume machine operation.

11 - "Robot Malfunction" – Indicates a robot problem. Check and reset robot to resume machine operation.

12 - "No. of Shots Reached" – Indicates the preset number of production cycles has been reached. Please refer to the Production Control section of this manual for more information.

13 - "Mold Open Time Out" – Indicates the mold opening parameters during the last production cycle have been outside the preset limits. Check Monitor 1 for more details. Please refer to the Monitoring Settings 1 (Automatic Alarm) section of this manual for more information.

14 - "Part Not Dropped" – Indicates an ejection failure while in Photo Sensor mode. Remove the mold product before resuming machine operation. Please refer to the Machine Control Panel Keys section of this manual for additional information.

15 - "Hopper Empty" – Refill the hopper with plastic granulate.

16 - "Mold Close End Error" – Indicates the mold closing parameters during the last production cycle have been outside the preset limits. Check Monitor 1 for more details. Please refer to the Monitoring Settings 1 (Automatic Alarm) section of this manual for more information.

17 - "Pos. Setting Error" – Indicates inconsistent position settings for either Mold Closing, Mold Opening, Suck-back or Charge (Plasticizing) settings. Check the relevant settings.
18 - "Finish Auto Adjust" – Indicates the automatic Mold Height Adjustment has been completed. Please refer to the Machine Operating Mode Keys section of this manual for additional information.

19 - "Lubr. Oil Level Error" – Indicates the lubrication oil level is too low. Check the oil level and fill up if necessary.

20 - "Inj. Start Pos. Error" – Indicates the injection parameters during the last production cycle have been outside the preset limits. Check Monitor 1 for more details. Please refer to the Monitoring Settings 1 (Automatic Alarm) section of this manual for more information.

21 - "Screw Rpm Error" – Indicates a problem during screw operation. Check the Charge (Plasticizing) settings and make sure the hopper is not empty.

22 - "Inject Time Error" – Indicates the injection parameters during the last production cycle have been outside the preset limits. Check Monitor 1 for more details. Please refer to the Monitoring Settings 1 (Automatic Alarm) section of this manual for more information.

23 - "Opn 1-Slow Pos. Error" – Indicates a problem during automatic Mold Height Adjustment. Check the transition position from slow to fast movement during Mold Opening. Adjust if necessary.

24 - "Mold Protection Error" – Indicates that the mold could not close properly. Check if the molding product has been completely ejected. Adjust mold settings if necessary.

25 - "Decompress End Error" – Indicates Suck-back could not be executed according to the settings. Check and adjust settings if necessary.

26 - "Charge End Error" – Indicates that the screw could not reach the set end position during Charge (Plasticizing). Make sure the hopper is not empty and adjust settings if necessary.

27 - "Pack Count Reached" – Indicates the preset number of product packs has been reached. Please refer to the Production Control section of this manual for more information.

28 - "Core Pull End Error" – Indicates the core has not reached the preset end position (limit switch). Check the core position and make sure it is moving freely.

29 - Reserved (not used)

30 - "Lubrication Fail" – Indicates a lubrication problem. Check the lubrication system.

31 - "Oil Level too Low" – Indicates the hydraulic oil level is too low. Check the hydraulic oil level and fill up if necessary.

32 - "Oil Filter Blocked" – Indicates a blocked hydraulic oil filter. Check the filter and clean if necessary.

33 - "Ptm. Board Check Error" – Indicates a communication problem with the potentiometer board. Check board for possible causes.

34 - "Adjust End Touched" – Warning message indicating the moving platen has reached the backward end position (limit switch). Do not move platen/mold further backward to avoid damage to the machine.
35 - Reserved (not used)

36 - "C. P. Active Pos. Error" – Indicates a core position settings problem. Verify the core settings and mold position at time of core activation and change if necessary.

37 - "C. P. Set Error" – Indicates a problem with the core in/out activation positions. Verify settings and change if necessary.

38 - "Waiting Air Mold" – Indicates the controller is waiting for signal form air injection system.

39 - "Adj. Sensor Fail." – Indicates automatic Mold Height Adjustment failure. Check the pressure and speed settings and verify if the platen/mold is moving.

40 - "Cool Water Prs Low" – Indicates low cooling water pressure. Check cooling system.

41 - "Switching Mold" – Status message during mold switching.

42 - "Waiting Robot" – Status message during robot operation.

43 - "Pls Press Close Key" – Prompt in Auto mode to press Close Mold key to start machine operation.

44 - "Eject Not Back" – Indicates the ejector has not reached the end position (limit switch). Check the ejector.

45 - Reserved (not used)

46 - "Lub. Filter Fail" – Indicates a problem with the lubrication oil filter. Check filter for possible causes.

47 - Reserved (not used)

48 - "Motor Fail" – Indicates a hydraulic pump motor failure. Check motor for possible causes.

49 - "Pls Press Start Key" – Prompt in Semi-auto mode to press Start key to start machine operation.

50 - "Pls Close Rear Door" – Indicates an open rear door. Close door to resume machine operation.

51 - Reserved (not used)

52 - "Manual Open/Eject" – Prompt in Manual mode to execute Mold Opening and Ejection manually to prevent possible damage to machine.

53 - "Motor Overload" – Indicates problem with hydraulic pump motor. Check the motor for possible causes.

54 - Reserved (not used)

55 - Reserved (not used)

56 - "Manual Open" – Prompt in Manual mode to execute Mold Opening manually to prevent possible damage to machine.
57 - "Temperature not up" – Indicates a barrel heating temperature error. The pre-set temperature could not be reached. Check the barrel heater.

58 - "Safe B. Plate Fail" – Indicates possible object on bottom plate. Remove any objects to resume machine operation.

59 - Reserved (not used)

60 - Reserved (not used)

61 - "Pls Close Upper Cover" - Indicates an open top cover. Close the cover to resume machine operation.

6. Robot Installation (Optional)

If you want to install a robot on the machine, the C-6000 controller provides a protection circuit for robot control and mold protection. Please refer to below diagram for robot circuit wiring.

- Connect the robot to the appropriate input point (default is PB23).
- Connect the robot to the appropriate output point (default is PC28).
- Activate the robot mode in the Other Settings screen (refer to the Other Functions and Settings section).

![ROBOT UP POSITION Diagram]

EX-37

PB23 COM

R1a

R1
ROBOT PC OUTPUT

VIO-32H(C)
Author: Techmation Co., Ltd.
Version: Pxa255 Q7M Linux Version
Address: 9F, NO. 529, Chung Cheng Road,
        Hsin-Tien City, Taipei Hsien,
        Taiwan, R.O.C.
Phone:   +886-2-2218 1686
Fax:      +886-2-2218 1766
E-mail:   techtp@techmation.com.tw
Date:     5/12/2010