Users Guide for MP370
Touch Panel Control System

www.rgbautomatyka.pl

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Please Note: this manual is designed to be a quick reference guide and training aid in the use of the MP370 machine interface. The operation of the Max urethane processor is easily mastered and with this guide, you will be able to operate the machine quickly and with confidence.

Areas regarding the mechanical systems and maintenance of the machine can be found in the main processor manual.

Configurations and questions not covered in this manual should be referred to the Technical Service Department at Max Machinery, Inc (707) 433-7281

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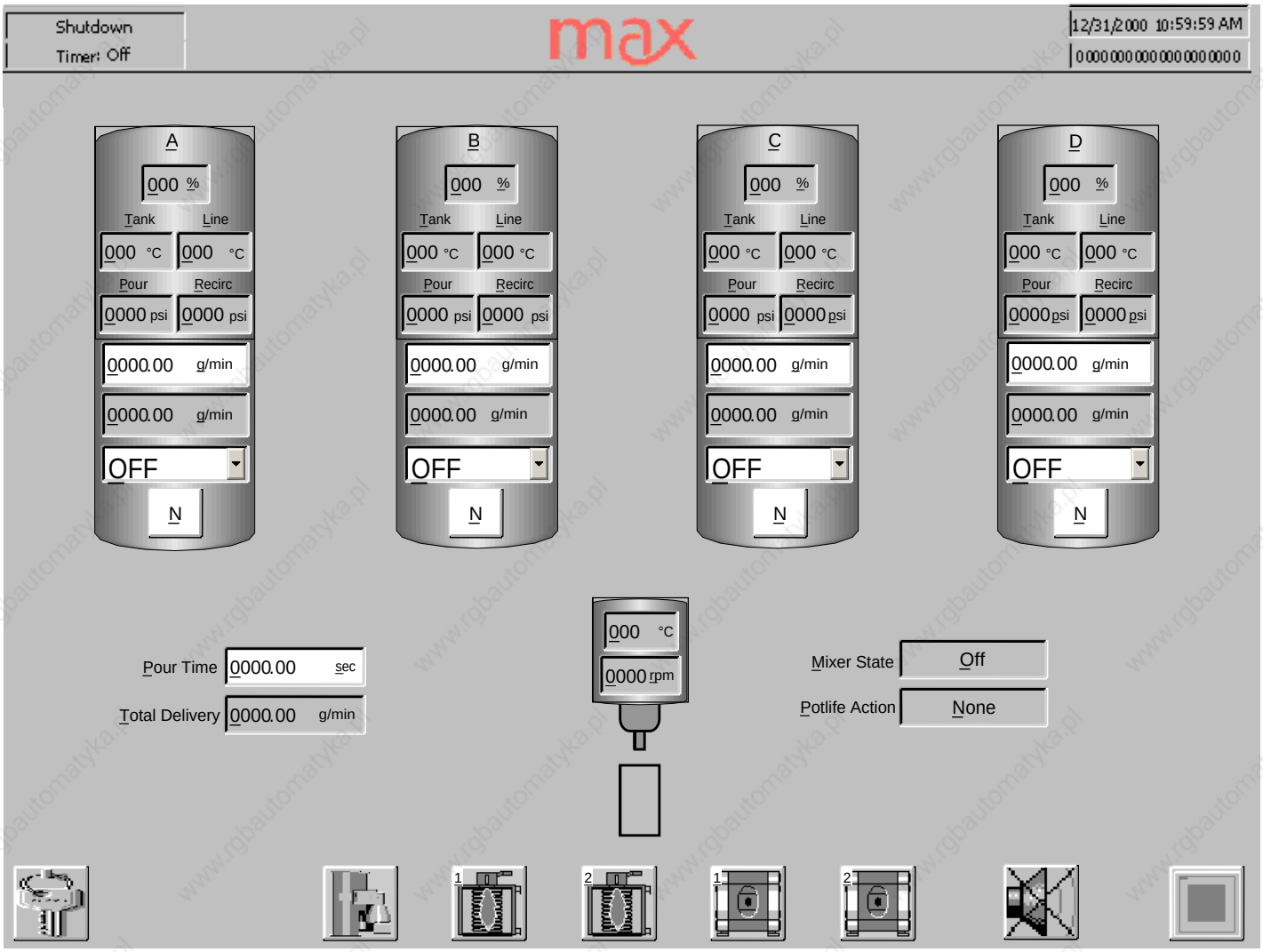
Screens

Home



The Home Screen is the main operator interface to the machine. All standard operating parameters are displayed for easy verification of proper operation. Each tank icon contains that components' tank level, tank and processing temperature, pouring and recirculation pressure, the flow set point, the actual flow rate the flow control mode and whether the pour valve is currently enabled.

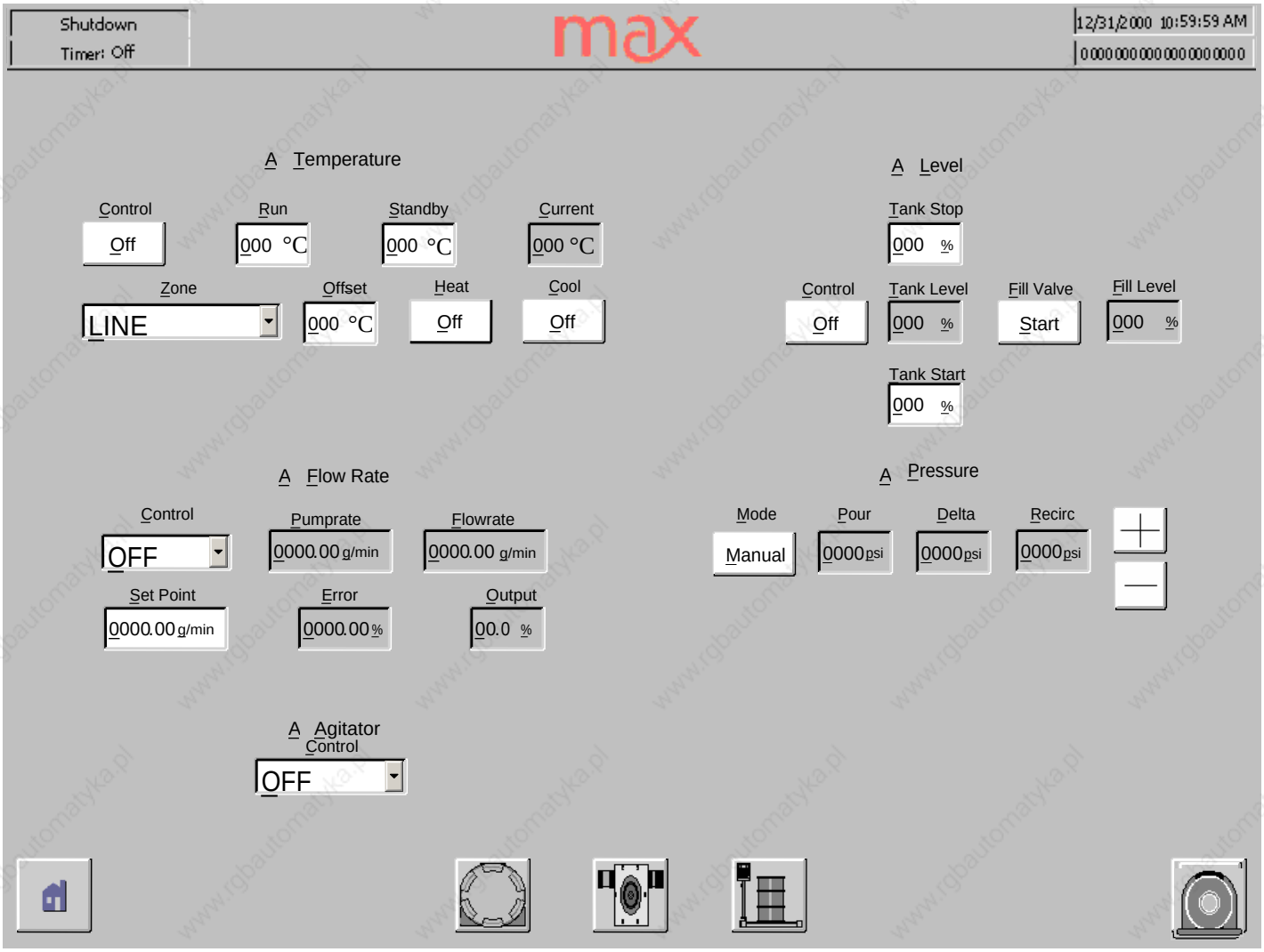
The Mix head icon reports the current temperature and mixer RPM. To the left is an indication of the shot time and sum of the flow set points. To the right is a report of the mixer switch position and the programmed response of the pot life timer.

If installed, the icons along the bottom access Log-out, recipes (an optional function), the heater/chiller(s), vacuum pump(s), the muting of the alarm and the System Screen

Touching the top half of the tank icon will access the component screen and alarm input screens.

Screens

Component



The Component screen is where the operator controls Temperature, Flow Rate, Level and Pressure. The operator can also access the Temperature P.I.D, Flow Rate P.I.D, Calibration and Component Alarm windows.

There are multiple temperature zones. The drop down menu allows you to individually select the temperature offset of the zone relative to the process temperature shown above. Process temperature typically refers to Line temperature at the 3-way valve.

Level control will operate the automatic fill valve to start and stop the filling process. Note: to start the flow from a new supply barrel may require cycling the control button several times until the material reaches the fill valve level probe. A time out function is used to prevent the imploding of empty barrels. Repeated activations will rewet the probe.

Flow rate can be controlled by monitoring the pump speed or the flow meter output signal. Select the appropriate control point and input the set point for your recipe.

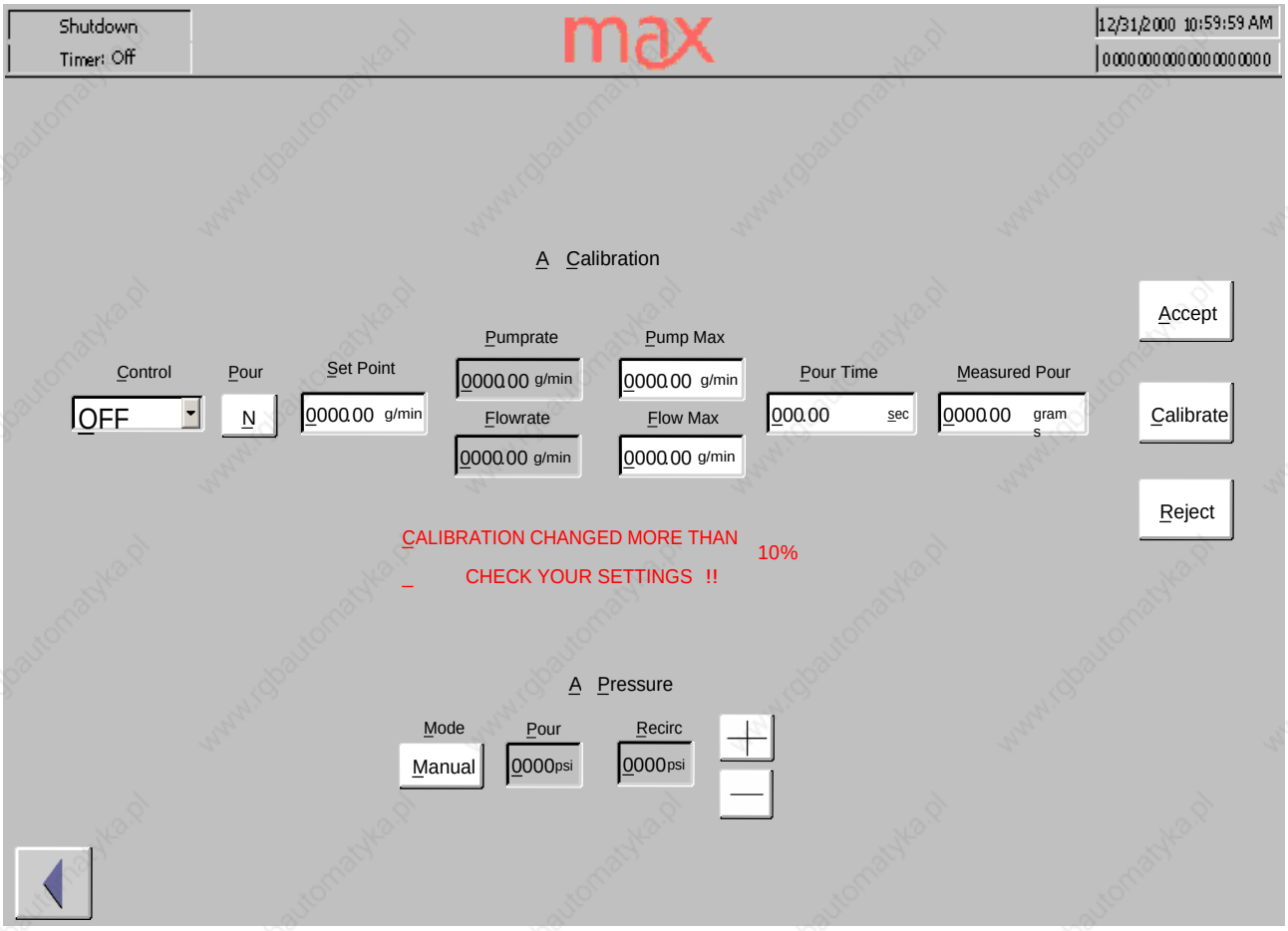
Pressure is usually controlled automatically. In the manual mode you can bias the recirculation pressure for very short shots – please consult the factory for direction.

Agitator control is an On/Off choice.

Icons at the bottom are links to the following pages.

Screens

Calibrate



The Calibrate screen is used to calibrate the flow meter and pump output for an individual component, line pressure can also be monitored and controlled from the calibrate screen. **NOTE:** You cannot enter the calibration screen during a pour, flush or material purge of the mix head. Entering or leaving this screen will set all pour valves to "N" to prevent unintentional pouring of chemicals.

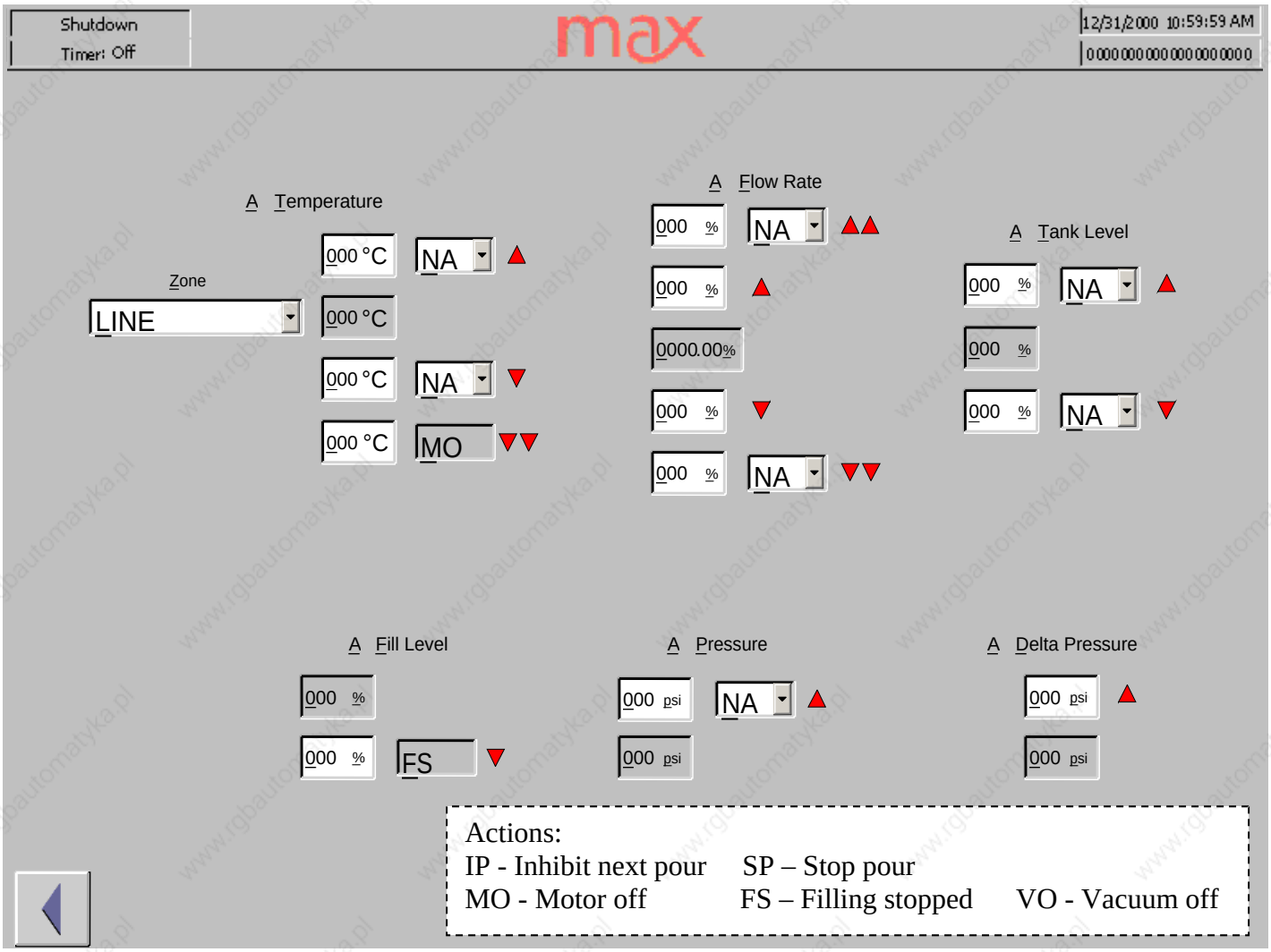
Before any short duration shots are performed, the pour and recirculation pressure need to be balanced. Establish the flow rate you intend to use. Cycle the pour valve and compare the displayed values. In automatic mode, the PLC will balance the two values. In manual mode, you can use the +/- keys to adjust the recirculation pressure until it matches the pour pressure.

A calibration check should be done for both the Flow Control choice and the Pump Control choice. (In systems that do not have flow meters, only the Pump Control choice will be valid.) The intended flow rate for this component should be entered as the Set Point. Select a pour time that will create a sample of at least 100 grams. Push the "start pour" button on the mix head control box, collect and weigh the sample. Input the sample weight into the "Measured Pour" field and hit the "Calibrate" button.

Calibration values that exceed the previously defined maximum Flow or Pump rate, or that change the density value by more than 10% will trigger a warning message. Double check the weight and entered value before accepting the adjustment.

Screens

Component Alarm



The Component Alarm screen is where the operator sets alarm limits and actions for component Temperature, Flow Rate, Level and Pressure.

Temperature: Select which zone to set alarm settings for by selecting the Zone list box. Set the desired Hi and Lo temperature alarm set points and the associated actions. The Lo 2 temperature alarm set point value is an absolute value and its action is hard coded as “MO”- motor off.

Flow Rate: Set the desired Hi1, Hi2, Lo1, Lo2 flow rate alarm set points and the associated actions. All alarm set points are relative to the current flow rate.

Tank Level: Set the desired Hi and Lo Tank level alarm set points and the associated actions. All alarm set points are absolute values.

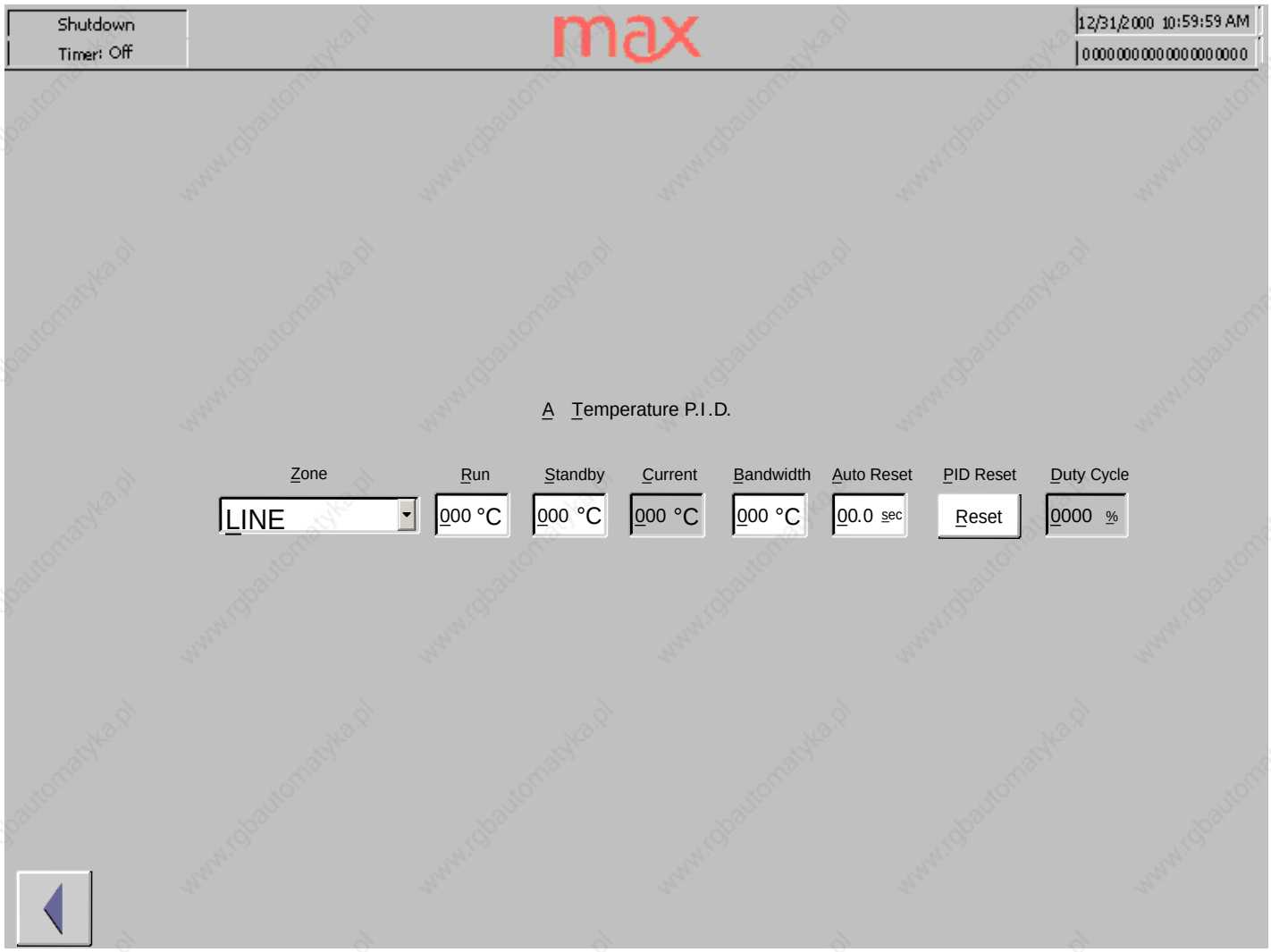
Fill Level: Set the desired Lo supply level alarm set point. The Lo supply level alarm action is hard coded as FS.

Pressure: Set the desired Hi pressure alarm set point and the associated action. The Hi pressure alarm set point is an absolute value.

Delta - Pressure: Set the desired Hi pressure alarm set point and the associated action. The Hi pressure alarm set point is an absolute value.

Screens

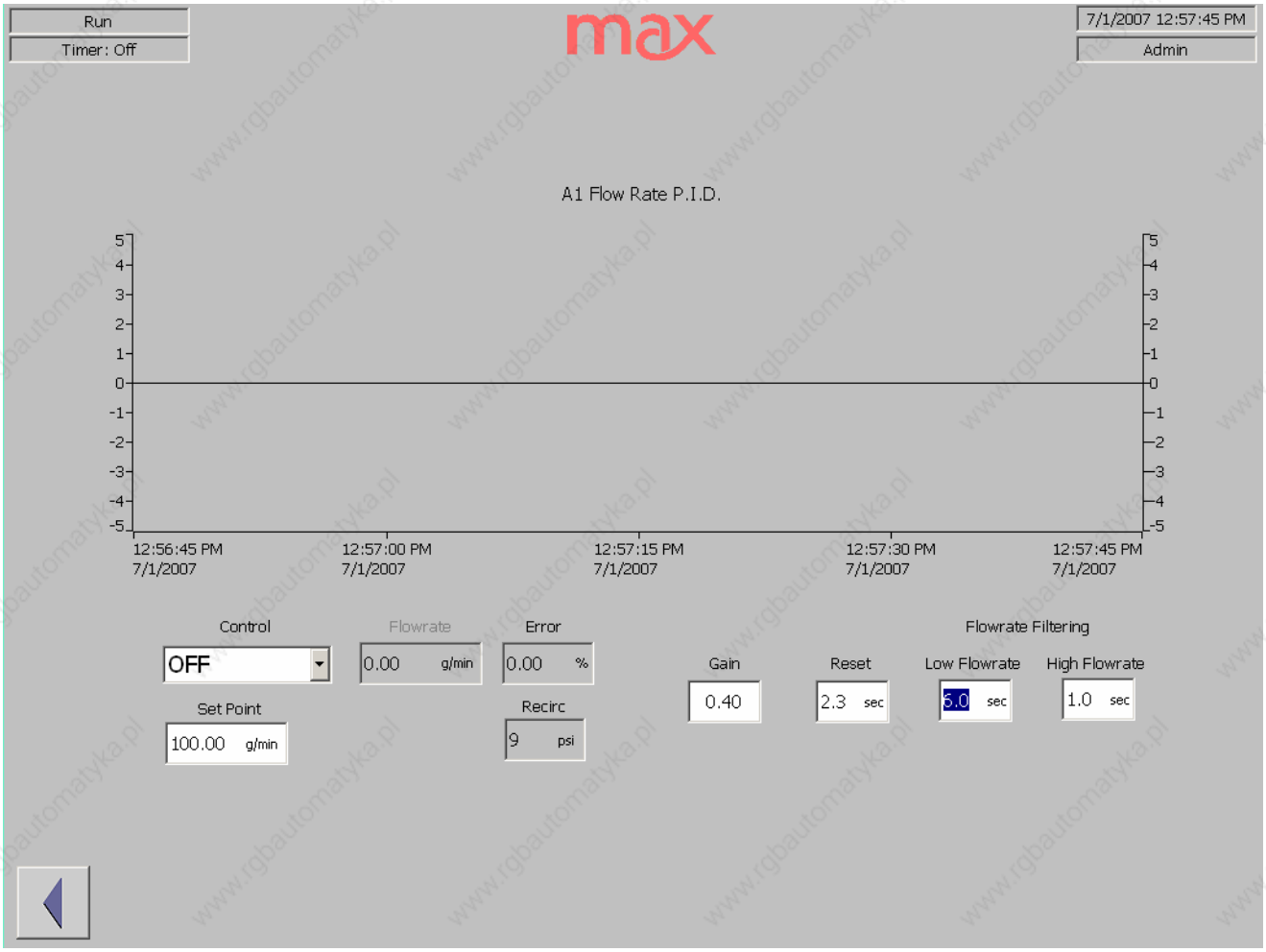
Component PID for Temp



Each temperature zone has P.I.D. tuning for optimum temperature control. These values are set at the factory and are based on the response rate of the tanks, lines and other components to the input of hot glycol. These values should not be adjusted without first consulting with the Technical Service Department at Max Machinery.

Screens

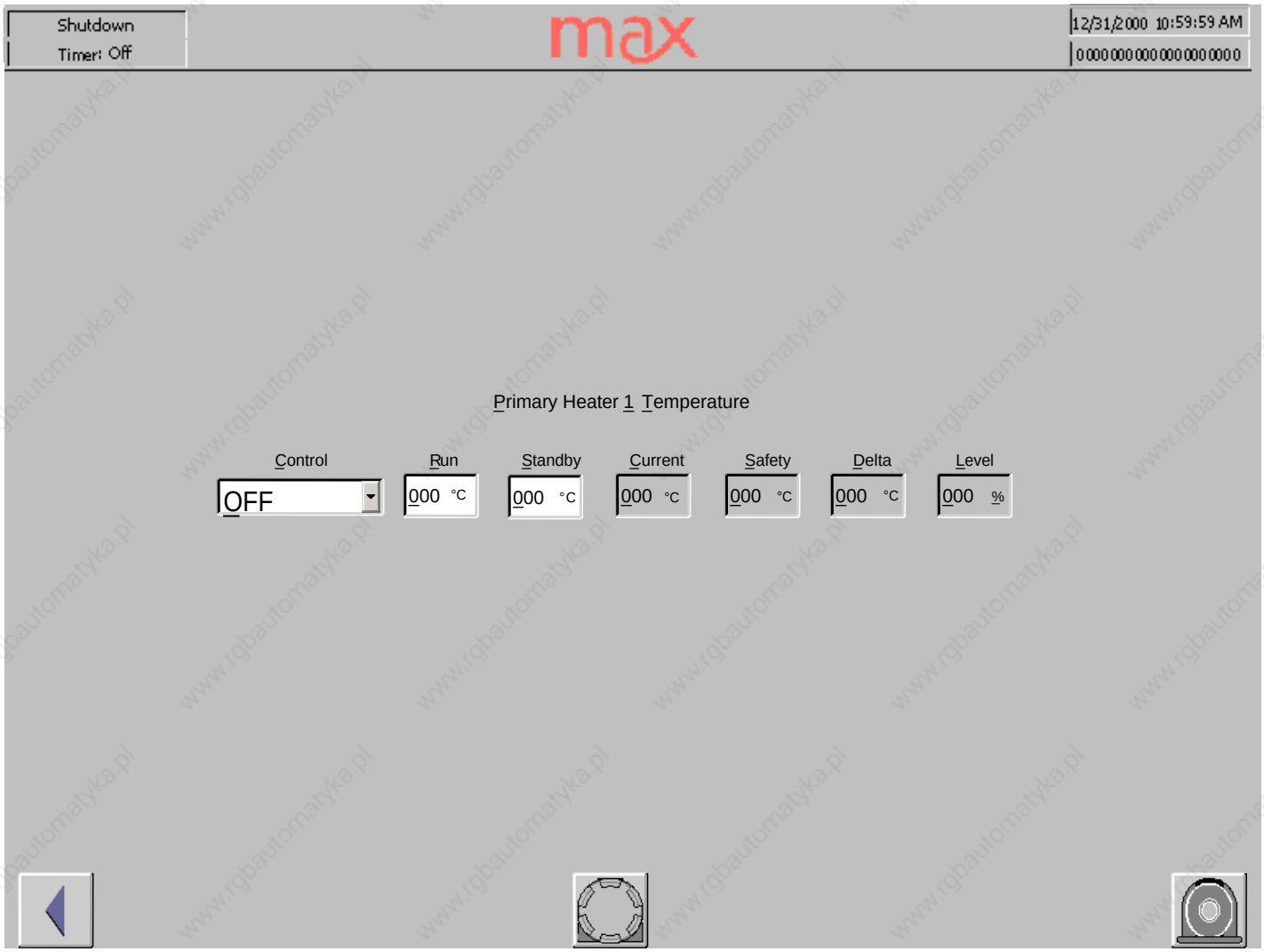
Component PID for Flow



Both the flow meter signal and the pump motor controller have P.I.D. tuning for optimum closed loop control. These values are set at the factory and are based on the response rate of the pumps and meters to a change in flow conditions or set point. These values should not be adjusted without first consulting with the Technical Service Department at Max Machinery.

Screens

Heater



Each glycol heater system can be independently activated and be set with a Run temperature and a standby temperature. The control options are Off, run the pump only, or run the heater and pump. Additional safety feature information is also displayed: The back up safety thermocouple, the delta temperature between the two probes and the level in the glycol reservoir – any of which will shut off the heater if a fault is detected.

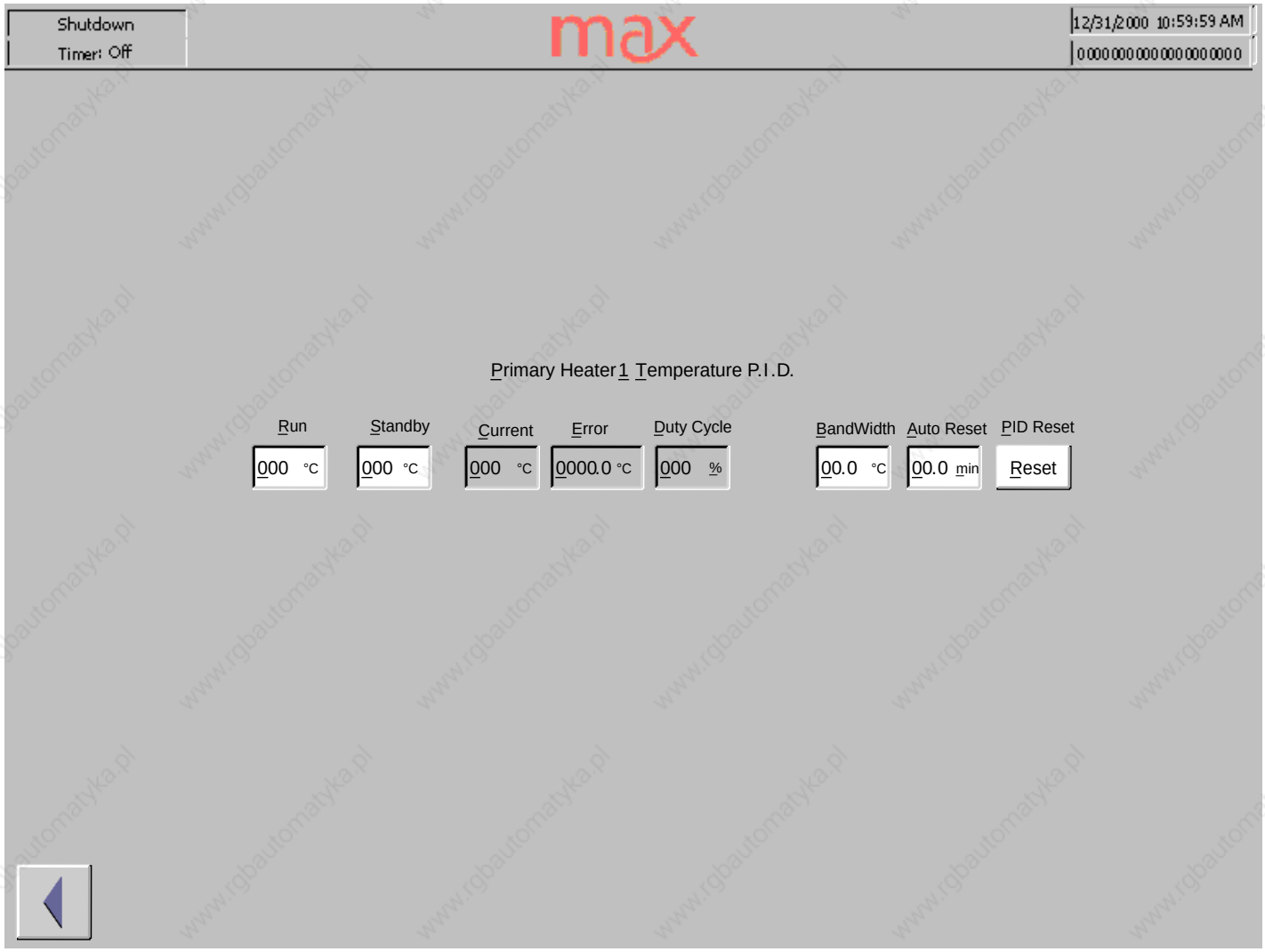
The heater alarm configuration screen is accessed by selecting the “Beacon” button

Screens

Heater Alarm

The Main Glycol heater has redundant safety settings. All alarm set points are hard coded to shut off the heater if any parameter is out of limits. These values are set to typical operating ranges and do not need adjustment. Lower trigger points can be programmed if desired.

Heater PID for Temp



The glycol heater has P.I.D. tuning for optimum temperature control. These values are set at the factory and are based on the response rate of the heater relative to the demand. These values should not be adjusted without first consulting with the Technical Service Department at Max Machinery.

Screens

Chiller

The Chiller screen is where the operator can turn the Chiller on and off, set the desired temperature and monitor current temperature.

The chiller alarm configuration screen is accessed by selecting the “Beacon” button.

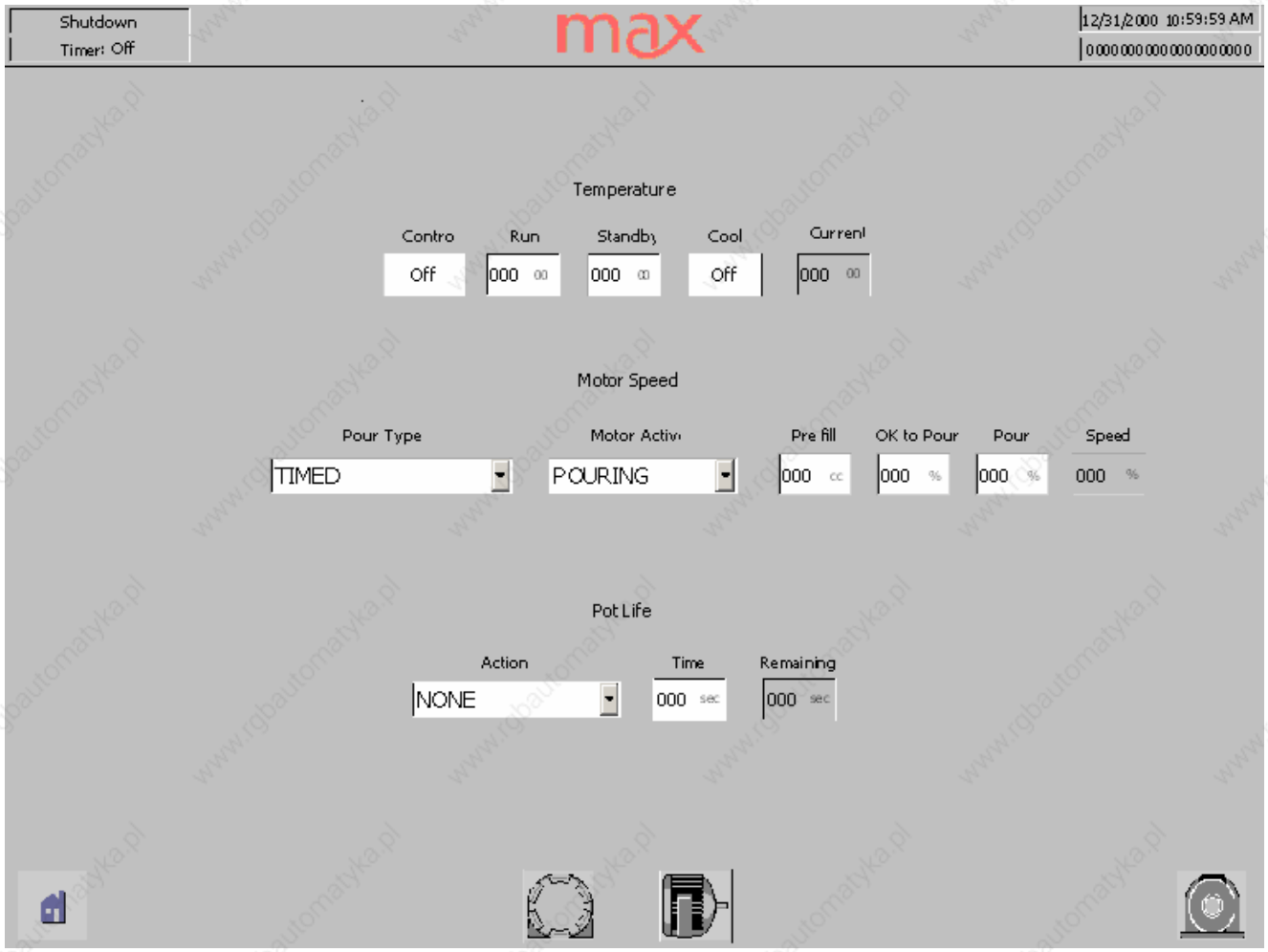
Screens

Chiller Alarm

The Chiller Alarm screen is where the operator sets the high alarm and monitors the current temperature.

Screens

Mixer



The Main mixer screen offers temperature, mixing and flushing control. The mixer zone has its own run and standby temperature settings, the ability to activate the control function and a direct shut off of the heating function.

The Pour Type choices are timed duration, continuous pouring on “start” until the “stop” button is pushed and momentary pouring as long as the “start” button is depressed. The mix motor can be set to run continuously or only during the pouring interval. To insure proper mixing of the chemicals, during shot operation, an up-to-speed setting of mixer RPM will delay the pour valves until the mixer is spinning at the minimum desired speed. The actual speed is indicated as is the level of the mixers lubrication supply.

The pot life action choices are; none, warning only, automatic flushing or recipe purge. The chosen action is initiated if mixed material remains in the mix chamber longer than the selected time. At the end of each pour, the remaining pot life will appear in the indication window. As a reference, the flushing solvent level is also displayed on this screen.

The center icons access the PID settings for the temperature control and the purge/flush/lube settings.

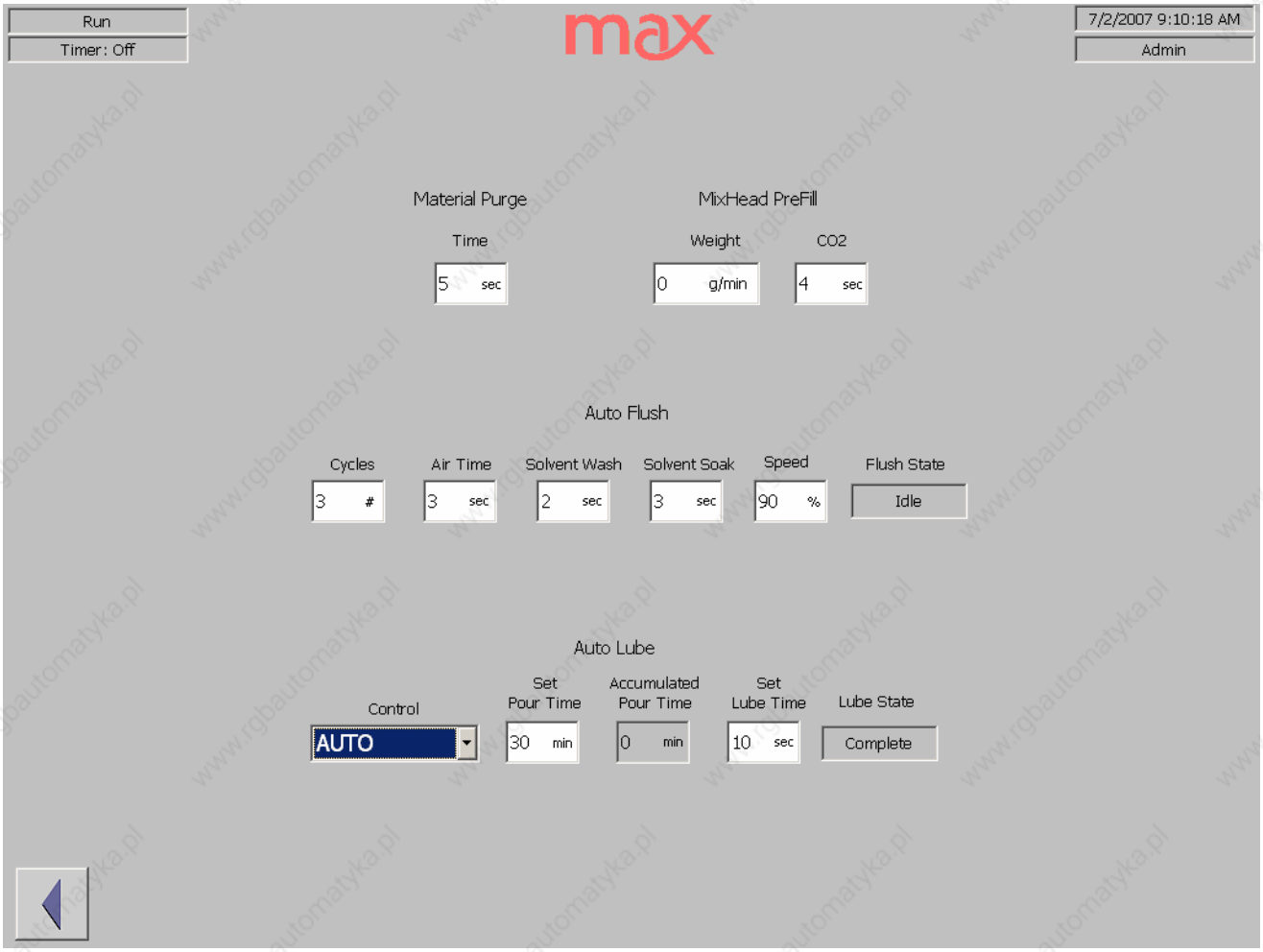
Screens

Mixer Alarm

Available alarms and actions for the Mix head are temperature, lubrication level and solvent level. The high and low temperature alarms can be set to either inhibit the next pour or stop the pouring, with the low-low alarm hard coded to stop all pouring. The action available for the low lube and low solvent is to inhibit the next pour.

Screens

Mixer Purge/Flush/Lube



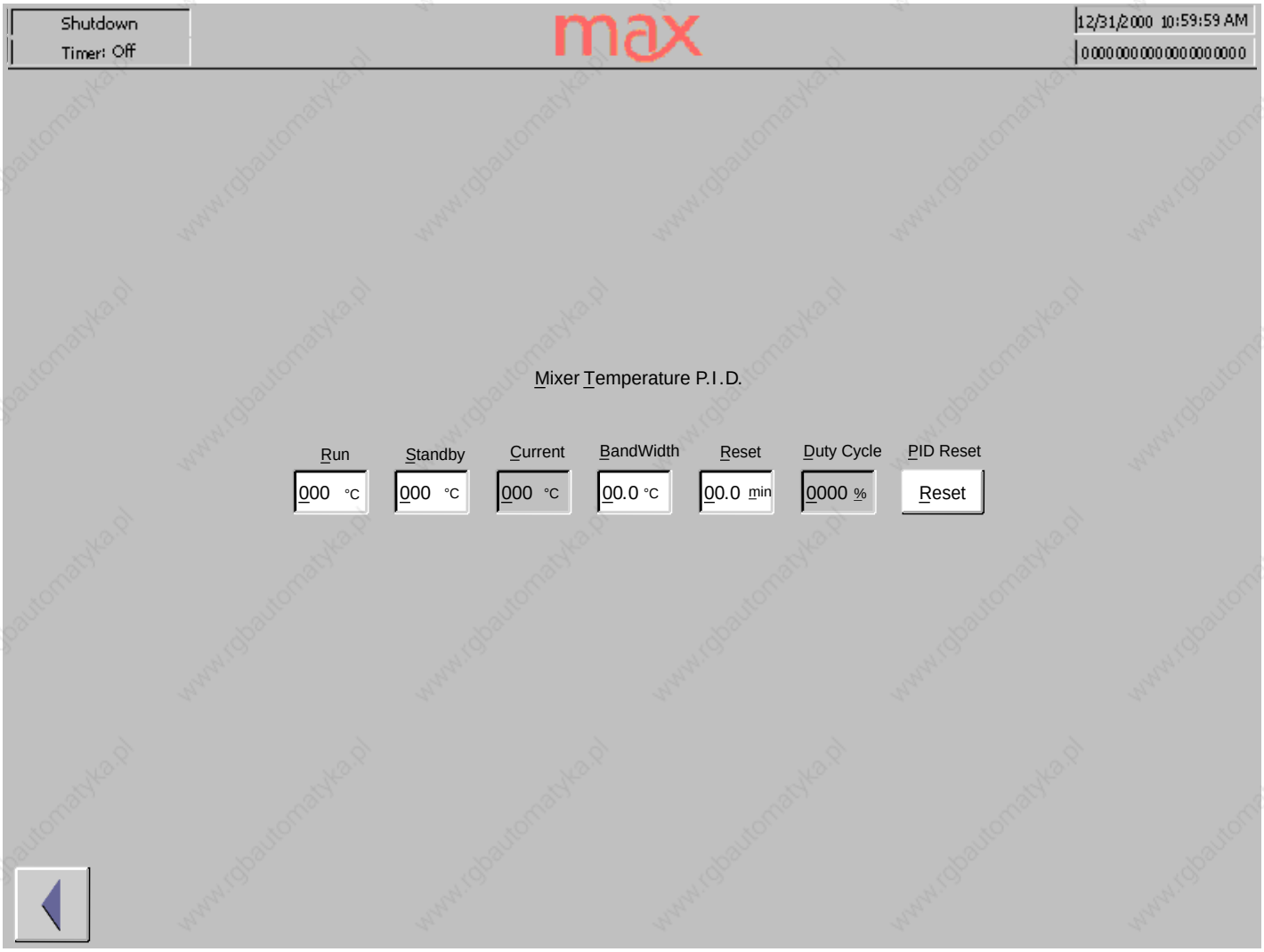
The action choices for clearing the mix head of reacting material are a recipe purge to refresh the mix chamber or a solvent flush. The duration of the material purge should be enough time to displace one chamber's worth of the current recipe. This value can be calculated by dividing the mix chamber volume by the flow rate of the complete mixture.

The Auto Flush cycle uses a repeated sequence of air and solvent injections separated by a high speed rotation of the mixer shaft in a chamber full of solvent. Depending on the reactivity of the urethane, 2 or 3 cycles are usually sufficient. The factory settings for the air, wash and soak durations were tested before shipment. If you find build up in the chamber, consult with the Max Technical Service staff before changing these time durations.

Mix head lubrication should be set to Auto Lube. The accumulated pouring time and the duration of the lube flow are set at the factory. The Start/Stop controls are provided to recharge the mixer bearing gland following a mix head servicing. Do not run the bearings without lubricant. Use the start command until lubricant appears in the top drain line, then set the control to Auto.

Screens

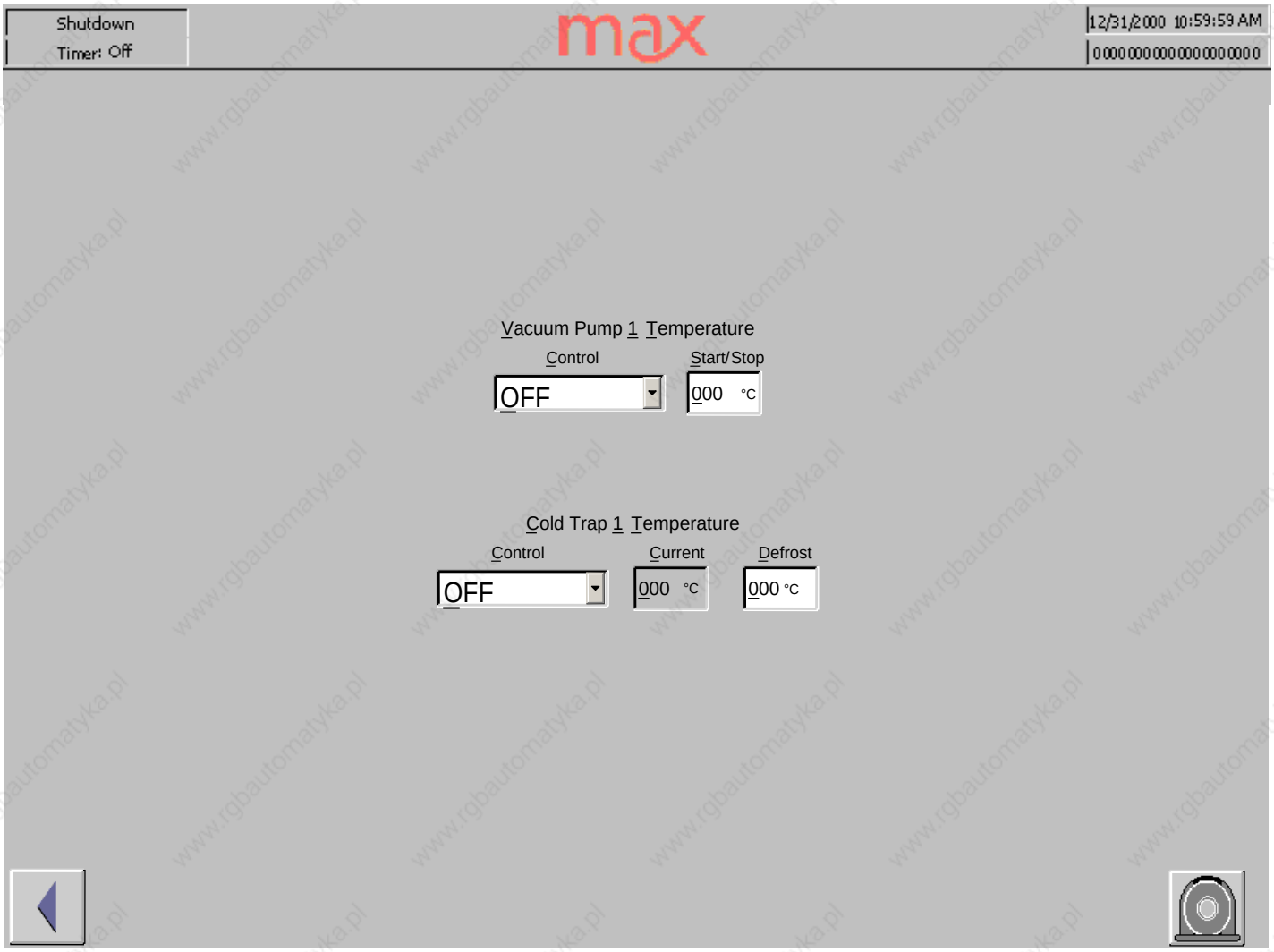
Mixer_PID_Temp



The mix head temperature zone has P.I.D. tuning for optimum temperature control. These values are set at the factory and are based on the response rate of the mix head temperature to the input of hot glycol. These values should not be adjusted without first consulting with the Technical Service Department at Max Machinery.

Screens

VacColdTrap

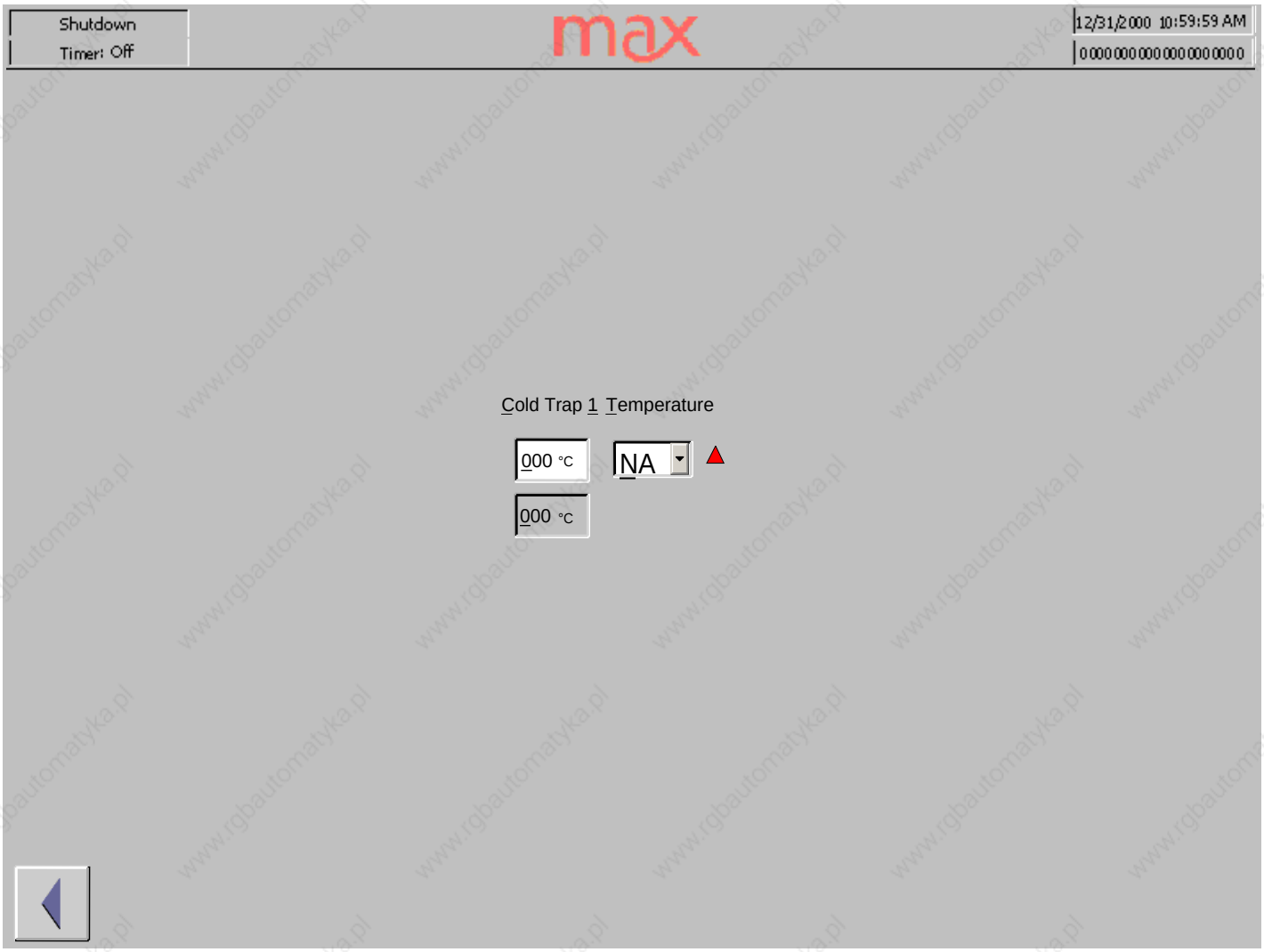


The vacuum pump oil is protected by the cold trap. To prevent chemical emissions from entering the pump or work environment, the pump is interlocked to the cold trap and should not be operated until the cold trap reaches operating temperature. The control of the Vacuum pump is Off, immediate On or Auto. In the Auto position the pump will start running as soon as the cold trap reaches the Start temperature.

The control of the Cold Trap is either Off, On to chill the trap or Defrost to reverse the compressor and melt out the accumulated vapors.

Screens

VacColdTrap_Alarm



The cold trap temperature can be alarmed as an alternative to being interlocked to the vacuum pump. The action choice is VO, vacuum off. Setting this temperature will disable the vacuum pump, even if the pump is set to the ON position.

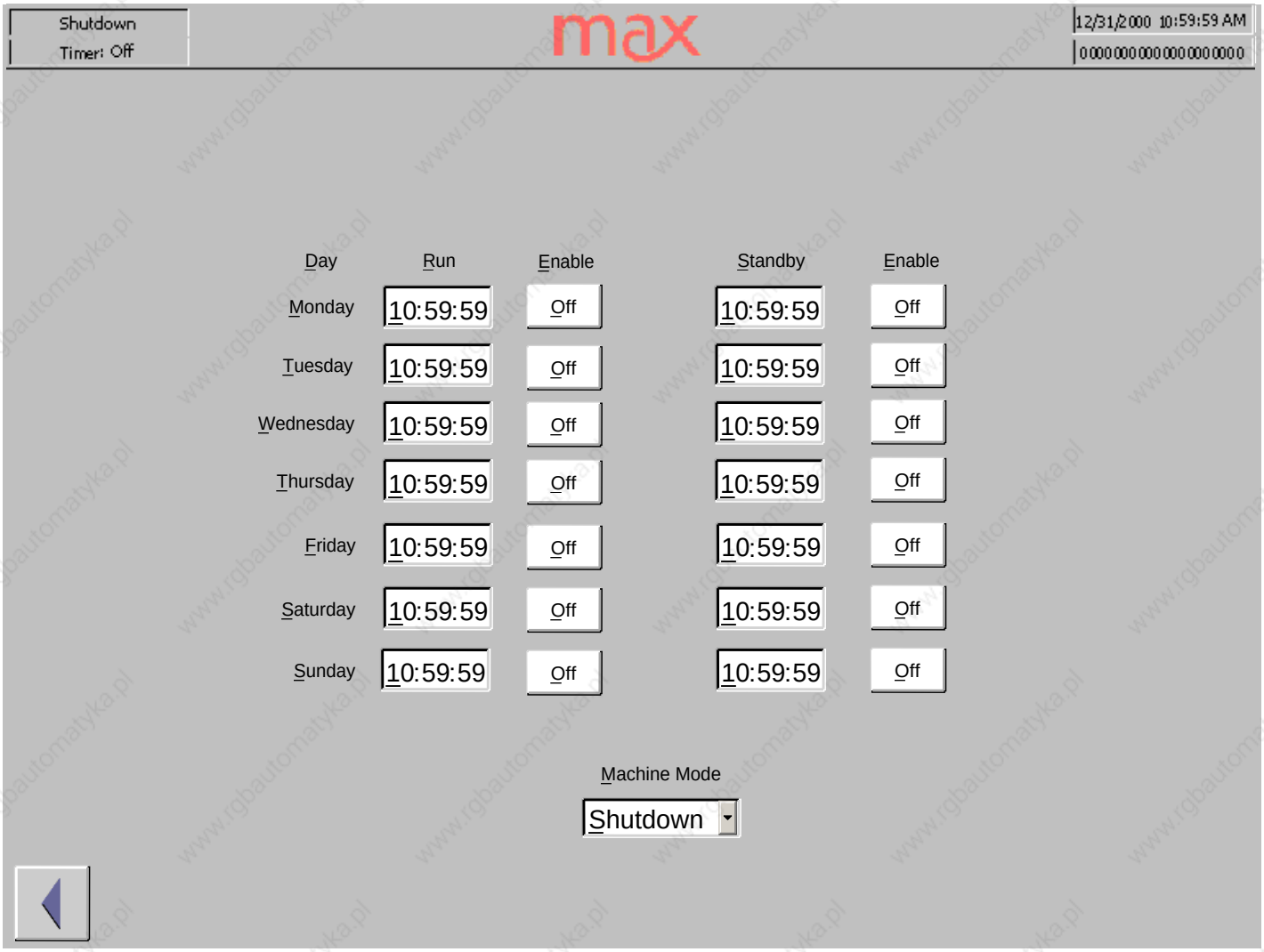
Screens

System

The System screen icons are a collection of maintenance functions:
Access to the Windows™ control panel, with a direct return to this screen,
EXIT the HMI program so that you can work in the underlying Windows™ system,
The shower icon numbs the touch panel long enough for it to be cleaned,
The 7 Day timer function,
User maintenance and
The Alarm history log screen.

Screens

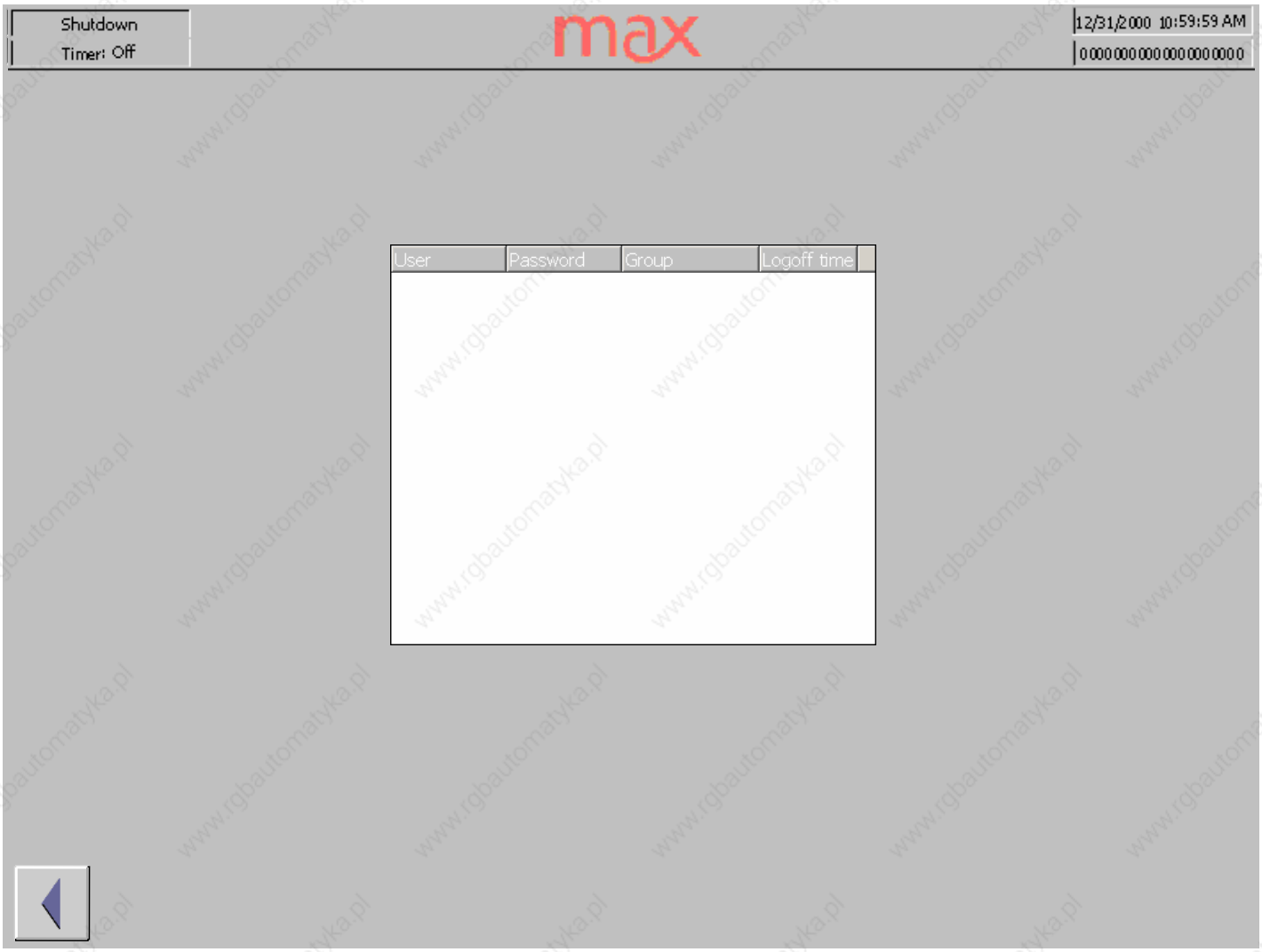
Timer



The 7 day timer program can automatically switch the temperature set points for the heater and the temperature controlled zones. By enabling and setting the trigger points the machine can prewarm each morning or each Monday before production begins. The available modes are to use the timer settings, run the machine without interference from the timer or the shutdown the machine.

Screens

Administration



The Administration screen allows for user creation and password maintenance. Administrator level personnel will be shown a complete list of users and passwords. Lower level personnel will only have access to their own password. The available level assignments are: User, Operator, Engineer and Administrator.

Users only have screen viewing permission.
Operators can control set points, manipulate and load recipes, adjust material purge time, mixer flush speed and change the machine mode.
Engineers add alarm set point control, flow rate and temperature PID settings, flush time, lube time and 7 day timer control.
The Administrator has full access, user management and system control.

Some screens may contain fields that are not accessible to the currently active user. If a lower level user tries to access a higher level function, they will be prompted to log in as a higher level user.

Screens

Alarm

The Alarm window allows the operator to view past alarms. This record is accessed through the System Screen and is different than the current alarm dialog box.
If any alarm conditions exist the operator will be notified by a floating, blue button with an exclamation point in a triangle. Touching this button will open the alarm screen which will display the current alarms

Level Access

USER TYPE	RIGHTS
ADMINISTRATOR	Full Control
ENGINEER	7 Day Timer Settings Component Flow Rate P.I. Set Points Component Flow Rate Filter Set Points Component Temperature P.I. Set Points Component Alarm Set Points Heater Temperature P.I. Set Points Heater Temperature P.I. Set Points Heater Alarm Set Points Mixer Temperature P.I. Set Points Mixer Auto Flush Settings Mixer Auto Lube Time Settings Mixer Alarm Settings Cold Trap Alarm Setting System Control Panel System Exit
OPERATOR	Alarm Log Erase Calibration Settings Chiller Control Chiller Set Points Clean Screen Component Temperature control Component Temperature set points Component Flow rate control Component Flow rate set points Component Pressure mode Component Pressure Increment/Decrement Component Level control Component Start/Stop Level set points Component agitator control Heater control Heater Set Points Machine Mode Mixer Temperature Control Mixer Motor Speed Settings Mixer Motor Potlife Settings Mixer Pre Fill Settings Mixer Material Purge Time Mixer Auto Lube Control Pour Time Vacuum\Cold Trap Control Vacuum\Cold Trap Settings
USER	Administration General Screen Access Alarm Silence

Backup/ Restore

Backup/Restore on memory cards

During a backup process, the operating system, application and data are copied from the internal Flash memory to an external storage medium. The minimum size of the storage medium must be 24 Mbyte. In the case of a restore process, the content of a Flash memory stored on an external storage medium is reloaded into the internal Flash memory. Prior to this, the MP 370's internal Flash memory is completely cleared following confirmation.

Backup on CF card or PC card

Proceed as follows to create a backup copy of the internal Flash memory:

Step	Action
1	Deactivate the write protection on the memory card, if set.
2	Depending on the target medium used, insert the memory card in the required slot (Figure 11-1, Page 11-3).
3	Call in the Windows CE Control Panel (refer to Page 3-6) and, from there, select the *Backup/Restore* option depicted on the right.
4	Start the Backup process by using the Backup button.
5	Confirm that any backup files which exist on the storage medium should be completely deleted beforehand.
6	When the data has been downloaded successfully, the MP 370 issues a message.
7	Remove the memory card.
8	Activate the write protection on the memory card, if available.
9	Label the memory card, e.g. with the date and version of the configuration saved, and keep it in a safe place.

Note

Insert the memory card in the relevant expansion slot before starting the Backup/Restore process:

_ PC card: Slot A (storage location \Storage Card\)

_ CF card: Slot B (storage location \Storage Card2\)

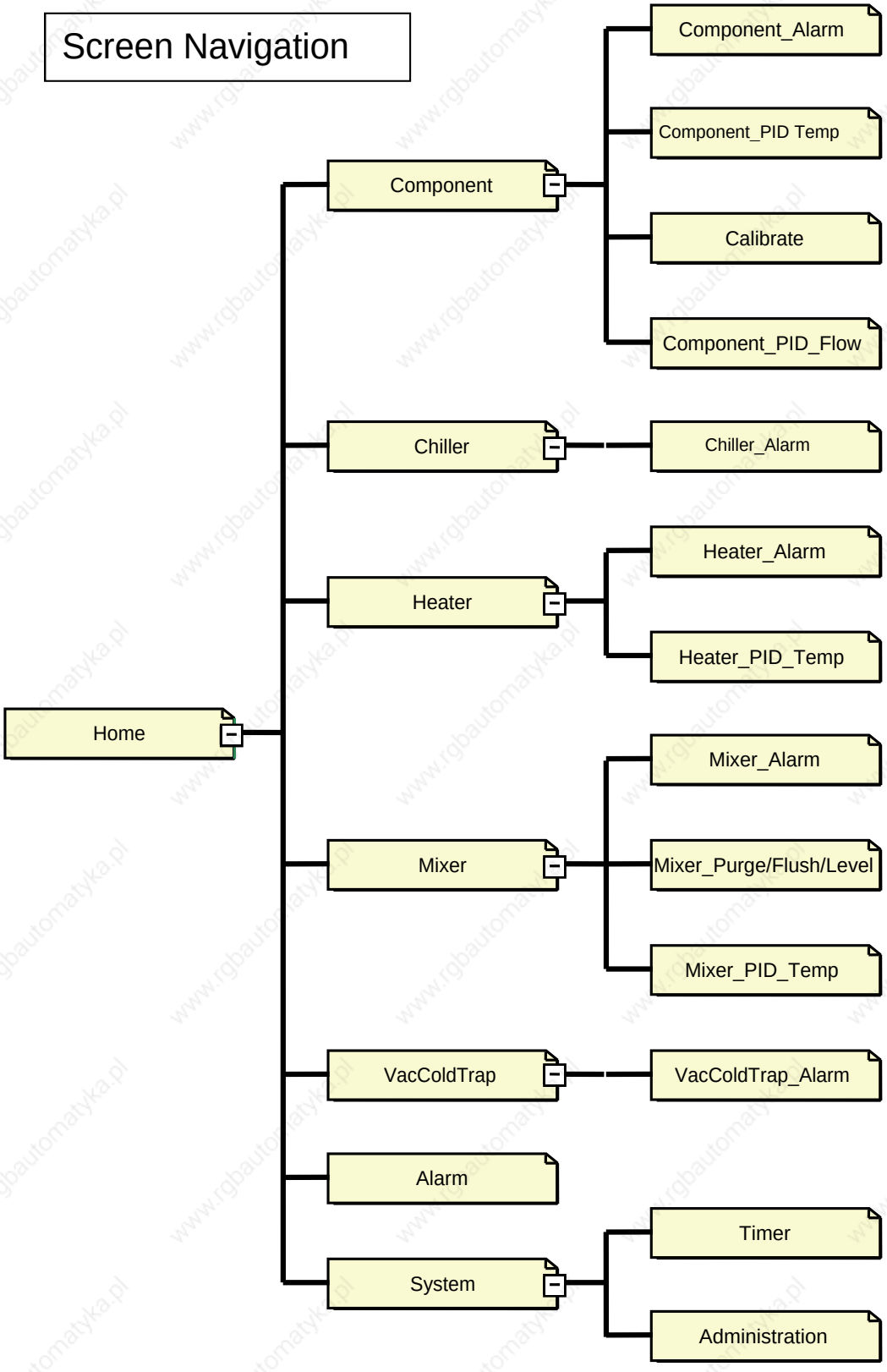
Information on the memory cards which may be used is provided in figure 3-16, on Page 11-3 of the *MP370 Equipment Manual 09/02 (*6AV6591-1DB10-2AB0)

Notice

A plug-in memory card is used for Backup/Restore. If both slots are occupied when Backup/Restore is initiated on the MP 370, the PC card (Slot A) is used first. In case of doubt, remove the memory card not to be used from the MP 370.

Restore from CF card or PC card

Proceed as follows to restore the content of the internal Flash memory:

Step	Action
1	For security reasons, activate the write protection on the memory card, if available.
2	Depending on the storage medium used, insert the memory card in the required slot (see Figure 11-1, Page 11-3 of the MP 370 Equipment Manual).
3	Call in the Windows Control Panel and select the *Backup/Restore* option.
4	Start the restore process by clicking on the "Restore" button.
5	Confirm that the internal Flash memory and licenses should be completely deleted.
6	After confirmation, the operating system will be reloaded and the MP 370 will automatically restart. After restarting, the remaining data will be downloaded.
7	When the data has been downloaded successfully, the MP 370 issues a message.
8	Remove the memory card.
9	Restart the MP 370.

Screen Navigation