DIGITAL KNIGHT

FACTORY

Digital Controller Instructions

Version 302

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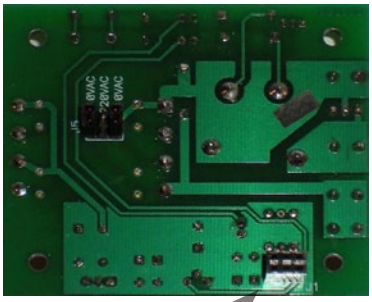
Contents

Controller Hardware

Voltage Settings



The Digital Knight controller can be set for 100-130V or 208-240 voltage supply.

To set the controller for 110V range:
Place jumpers on the (2) 110V positions

To set the controller for 220V range:
Place 1 jumper on the (1) 220V positions, and the spare jumper can be stored on one pin only of a 110V position

The 6-pin connector mates the 2 circuit boards together. MAKE SURE both boards are oriented to each other correctly to allow this male 6 pin connector to plug into the female 6-pin connector on the LCD board.

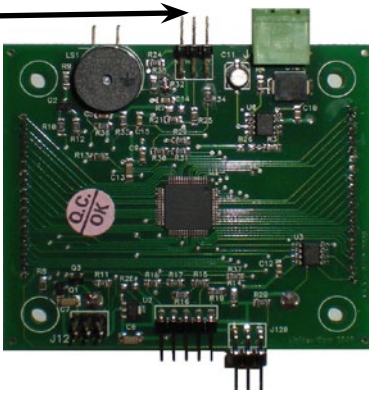
Processor Board Connections

The large green connector is the Thermocouple temperature connector. The red striped (or yellow) thermocouple wire connects to the right pin over the "O" in GEO from this view, the white (or red) thermocouple wire connects to the left pin over the "G" in GEO.

The 2-pin connector is an additional Beeper connector. A louder beeper may be supplied that will connect to this 2-pin connection and work in tandem with the on board beeper. The + (positive) red wire connects to the pin on the left from this view.

The bottom 6-pin connector is for firmware updates by the factory Only. Do NOT Connect anything to the Bottom 6-pin connector.

Processor Board Connections (cont.)



The Top 6-pin connector is the timer & pressure connector.

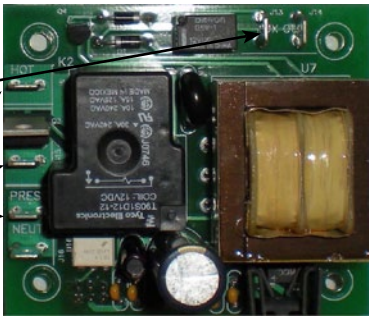
The center 2 pins are the timer signal inputs. This pair of pins signal the timer to start or stop counting. This pair of pins can be configured from the TNE factory menu to operate as a normally open, normally closed, or momentary contact signal. They are not polarized.

The outer pairs of pins are for the pressure signal. On older models, the height gauge used a red, blue and white wire. On newer models the pressure gauge uses a red and blue wire only. Here is the location for these connections looking down on the pins from the top:

The bottom 5 pin connector is for the keypad connection. The membrane keypad has a green & silver striped ribbon that will plug into this connector.

Power Board Connections

The following wire connections are for the rear of the power/relay board:



Auxiliary Relay wires
Hot (black wire from on/off switch)
Press (2 fiberglass heater wires)
Neut (white wire from on/off switch)

Controller Defaults

Clear Presets

The user programmable presets can be cleared and restored to default values, and the controller configuration settings can also be reset to the most common factory settings. DO NOT USE THIS FUNCTION unless you are sure of what you want to do.

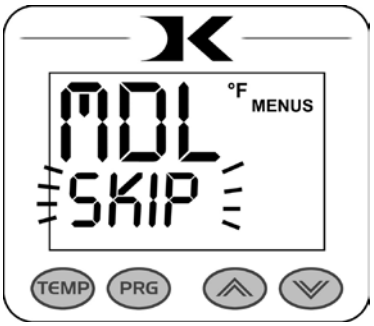
To enter the reset/clear mode, hold the UP & DOWN ARROW keys together - without letting go - during power up of the press. Let go when the following screen appears:

Use the arrow keys to select YES or NO and then press PRG.

All of the stored presets in the controller will be reset to generic default Temperature & Time values if YES is selected.

Program Heat Press MODEL

After the Clear Presets menu, the Model programming menu appears. The controller can be set with all the default values for calibration, programming, timer, relay, & aux relay behavior for a specific model with this function.



Use the arrow keys to select the Model of the heat press this controller is installed in. Make sure to allow the model name to scroll fully if longer than 4 characters.

Press PRG and the controller will be programmed with all the settings for the model selected.

If SKIP is selected, the controller settings will not be changed.

Factory Settings/Menus

Entering Menus & Firmware Version

To enter the factory menus, HOLD the TEMP & PRG keys together while powering on the press.

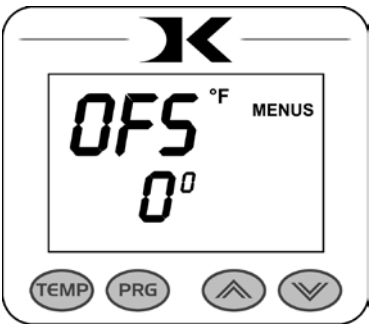
Continue to hold the TEMP & PRG keys until...

The following screen will appear, showing the firmware version of the software. Anything less than 100 must be updated by the factory for proper functionality.
Press PRG to go the Offset menu.

Temperature Offset

From the Firmware screen, press PRG to enter the Offset Factory Menu. The Offset menu will automatically appear after a certain time waiting at the firmware screen, or after leaving the "Reset to defaults" options.

The current temperature displayed during normal use can be offset by + or - 99°F or °C. Use the ARROW KEYS to increase or decrease the offset value. Press PRG to move to the next menu.



When calibrating the temperature of the heat press platen to the displayed temperature, always set the offset to display the **highest** temperature read on the heat platen.

For example: If the controller displays 350°F as the current temperature, and heat platen surface readings are 370, 365, 357, 361, etc, set the offset to +20. The controller will now read 370 instead of 350.

Auxiliary Relay

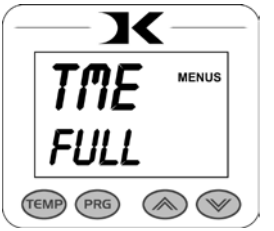
The Auxiliary relay contacts (labeled AUX OUT) on the power/relay board can be configured using the ARROW KEYS to select TIME/ALAR/HEAT.

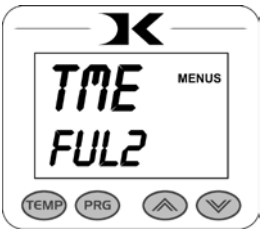
TIME causes the relay contacts to close when the press is Timing, and open at all other times. This is useful for signaling automatic components to activate during timing.

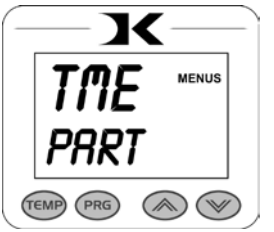
HEAT causes the relay to mimic the main heating relay: Close when heating, Open when not heating.

ALAR causes the relay to mimic the alarm when beeping. This is useful if an additional Light or Buzzer is desired to increase awareness of a finished cycle. There is a .5A limit to the load on this contact.

Timer Configuration







Press PRG to move to the timer menu. This menu allows for the configuration of the timing signal. To start the timer of the controller, a signal must be sent to the controller via mercury switch, lever switch, momentary switch, etc. The controller is able to process a normally open, normally closed, or partial momentary signal to start, stop, interrupt and reset the timing cycle.

The signal contacts are noted on Page 3, shown as the Yellow and Grey connections - the middle pair of connector pins - on the 6-pin top connector.

Use the Arrow Keys to select FULL, FUL2, or PART. Press PRG to move to the next menu item.

The **FULL** setting configures the controller to receive a normally open timer signal. This means that whenever the signal is open, the timing cycle is not counting, and the press is “OPEN”. The moment the signal is closed, the timer begins counting down. The timer will continue counting down, and when finished, will display “DONE”. When the switch is opened, the display will show “OPEN”.

The **FUL2** setting is the opposite of the FULL setting. FUL2 configures the controller to receive a normally closed timer signal.

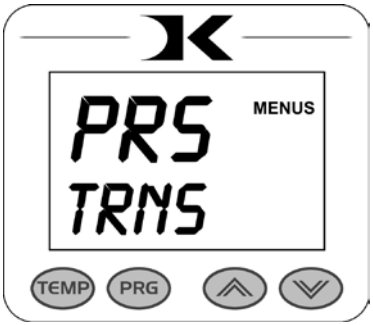
The **PART** setting configures the controller to receive a momentary closure signal. This means that only a “Blip” of signal closure will start the timer, or interrupt and reset the timer. This is useful for automatic and push-button activated machines. The first closure begins the timing cycle. If the timing cycle is completed, it immediately resets back to the original timer setting, and awaits another closure. If a second signal closure is detected during the countdown then the timer will be interrupted and reset. There is a 2 second ‘bounce’ feature that disallows additional signal closures to confuse the controller and stop/start/stop the timer.

Pressure Sensor

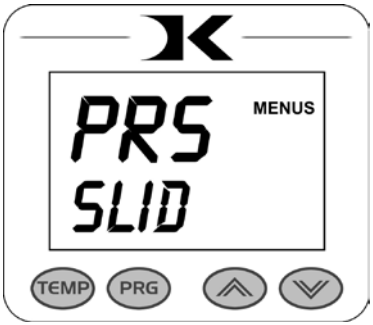
The pressure sensor menu item configures the pressure inputs to receive the older style 3-wire slide pot height sensor input, or newer style 2-wire pressure input.

Use the Arrow Keys to select TRNS or SLID. Press PRG to move to the next menu item.

Selecting **TRNS** will cause the sensor to only look at the red & blue connections on the 6 pin connector (see page 3). This reads a resistance-type pressure transducer and displays a general readout on the "0 to 9 Bar Graph" display on the screen. When set to TRNS, the user options menus will offer PRO and PMX (pressure min & max) calibration menus for this sensor input.



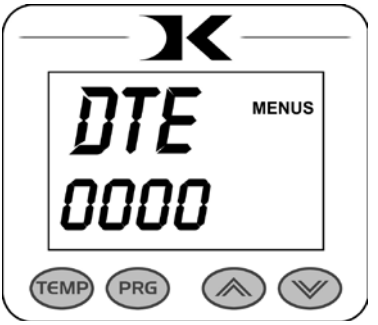
Selecting **SLID** will cause the sensor to look at the red, blue and white connections on the 6 pin connector (pg 3). This reads a 3-wire slide potentiometer that shows a "PRS 0:00" to "PRS 10:00)" height reading on the screen. The lower bar graph display is disabled. When set to SLID, the older style PRH, PRL, and PRR height gauge calibration menu items are available in the user options menus.



Date / Serial Number

The Date and Serial Number information of the machine is stored in the controller. This provides a verification of the machines age and identity if the serial tag information is not available or the processor is separate from the machine. The date and serial number are locked and not changeable by the user. These settings should only be set by Geo Knight staff.

The **DTE** menu displays the month and year for the controller. The first two digits represent the month, and the second two digits represent the year in which the machine was shipped. In order to set the Serial Number or the Date codes, the unlocking procedure must be done at the DTE menu.

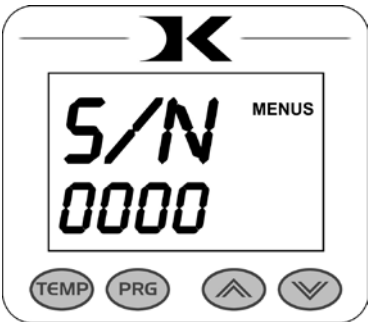


To unlock the DTE menu:

Press UP arrow, then PRG, then DOWN arrow, then PRG

The lower numbers will flash. Use the UP and DOWN arrows to change the month digits. Press PRG to switch to the year digits. Use UP and DOWN arrows to change the year digits.

Press the PRG key again, and the **S/N** menu will appear. Use the UP and DOWN arrows to change the first two digits of the Serial Number. Press PRG again to switch to the last two digits of the Serial Number, and use the UP and DOWN arrow keys to change the values. Press PRG to lock in the settings and move to the next menu item.



Recorded Pressings & Heat Cycles

The controller will record the number of pressings throughout the life of the machine. The number of pressings is Not necessarily the number of times the press has been opened or closed. The 'odometer' value recorded in the controller is based on the number of *completed timing cycles* the press has performed. This provides a fair and conservative picture of the number of pressings the machine has performed throughout its lifetime (or throughout the lifetime of the machine with that particular controller in it).

The **RCP** menu displays the number of complete pressing cycles performed. Because the number can display up to 9,999,999, the figure is scrolled across the screen, and separated by a "-" sign. The RCP menu is not editable, or resetable to zero.

Press PRG to move to the RCC menu item.

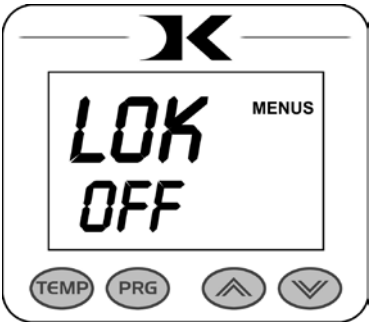
The **RCC** menu displays the number of complete heating cycles performed, rounded off every 20 cycles to avoid high read/write rates to the memory. Because the number can display up to 9,999,999, the figure is scrolled across the screen, and separated by a "-" sign. The RCC menu is not editable, or resetable to zero.

Press PRG to move to the next menu item.

Operator Lockout

The operator lockout feature simply disables the keypad. This prevents the operator from changing any settings, and adjusting anything on the controller.

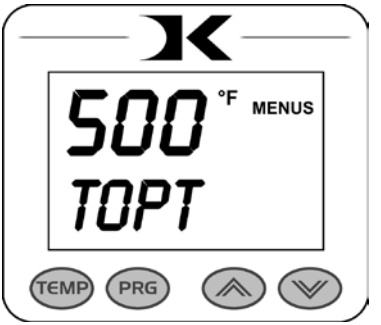
Use the Arrow Keys to set the **LOK** menu ON or OFF. When set to ON, the keypad is disabled during normal operation. The only way to enable the keypad is to power off the machine, and re-enter the factory menus (see page 4).



Top Temperature Limit

The Top Temperature limit sets a maximum temperature limit for the controller. This is useful if certain presses should not be allowed to exceed a certain temperature setting. The range of settings is from 32°F to 600°F.

The **TOPT** menu displays the temperature limit on the top 3 display digits on the screen. Use the Arrow Keys to change the temperature to the desired Max Temp Limit.



Normal Operation

Normal Operating Mode

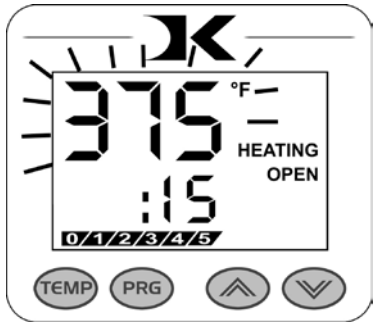
The normal operating mode of the press will display the current actual Temperature at the top of the screen and the time setting or elapsed time below the temperature.

The right side the screen will indicate the heating status by stating HEATING, READY, both of those words, or none at all, depending on if it is cooling down or heating up to the set temperature. READY is shown only if the current temperature is within 5 degrees of the set point temperature.

The right side of the screen will also indicate the timing status by stating OPEN, TIMING or DONE. The DONE indicator may remain on in some cases until the press is opened back up.

If the pressure feature is enabled, the pressure bar graph will show the last known pressure exerted when the press was closed.

Setting Temperature



From the normal operating mode, simply press the TEMP key to set the temperature.

The flashing 3-digit number is the temperature setting (not the current temp). Use the Arrow Keys to set the desired temperature. Press both Arrow Keys together to set it to 350°F.

Press TEMP again to lock in the setting. The control will return to the normal operating mode after 10-15 seconds if TEMP is not pressed.

Setting Time

From the normal operating mode, simply use the Arrow Keys ONLY to set the time. Do not touch the PRG key.

Hold down either the Up or Down arrow key for more than 2 seconds and the time will increase rapidly.

Press BOTH Arrow Keys and the time will reset to 00 seconds.

Pre-Press Timer

There is a second timer available for use, called the "Pre-Press Timer". This feature is useful if a multiple-step process is performed.

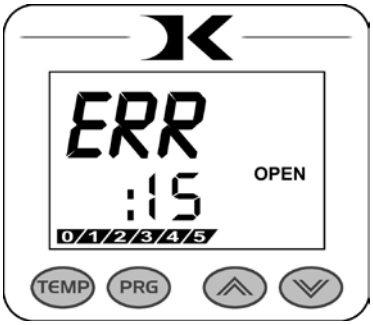
For example: If a product must be pre-pressed for 5 seconds before a main pressing cycle of 20 seconds, the Prepress timer can be set for 5 secs, and the main timer for 20. When the operator closes the press, the 5-sec time counts down. When the operator opens the press, the time setting switches to 20 seconds.

The word PREPRESS will be displayed next to the 2nd pre-press time setting when it is active. To set the pre-press time, simply use the Arrow Keys to set the time. If PREPRESS is not displayed next to the time, quickly close and then open the press to switch to the prepress time.

To turn on the prepress timer feature, enter the User Options Menus and go to the PPR setting and turn it ON. (See page 16, then page 24)

ERR Mode

During operation of the press, if there is a loss of signal from the temperature sensor wire, the ERR display will appear.



This is a safety feature that will shut off the relay so the press will not overheat aimlessly without a temperature signal.

Once the temperature signal is restored (no longer broken, or plugged back into the control) the press will resume the temperature display, and start heating if necessary. If ERR persists, contact support.

Over-Temp Alarm

If the press heats beyond the set temperature by 40 degrees or greater, the OverTemp alarm will sound.

This is a safety feature that warns the operator of a possible thermal run-away of the press. This means the press relay may be locked in a heating position where it will never stop heating, to a possibly harmful temperature level.

If the OverTemp alarm sounds, turn off the press and let it cool off to room temperature.

Turn the power back on and immediately set the temperature to a low setting like 200°F. Wait for the press to heat up. When the press displays "READY", monitor the temperature and see if it continues to heat to a level that the OverTemp alarm activates again. If so, contact support.

Programmable Presets

How Presets Work

There are 70 programmable presets in the controller. The operator can store a Temperature, Time, Prepress Time, and Pressure setting in each preset.

When a preset program is loaded by the operator, the Current Temperature Setting, Time and Prepress Settings (if there is a Prepress setting in that preset) are updated in the normal operating mode.

The pressure is NOT set for the operator mechanically. A brief display of the pressure value in the preset is shown while updating the current settings. This is simply a reference... a reminder of what pressure setting the operator must adjust for that preset.

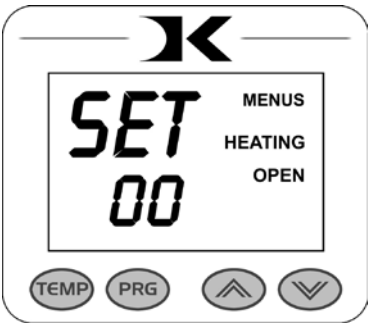
There are 2 main functions to using the presets. LOADING and EDITING the preset. LOADING a preset simply means selecting a desired preset, and returning to the normal operating mode where the current settings are changed. EDITING a preset is when the operator actually changes the preset's settings.

Loading a Preset

To enter the presets, press the PRG key.

SET will display on the screen.

Use the Arrow Keys to select a preset from 00 to 70.



Press PRG to return to the normal operating mode. The current active Temperature, Time & Prepress time settings (if there is a prepress setting in that preset) are now updated with the presets values.

Editing/Programming a Preset

To edit a preset and change it's values to your own desired settings, you simply use the TEMP key while in the SET preset mode.

From the normal operating mode, press the PRG key. SET displays on the screen. Use the Arrow Keys to select the preset # you wish to edit.

Press the TEMP key. The temperature will flash. Use the Arrow Keys to set the temperature for that preset.

Press the TEMP key. The time will flash. Use the Arrow Keys to set the time for that preset.

Press the TEMP key. The Prepress time will flash. Use the Arrow Keys to set the Prepress time. Set the Prepress time to 00 if only one timer is to be used for that preset. Setting Prepress to 00 will disable the Prepress feature.

Press the TEMP key. The Pressure reference value will flash. Use the Arrow Keys to set the pressure for that preset. This will display 0 to 9 for presses configured for Bar Graph Pressure readout, and will display 0:00 to 10:00 for presses configured for a Height Gauge readout.

Press the TEMP key. The screen returns to the preset #. Press PRG to return to the normal operating mode, or use the Arrow Keys to select a different preset and edit that as well.

A Walkthrough Tutorial for using Presets

Here is a tutorial of programming 2 different presets, and then an example of using them in normal daily operations. Do this walkthrough to practice using presets.

Part 1: Programming 2 different presets.

From the normal operating mode, press PRG. SET appears.
Use the arrow keys to select SET 01.
Press TEMP. Set the flashing temperature to 400 with the arrow keys.
Press TEMP. Set the flashing time to 45 with the arrow keys.
Press TEMP. Set the flashing Prepress time to 00 with the arrow keys.
Press TEMP. Set the flashing Pressure ref to 6 with the arrow keys.
Press TEMP. Use the arrow keys to select SET 02.
Press TEMP. Set the flashing temperature to 350 with the arrow keys.
Press TEMP. Set the flashing time to 12 with the arrow keys.
Press TEMP. Set the flashing Prepress time to 3 with the arrow keys.
Press TEMP. Set the flashing Pressure ref to 8 with the arrow keys.
Press TEMP. Press PRG to leave the preset mode.
Presets SET 01 and SET 02 have now been programmed.

Part 2: Loading the presets. Let's say we are powering on the machine and starting a job. The first job will need to use preset 01, and later on the next job will need preset 02.

From the normal operating mode, press PRG. SET appears.
Use the arrow keys to select SET 01 then Press PRG. Done!
The press is now set for 400°F and 45 seconds and will start to heat to that temperature. When leaving the presets, the screen briefly displayed PRS 6 - indicating you must manually set the clamping pressure so the bar graph shows 6 (or close to it) at the bottom of the screen.

Now let's change to the next job. Press PRG. SET appears.
Use the arrow keys to select SET 02 then Press PRG. Done!
The press is now set for 350°F, 12 secs, 3 prepress, and you are reminded to set the pressure heavier to 8 on the bar graph display (when closed).

That's it! You can load a preset as often as needed: just press PRG, pick the preset you want with the Arrow Keys, and press PRG again.

User Menus

Entering the user menus & options

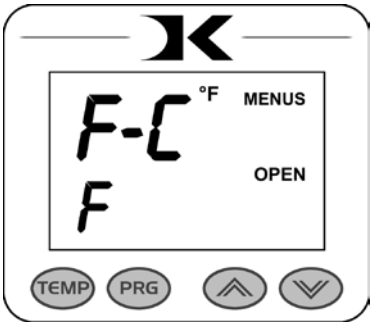
There are many useful features beyond simply setting time & temperature, and storing presets. All of these additional features are available to the operator in the User Menus.

To access the user menus, simply press TEMP & PRG at the same time from the normal operating mode and let go.

(Try to use two hands and press the keys at the exact same time. If one key is pressed too early from the other, the temperature setting or preset modes may be activated instead. Turn the press off and then on and try again.)

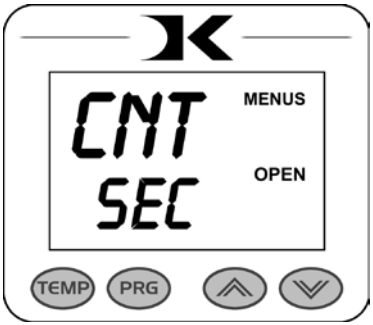
Fahrenheit / Celsius

The current and set temperature can be displayed in °F or °C. After entering the user menus (see above), use the arrow keys to select F or C. Press PRG to move to the next menu item.



Timer Counter Units

The timer and Prepress timer can be set for mins/secs (default) or hours/mins. If special applications need a higher timer range than 99 mins, 59 secs, this can be changed. After entering the user menus (see top of page), Press PRG until CNT displays. Use the arrow keys to select SEC or HR. Press PRG to move to the next menu item.



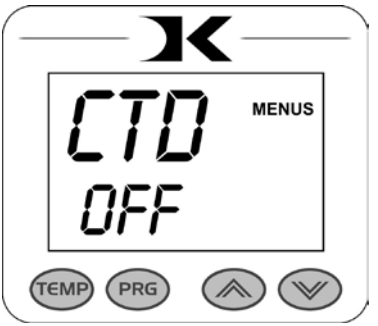
Recorded Pressings Odometer

There is an "odometer" that records pressing cycles done. This can be cleared and reset to 0 at any time when needed. The figure scrolls and it's beginning and end are separated by a "-" sign.

After entering the user menus (see top of page 19), Press PRG until REC displays. Use the arrow keys to reset the counter to 0. Press PRG to move to the next menu item.

Pressings Countdown Odometer

There is a second type of "odometer" that counts down the number of pressing cycles from a set amount.



After entering the user menus (see top of page 19), Press PRG until CTD displays. Use the arrow keys to set it ON or OFF.

When this feature is ON - the normal countdown timer display is replaced by this odometer instead. The arrow keys no longer adjust the countdown timer, but instead are used to set the countdown odometer. When OFF, the timers are visible.

The timer & prepress timer (if ON) still operate. However they are not visible. Instead, at the end of every main timing cycle (but not prepress), the odometer decreases by 1. This way, the opreator can keep track of how many pressings are left to do, without checking the REC menu.

This feature is useful when a specific amount of pressings must be performed, and the operator must be aware of how many pressings are remaining. Simply use the arrow keys to adjust this value in the normal operating mode (just like they are normally used to change the time). This value will automatically decrease at the end of each timing cycle.

 Press PRG to move to the next menu item.

Pressure Minimum

When the factory settings are set for the pressure sensor (TRNS), this menu item is visible. It is for calibrating Low Pressure. This menu item is not applicable to presses without a pressure sensor.

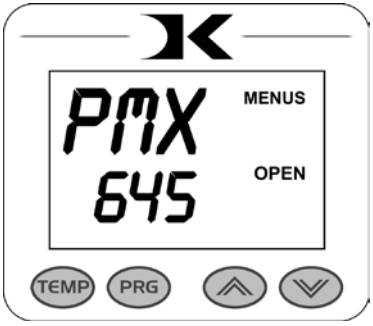
Do NOT set this setting unless you are sure adjustments are necessary.

Adjust the pressure of the machine so there is barely any contact or pressure when clamping the press. Press either Arrow Key. The press now considers this pressure as “0” on the Pressure Bar Graph Display.

Press PRG to move to the next menu item.

Pressure Maximum

When the factory settings are set for the pressure sensor (TRNS), this menu item is visible. It is for calibrating Highest Pressure. This menu item is not applicable to presses without a pressure sensor.

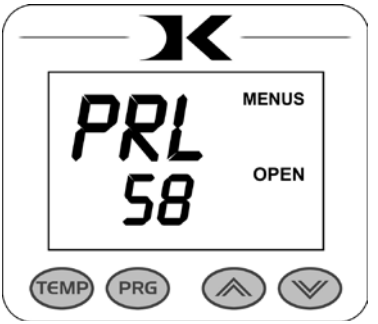


Do NOT set this setting unless you are sure adjustments are necessary.

Adjust the pressure of the machine so there is extremely heavy pressure when clamping and locking the press. Press either Arrow Key. The press now considers this pressure as “9” on the Pressure Bar Graph Display.

Press PRG to move to the next menu item.

Height Gauge Minumum



When the factory settings are set for the height gauge (SLID), this menu item is visible. It is for calibrating Lowest Level of the head. This menu item is not applicable to presses without a height gauge (on discontinued style machines only).

Do NOT set this setting unless you are sure adjustments are necessary.

Adjust the height of the machine as desired for max height. Press either Arrow Key. The press now considers this level as “10:00” on the PRS screen display.

Press PRG to move to the next menu item.

Height Gauge Maximum

When the factory settings are set for the height gauge (SLID), this menu item is visible. It is for calibrating Highest Level of the head. This menu item is not applicable to presses without a height gauge (on discontinued style machines only).

Do NOT set this setting unless you are sure adjustments are necessary.

Adjust the height of the machine as desired for max height. Press either Arrow Key. The press now considers this level as “10:00” on the PRS screen display.

Press PRG to move to the next menu item.

Height Gauge Sensitivity

When the factory settings are set for the height gauge (SLID), this menu item is visible. It is for calibrating the sensitivity of the PRS height display. This menu item is not applicable to presses without a height gauge (on discontinued style machines only).

Do NOT set this setting unless you are sure adjustments are necessary.

Set the sensitivity to a low number to allow the PRS screen to appear more often or easier when slight changes are made. 02 is a typical setting. Set the sensitivity to a high number (over 30) to basically disable the PRS screen from displaying. ***In extreme cases of electrical interference, a setting of 90 will keep this screen from showing at unwanted times.***

Press PRG to move to the next menu item.

Temperature Drop Sense

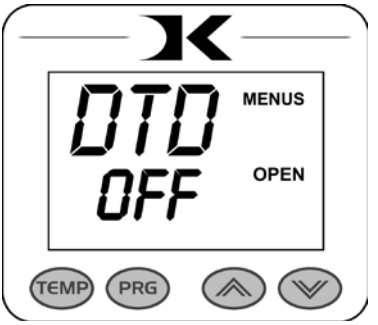
The press can be set to alarm if the temperature drops a certain range below the set temperature. This is useful to warn the operator if the press is too far out of temperature range during excessive use.

After entering the user menus (see top of page 19), Press PRG until DRP displays. Use the arrow keys to set it to OFF (default), or 10, 20, 30, etc.

If the current temperature drops below the set temperature by that many degrees, and alarm will sound. Press TEMP to silence the alarm.

Press PRG to move to the next menu item.

Temperature Drop Sense Timer Disable



The press can be set to disable the timer if the temperature drops a certain range below the set temperature. This is useful especially on automatic presses to “freeze” the operation of the machine if the temperature is below useful range.

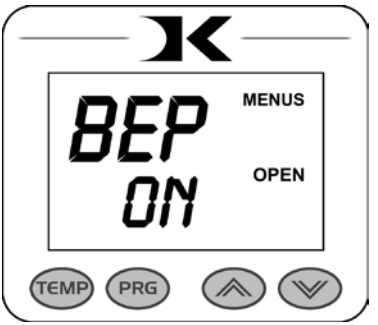
After entering the user menus (see top of page 19), Press PRG until DTD displays. Use the arrow keys to set it to OFF (default), or 10, 20, 30, etc.

If the current temperature drops below the set temperature by that many degrees, the timer will not operate, and therefore on an automatic press, the press will not activate. The press will “unfreeze” once the temperature is within set point by the value selected or less.

For Example - DTD is set for 20. The temperature setting is for 400. As long as the current actual temperature is higher than 380, the timer (and automatic activation if the press is automatic) will operate normally. If the temperature drops to 380 or below, the timer will not start, and on automatic presses, the press will not activate. Set to OFF to disable.

Press PRG to move to the next menu item.

Keypad Beeper



The keypad beep can be silenced if needed.

After entering the user menus (see top of page 19), Press PRG until BEP displays. Use the arrow keys to set it to ON or OFF.

Press PRG to move to the next menu item.

Alarms

The timer alarm can be adjusted for different beeping patterns. This can differentiate between multiple presses, and allow the operator to have a short beep or a continuously repeating beep.

After entering the user menus (see top of page 19), Press PRG until ALR displays. Use the arrow keys to set it to OFF, or 1 through 10.

Press PRG to move to the next menu item.

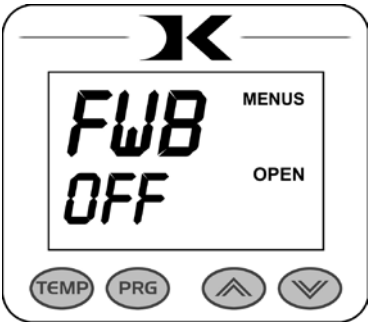
• denotes a short beep.

_ denotes a longer beep.

~ denotes infinite loop.

Alarm #	Alarm Pattern
Off	No alarm
01	• • • _
02	• • • _ ~
03	• • _
04	• • _ ~
05	• • •
06	• • • ~
07	_ ~
08	_
09	•
10	• (shorter)

Finished Warning Beep

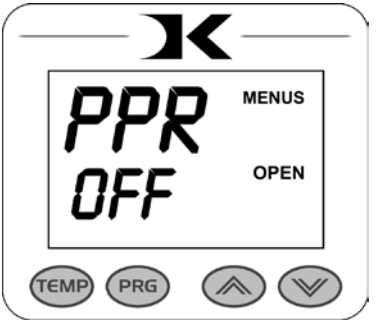


The press can sound a beep on the last 3 seconds of the timer or Prepress timer countdown. This is useful if the press is automatic and the operator needs a warning that the press is about to finish, open, or pop-up dramatically.

After entering the user menus (see top of page 19), Press PRG until FWB displays. Use the arrow keys to set it to ON or OFF.

Press PRG to move to the next menu item.

Prepress Timer



The press can cycle back and forth between two distinct timer settings: the normal countdown timer, and a 2nd Prepress timer. (see page 11 & 12). This menu item turns the Prepress timer ON or OFF.

After entering the user menus (see top of page 19), Press PRG until PPR displays. Use the arrow keys to set it to ON or OFF.

If PPR is set to OFF, pressing PRG will return to the normal operating mode.

If PPR is set to ON, pressing PRG will move to the next menu item.

Prepress Alarms

The Prepress timer alarm can be adjusted for different beeping patterns. This allows for differentiateing from the normal timer, and can allow the operator to have a short beep or a continuously repeating beep.

After entering the user menus (see top of page 19), Press PRG until AL2 displays. The PPR menu must be set to ON for this menu to be visible. Use the arrow keys to set AL2 to OFF, or 1 through 10.

Press PRG to return to the normal operating mode.

• denotes a short beep.

_ denotes a longer beep.

~ denotes infinite loop.

Alarm #	Alarm Pattern
Off	No alarm
01	• • • _
02	• • • _ ~
03	• • _
04	• • _ ~
05	• • •
06	• • • ~
07	_ ~
08	_
09	•
10	• (shorter)

Digital Knight
Heat Press Wiring Diagram