
KNIGHT



Chem-Trak Tunnel Programming Manual

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CAUTION: Wear protective clothing and eyewear when dispensing chemicals or other materials. Observe safety handling instructions (MSDS) of chemical mfrs.



CAUTION: To avoid severe or fatal shock, always disconnect main power when servicing the unit.



CAUTION: When installing any equipment, ensure that all national and local safety, electrical, and plumbing codes are met.

MENU MAP

1 *** DISPENSER *** MEMORY FUNCTIONS

- Load defaults
- Clear sum/cycle report memory
- Clear load counter

2 *** DISPENSER *** SETUP ROUTINES

- Change ID and main access code
- Set date and time
- Select unit of measure
- Setup auto formula select
- Select load count pump
- Set flush parameters

3 *** DISPENSER *** REPORT SETUP ROUTINES

- Change user access code
- Setup report name
- Change chemical names and costs
- Change formula names and weights
- Set shift times
- Set washer capacity
- Set number of modules

4 *** DISPENSER *** PROGRAMMING ROUTINES

- Calibrate pumps
- Prime pumps
- Set pump flow rates

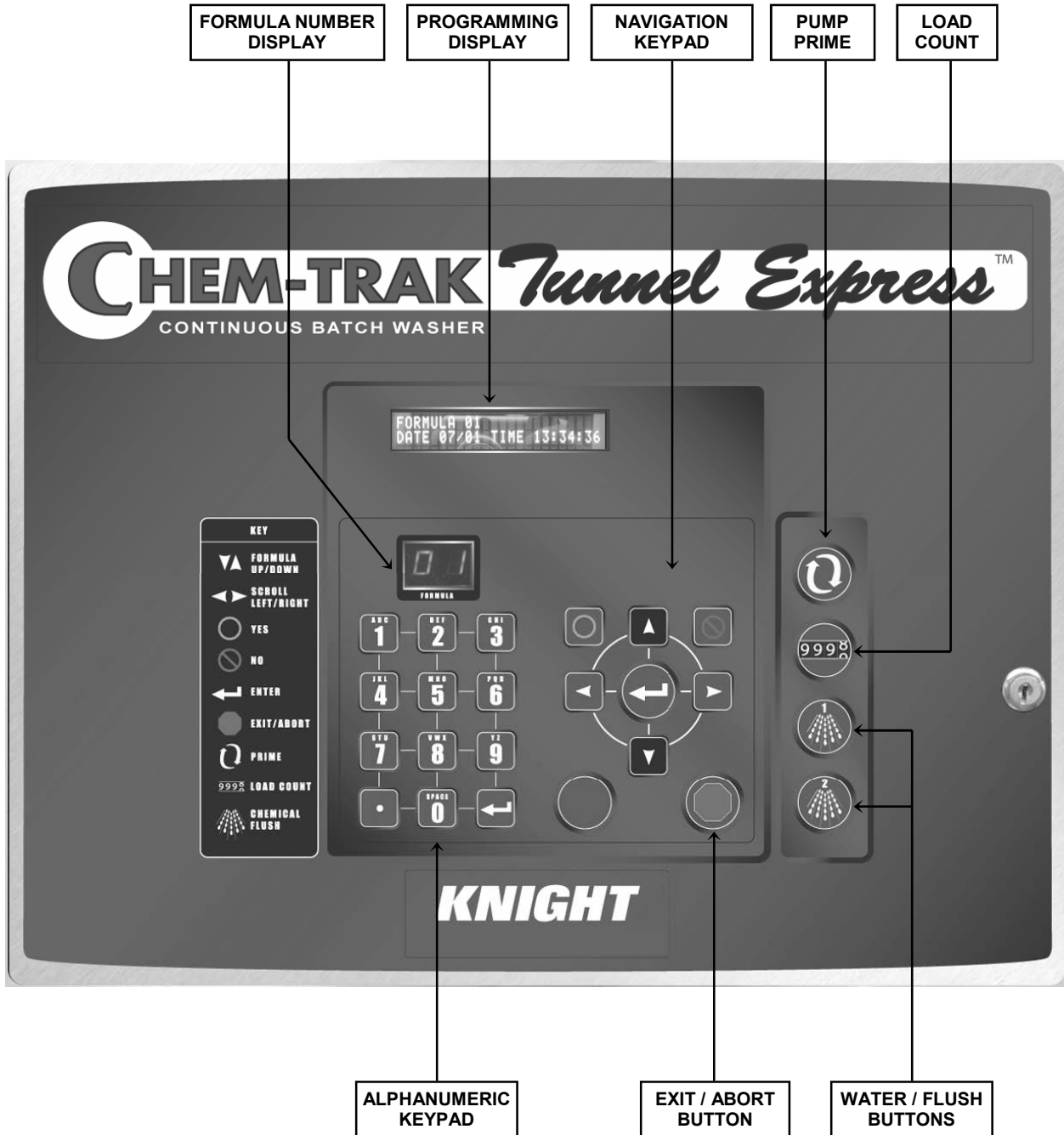
5 *** DISPENSER *** PUMP TEST ROUTINES

- Prime pumps

6 *** DISPENSER *** DIAGNOSTIC ROUTINES

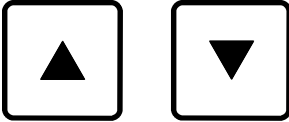
- Test SIB/LMIB signal inputs
- Perform SIB noise test

CONTROL PANEL DIAGRAM

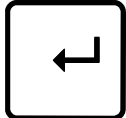


KEYPAD DESCRIPTIONS

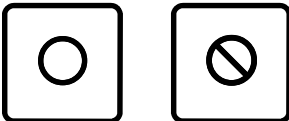
The Chem-Trak Tunnel system has been designed "USER FRIENDLY". The only two (2) keys you need to know are the MENU DOWN and ENTER. Pressing either key will advance you through the screens. Read the screens and respond with one of the buttons below.



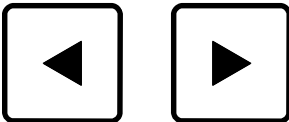
The UP and DOWN buttons function as MENU select and formula select navigation buttons during programming and allow you to move up and down through menu selections. Operators can use these buttons to select formulas during normal operation.



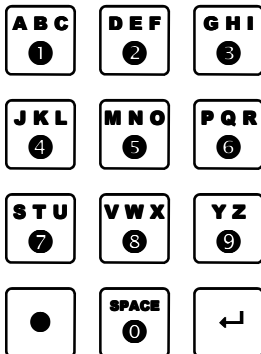
The ENTER button (either one of the two) acknowledges input data and logs it into memory. It also takes you into a menu for programming.



The YES and NO buttons allow you to pick whether you want to do something or not in the various menu prompts that you will see when programming the system.

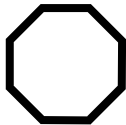


The SCROLL (LEFT and RIGHT) buttons allow you to move through a particular menu screen, and pick one of several items to change, such as characters on the display.



The alphanumeric keypad allow you to input numbers and letters. By repeatedly pressing any key, any of the letter characters (as well as the numeric character) can be entered into the menu selection you are working on.

NOTE: The PUMP PRIME button (upper-right button on control panel) can be used to switch units of measure between ounces and gallons when in U.S. or Imperial units, or between milliliters and liters when in metric units, when auto-calibrating or manually setting flow rate (only). Its also used for priming/calibrating functions.



The EXIT/ABORT key performs a number of functions. From any main menu selection, pressing EXIT will end out of the programming mode access and will return the screen to the main operating display. From any screen *within* a main menu that allows you to adjust something (i.e. setting a flow rate), pressing EXIT/ABORT takes you back to *that* main menu selection. **Subsequently, EXIT/ABORT can be used to halt pump operation; as desired or in an emergency situation.**

USER DISPLAY DESCRIPTIONS

CHEM-TRAK TUNNEL DATA MANAGEMENT SYSTEM

When the system is powered up, the display will initially show the image at the left. After a few seconds, the display will change to the example shown below.

FORMULA 01 DATE 02/05 TIME 10:54:20

The “main display” screen shows the current formula selected (by name) as well as the date and time.

FORMULA 01 \ PUMP-01

When there is pump activity, the display will show which pump is running.

When the pump is finished, the display will return to its previous appearance.

OPERATION

- The tunnel washer programming controls all chemical dosages. Each chemical pump will run for as long as its respective trigger signal is energized by the washer’s controller.
- An optional flush feature can be used to flush chemicals to the washer. See the setup programming routines menu for details on how the flush option works.
- The Chem-Trak Tunnel system monitors the dispensing duration of each chemical pump and records cumulative totals in the cycle tracking memory. Product usage can then be calculated based on the flow rate for each individual pump.
- Load counts are tallied for each formula based on the number of times the load count pump was signaled for each wash formula chosen during operation.

GETTING STARTED

Chem-Trak Tunnel programming is done through the use of menu selections. Any menu can be entered by pressing the ENTER button, or exited by pressing EXIT (or in some cases FORMULA ↓ or ↑). Its that simple! Each of the main menu headings give an idea of what information can be found, entered, or changed. Within each main menu selection are several screen "prompts" that walk you through the complete programming process step-by-step.

Below is an example of the main display when you are not in the programming menus. The main display is more commonly referred to as the *default display*, and appears when the system is in normal operating mode.

FORMULA 01 DATE 05/11 TIME 14:32:54	The default display shows the formula name on the top line. The bottom line of the display will show the current date and time. From the default display, you must enter the main access code (following) to begin programming.
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ACCESS CODES

The Chem-Trak Tunnel system has two access codes for protection:

- The "main" access code, allows entry into ALL of the menus and functions of the system.
- The "user" access code allows entry into menus 5 & 6 ONLY, without the ability of changing programmed information.
- Systems are shipped from the factory with both access codes set to zero. Only a person with the "main" access code can change the "user" access code. (changing codes is explained later in this manual). If desired the two access codes can be the same, however the user will then have access to ALL of the functions of the system, including the ability of changing programmed information.

TO PROGRAM DISPENSER PRESS "ENTER" ...

ENTER ACCESS CODE THEN PRESS ENTER	From the default display shown above, press the ENTER button. The screen at left should appear. If the screen at left does not appear, wait 2 seconds, press EXIT, then press ENTER. When you see the screen at left, type in the access code and press ENTER. Remember, for a new system, the access code will be zero (until you change it later). Follow the programming steps for each section, starting on the next page.
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IMPORTANT NOTES:

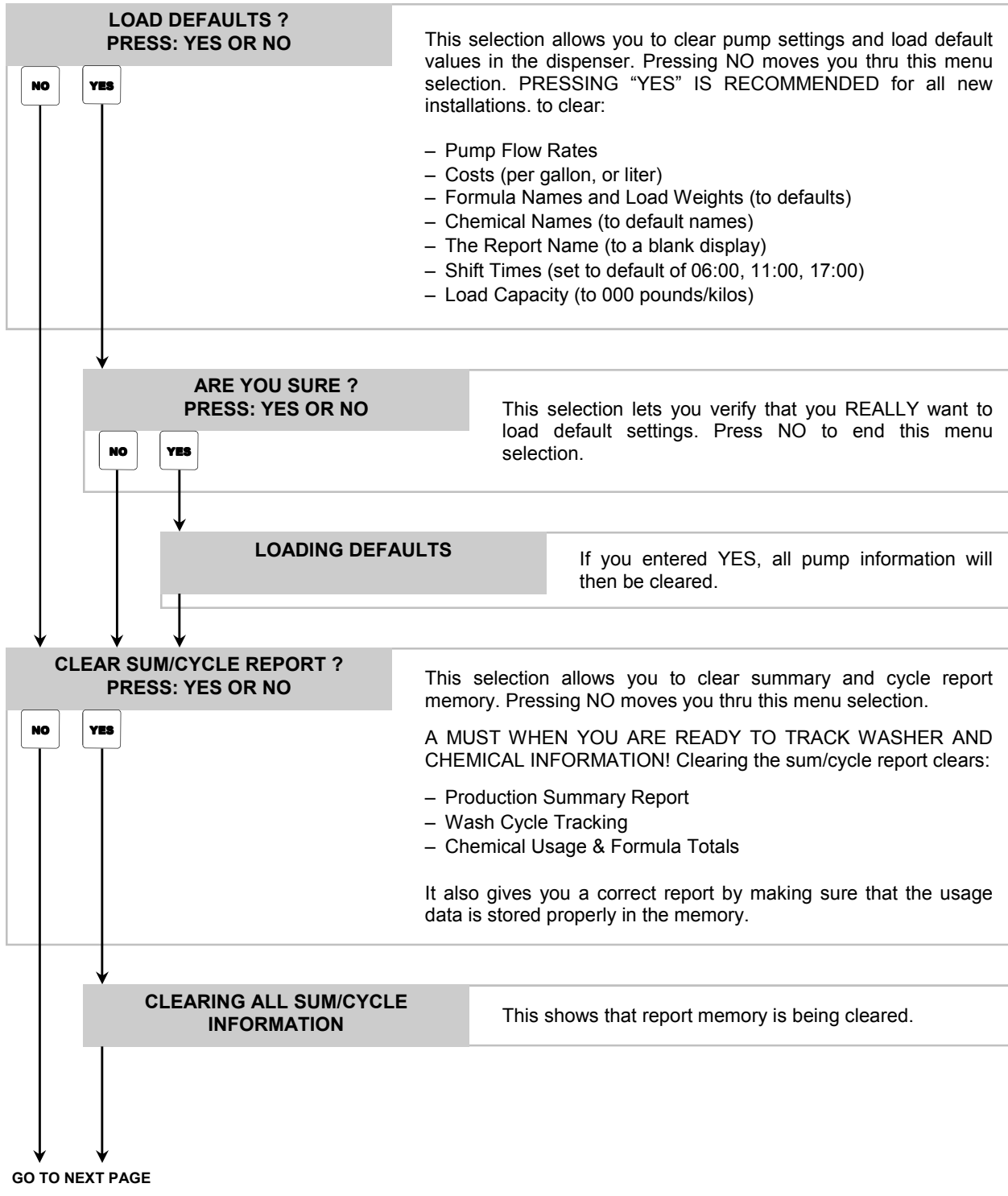
- Its recommended to clear memory prior to initial programming. See MEMORY FUNCTIONS [menu 1] for details.
- If at any time you get lost in the programming and are not sure what to do, press the EXIT button until the section menu heading appears, then proceed.

1

*** DISPENSER MEMORY FUNCTIONS ***

- Load defaults
- Clear sum/cycle report memory
- Clear load counter

IMPORTANT: Dispenser memory must be cleared when programming a new dispenser. Press ENTER to enter the menu or MENU ↓ to skip to the next main menu.



1

***** DISPENSER ***
MEMORY FUNCTIONS**

• Continued

**CLEAR LOAD COUNT ?
PRESS: YES OR NO**

This selection allows you to clear the load counter. The load counter stores the number of times the load count pump has operated. Pressing YES clears the counter; pressing NO moves to the next menu selection WITHOUT clearing the counter.

NO

YES

CLEARING LOAD COUNT

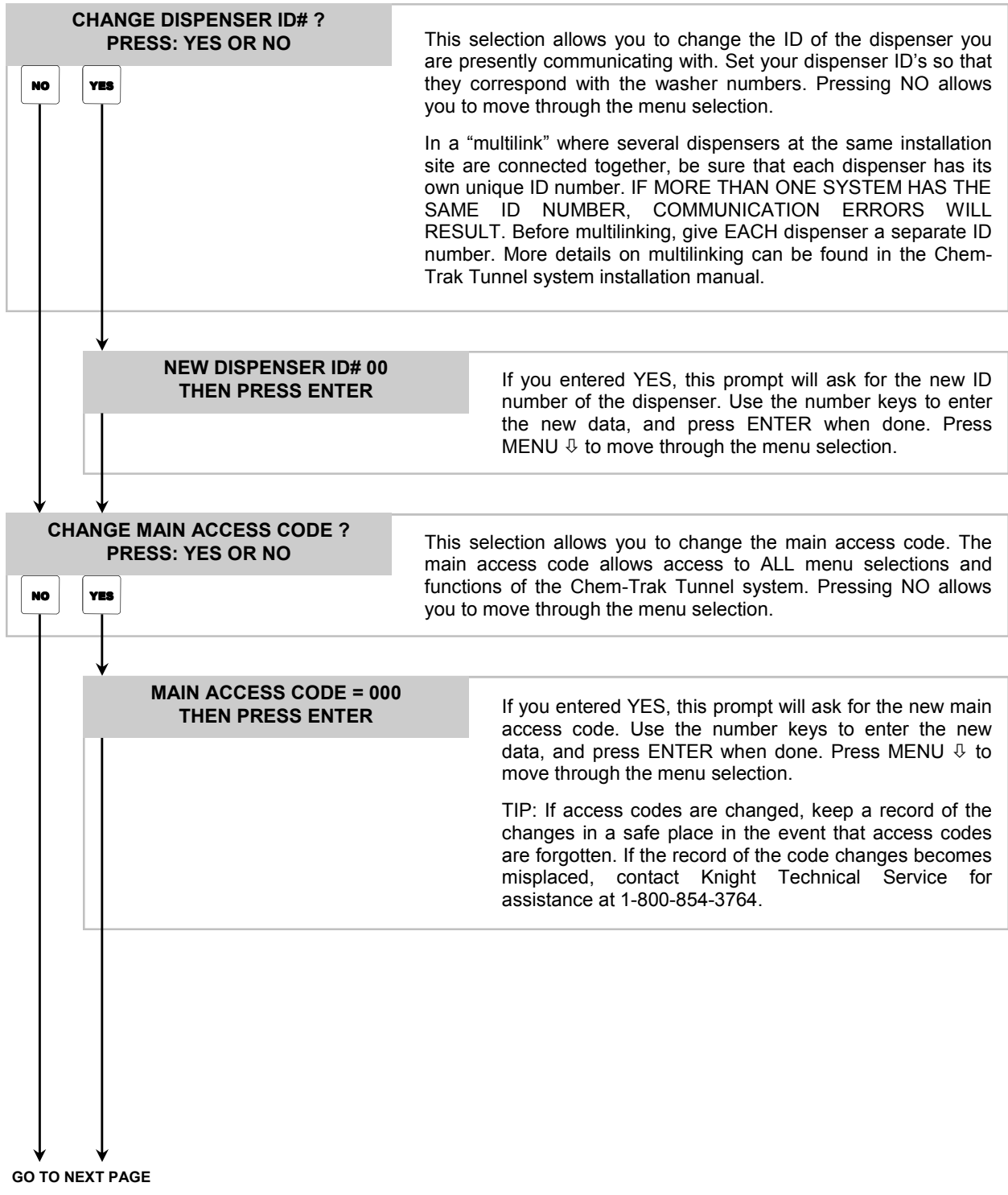
Load count is then cleared.

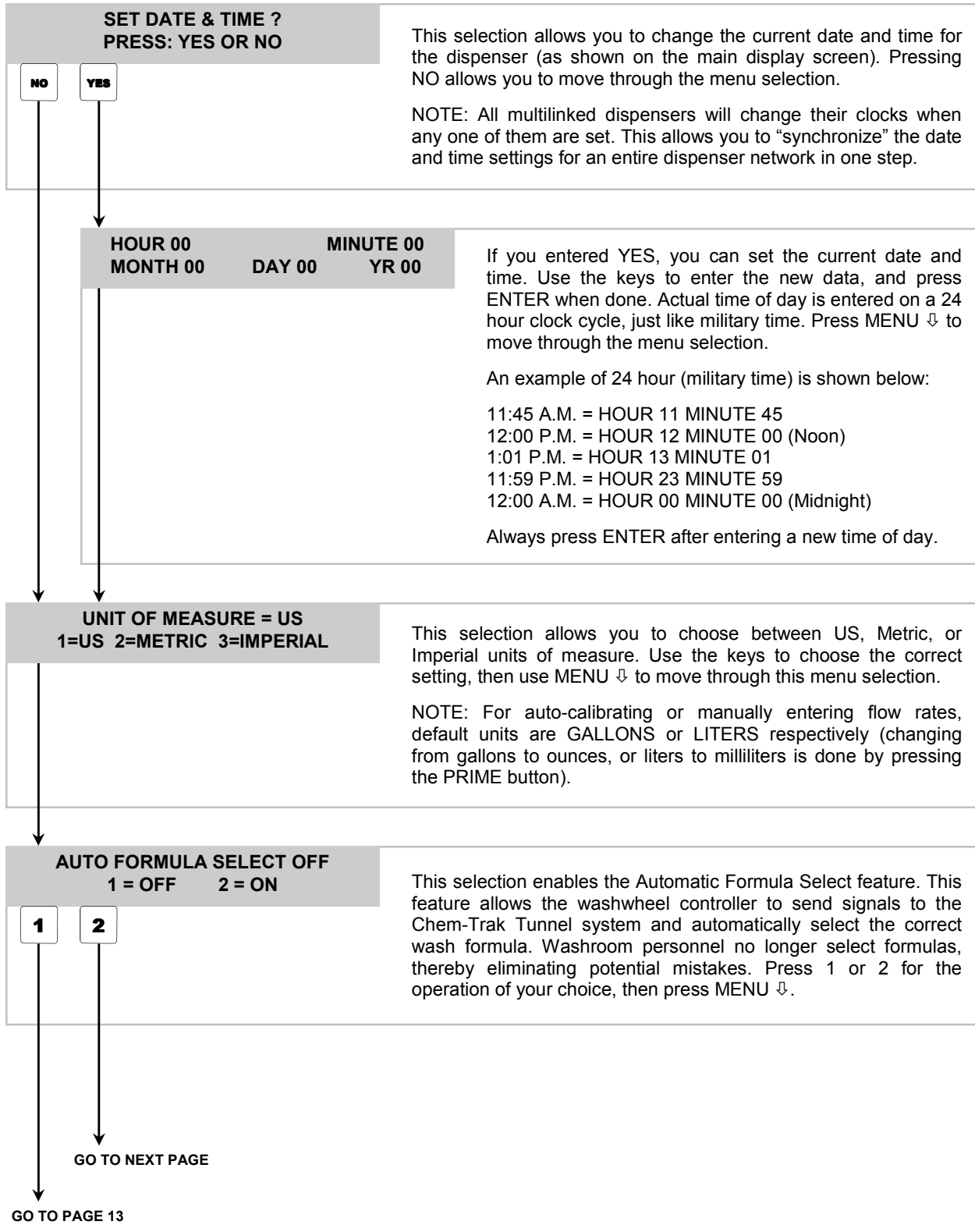
MEMORY FUNCTIONS MENU HEADING

2

*** DISPENSER SETUP ROUTINES ***

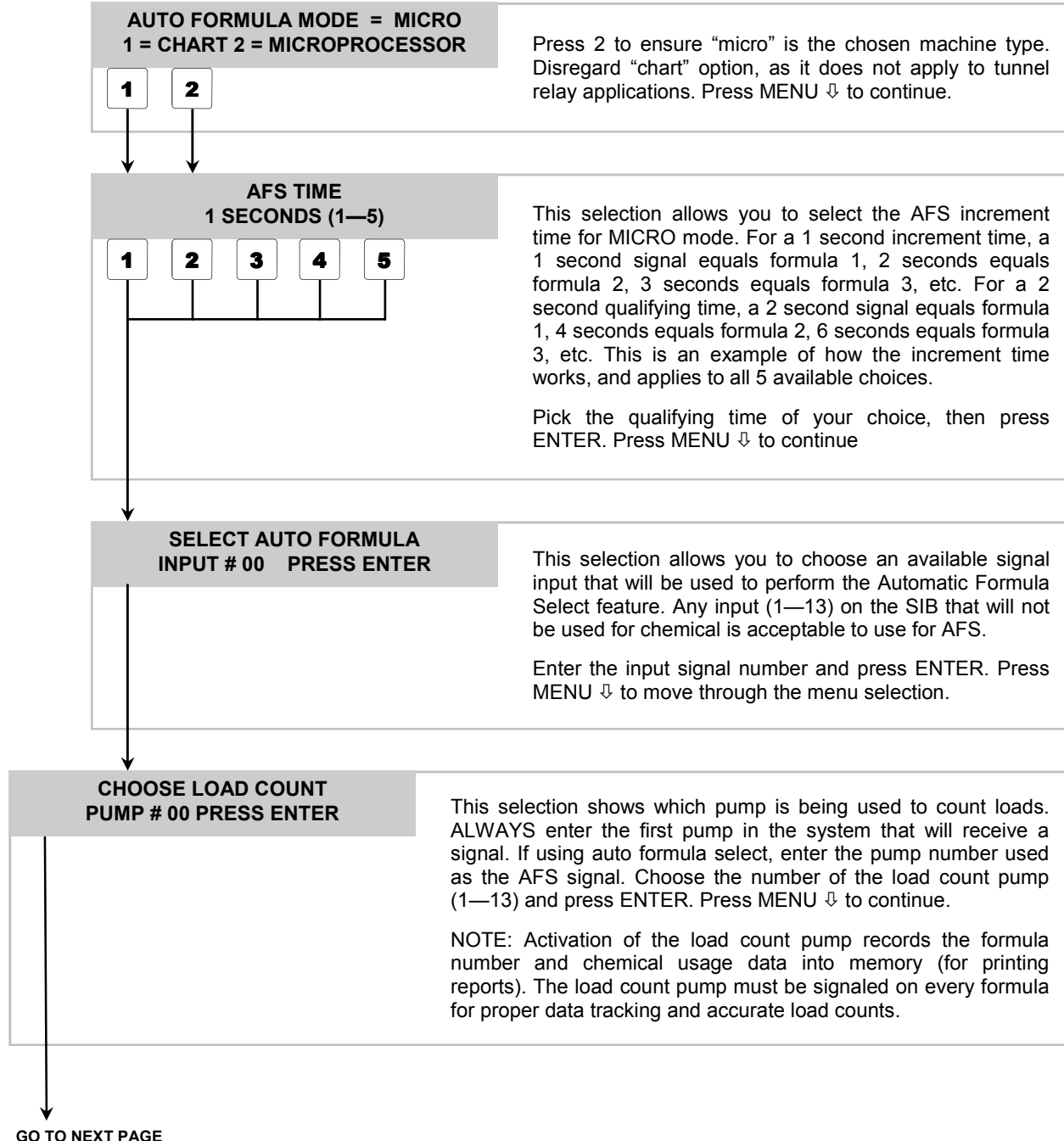
- Change ID and main access code
- Set date and time
- Select unit of measure
- Setup auto formula select
- Select load count pump
- Set flush parameters





AUTO FORMULA SELECT — HOW IT WORKS

Micro(processor) mode is used for automatically selecting formulas with washwheels that have microprocessor controllers. To operate this mode, choose an available signal output from the microprocessor that will be dedicated to selecting formulas. Connect the signal from that output to the Automatic Formula Select input you designated. Any unused input on the SIB can be designated for automatic formula selection. The length of time this signal is applied will determine the selected formula.



FLUSH TIME 000 SECONDS

This sets the time the flush solenoids (if used) will operate after the pumps have finished. Type in the flush time, then press ENTER. Press MENU ↓ to move on to the next menu.

NOTE: If flush time is set to zero and number of flush valves is zero, then a maximum of 12 pumps can be operated. Otherwise, the max number of pumps is 10 if using flush.

FLUSH ERR DLY 03 SECONDS

This is for flush applications where a flow switch is used to verify actual water flow. This setting tells the system at what point during the flush cycle to check the flow switch state (open or closed). If set to 00, this feature is turned "off", and the flow switch input will not be checked (no FLUSH ERROR warnings will be produced). For flush systems with a flow switch, it is recommended that this setting be no less than 03 seconds. Make your selection and press ENTER. Press MENU ↓ to continue.

**NUMBER OF FLUSH VALVES = 0
THEN PRESS ENTER**

This menu selection tells the system which water valves will be used (for flush manifold applications). This prevents manual activation of any flush valves that will not be used. Choose 0 if no flush, 1 if only using output 11, or 2 if using both outputs 11 and 12, then press ENTER. Press the MENU ↓ button to continue.

IMPORTANT: Ensure you enter 1 if you are only using one flush.

NOTE: If flush time is set to zero and number of flush valves is zero, then a maximum of 12 pumps can be operated. Otherwise, the max number of pumps is 10 if using flush.

**SELECT FLUSH OUTPUT
PUMP 01 FLUSH 0 0,1,2**

This menu selection assigns a flush output (water valve) to each chemical pump in the system. This allows you to independently control which flush output will be activated by each pump. Only one flush output can be assigned per pump. If no flush manifolds are used, then this setting should be 0 (zero) for each chemical pump.

Choose 0 if no flush is used.

Choose 1 if the pump will use the flush manifold connected to output 11 (flush 1).

Choose 2 if the pump will use the flush manifold connected to output 12 (flush 2).

Press ENTER after each pump and flush assignment. When finished, press the MENU ↓ button to continue.

SETUP ROUTINES MENU HEADING

3

*** DISPENSER *** REPORT SETUP ROUTINES

- Change user access code
- Setup report name
- Change chemical names and costs
- Change formula names and weights
- Set shift times
- Set washer capacity
- Set number of modules

CHANGE USER ACCESS CODE? PRESS: YES OR NO

NO **YES**

This selection allows you to change the user access code. The user access code allows access to a limited number of menu selections within the Chem-Trak Tunnel system. Pressing NO allows you to move through this menu selection.

USER ACCESS CODE = 000 THEN PRESS ENTER

If you entered YES, this prompt will ask for the new user access code. Use the keys to enter the new data, and press ENTER when done. Press MENU ↓ to move through the menu selection.

CHANGE REPORT NAME ? PRESS: YES OR NO

NO **YES**

The report name is what is printed on the report heading. Pressing NO allows you to move through this menu selection.



If you entered YES, you can change the report name (use the SCROLL and alphanumeric buttons to enter the new data, and press ENTER when done). Press MENU ↓ when finished to move through this menu selection.

TIP: Entering the report name in the center of the display window will center it at the top of the report.

CHANGE CHEMICAL NAMES PRESS: YES OR NO

NO **YES**

This is the type of chemical for each pump in the system. Pressing NO allows you to move through this menu selection.

PUMP 01
PUMP-01

If you entered YES, you can change the chemical name for each pump (using the SCROLL and alphanumeric buttons to enter the new data). Press MENU ↓ to move through this menu selection.

TIP: First select the pump number on the top line and press ENTER...the current name for the pump you selected will be displayed on the bottom line. Then change the information on the bottom line and press ENTER again to lock-in the new pump name.

GO TO NEXT PAGE

**CHANGE PRODUCT COSTS ?
PRESS: YES OR NO**

NO

YES

This menu selection allows you to change costs for each product. Pressing NO allows you to move through this menu selection.

PUMP 01 \$00.00 /GALS

If you entered YES, you can change the cost for each chemical (using the SCROLL and alphanumeric buttons to enter the new data). Press MENU ↓ to move through this menu selection.

TIP: First select the pump number on the left side of the display and press ENTER...the product cost for the pump you selected will be displayed on the right side. Then change the information on the right side and press ENTER again to lock-in the new product cost.

**CHANGE FORMULA NAME AND
WEIGHT? PRESS: YES OR NO**

NO

YES

This menu selection allows you to change the formula names and load weight for each formula. Giving each formula a descriptive name makes the system more user-friendly. Load weights are used for data-tracking purposes to generate reports. Pressing NO allows you to move through this menu selection.

FORMULA 01
FORMULA 01

If you entered YES, you will first change the formula names. When finished changing all formula names, press MENU ↓ to move on to the next display for changing load weights.

TIP: First select the formula number on the top line and press ENTER...the current formula name will be displayed on the bottom line. Then change the information on the bottom line and press ENTER again to lock-in the new formula name.

FORMULA 01
LOAD WEIGHT 000 LBS

Now enter the load weight for each formula used. When finished changing load weights, press MENU ↓ to move on to the next menu selection.

TIP: First select the formula number on the top line and press ENTER...the current load weight will be displayed on the bottom line. Then change the information on the bottom line and press ENTER again to lock-in the new load weight.

GO TO NEXT PAGE

3

***** DISPENSER ***
REPORT SETUP ROUTINES**

• Continued

**WANT TO SET SHIFT TIMES ?
PRESS: YES OR NO**

This selection allows you to enter the shift times (the start time for each work shift in the washroom) for the report. Pressing NO allows you to move through this menu selection.

NO **YES**

START TIMES **#1 06:00**
 #2 11:00 **#3 17:00**

If you entered YES, you can change the start time for each washroom work shift. Use SCROLL and the numbered keys to enter the new data, then press ENTER. Shift times are entered on a 24 hour clock cycle (like military time). Press MENU ↓ to continue.

**WASHWHEEL LOAD CAPACITY
000 LBS**

This selection allows you to enter the load capacity for the wash wheel that the dispenser is presently connected to. Use the keys to enter the new data, and press ENTER when done. Press MENU ↓ to continue.

NUMBER OF MODULES 000

This selection allows you to enter the total number of modules on the tunnel washer. Use the keys to enter the new data, and press ENTER when done. Press MENU ↓ to continue.

REPORT SETUP ROUTINES MENU HEADING

ALTERNATE CALIBRATION STEPS

The following calibration steps can be used if the ball-valve injection assembly is used.

Adjust flow rate of pump to desired speed.

- (1) Turn the two way ball valve to the off position.
- (2) Prime the pump you wish to calibrate.
- (3) Open the ball valve and adjust the metering valve to the desired flow rate.

How to determine the flow rate.

- (1) Restart the desired pump in prime mode.
- (2) Capture chemical whole timing to 60 seconds.
- (3) Divide volume by 60 seconds to determine flow rate and manually enter the value in the programming menu.

4

*** DISPENSER *** PROGRAMMING ROUTINES

- Calibrate pumps
- Prime pumps
- Set pump flow rates

**ARE PUMPS CALIBRATED ?
PRESS: YES OR NO**

This selection asks if the pumps are calibrated. Pressing NO allows you to move through the menu selection. During initial programming, the normal choice is NO.

NO **YES**

PROGRAMMING ROUTINES MENU HEADING

**ARE PUMPS PRIMED ?
PRESS: YES OR NO**

This menu selection asks if the pumps are primed. Priming is necessary for proper calibration. For an initial installation, press NO, otherwise press YES.

YES **NO**

**PRIME PUMP 01
PUSH PRIME TO START/STOP**

If you pressed NO, prime each pump by using the PRIME button to start and stop the pump (the maximum time a pump can be primed is 255 seconds). Press MENU ↓ after priming all pumps to move through this menu selection.

TIP: You can also prime pumps using the push-buttons on the POB circuit board located inside the pump cabinet. Pump will run as long as the button is pressed.

**MANUALLY ENTER FLOW RATE
PRESS: YES OR NO**

This selection asks if you want to manually enter (or change) the flow rates for each pump. This is known as manually calibrating each pump, and is only recommended if the exact pump flow rate is known. Normally, the answer is NO.

Press NO if you wish to “auto calibrate” pumps. Knight recommends auto calibrating pumps instead of attempting to estimate flow rates manually. Especially on new installations.

NO **YES**

**FLOW RATES PER MINUTE
P-01 000.0 OZ**

Go to page 20.

GO TO NEXT PAGE

4***** DISPENSER ***
PROGRAMMING ROUTINES**

• Continued

**CALIBRATE PUMP 01
PRESS CAL. TO START/STOP**

This selection allows you to automatically calibrate each pump. Auto calibrate “teaches” the system the actual flow rate of the pump. Correct flow rates are important for accurately tracking the amount of chemical used.

Follow the steps below to auto calibrate the pumps. Use the LARGEST container possible (larger containers result in more accurate pump calibrations).

Place your empty container under the discharge tube of the pump you wish to calibrate.

Next, select the pump number and press the PRIME button to start the pump. Let the pump run for about 60 seconds, then press the PRIME button again to stop the pump. You will then see the following display...

**ENTER CALIBRATION
VOL PUMPED = 000.0 OZS**

Check to see how much chemical was actually pumped and enter this amount as the VOL PUMPED (in OZ or ML only depending on the unit of measure selected in setup menu #2) then press ENTER. You will then see the following display...

**FLOW RATES PER MINUTE
P-01 000.0 OZ**

(auto calibration continued) The resulting flow rate from the previous step will be displayed. If you wish to re-calibrate the pump, or to calibrate other pumps, press MENU ↑ and repeat the auto calibration steps. Otherwise, press MENU ↓ to return to the menu heading.

NOTE: If you had entered YES to the “*manually enter flow rate*” prompt, use the SCROLL and numbered keys to enter the new data. Make sure the correct unit of measure is displayed; if it is not, use the PRIME button to change the unit of measure (OZS/GAL or MILS/LTRS). Press ENTER to lock-in the new flow rate. Press MENU ↓ to return to the menu heading.

PROGRAMMING ROUTINES MENU HEADING

5***** DISPENSER ***
PUMP TEST ROUTINES**

- Prime pumps

**PRIME PUMP 01
PUSH PRIME TO START/STOP**

This selection allows you to prime a pump. Use the numbered keys to select the desired pump, then push PRIME button to start the pump. Push PRIME again to stop the pump. Press MENU ↓ to move on to the next menu.

NOTE: The maximum time that a pump can run while priming is 255 seconds. After beginning to prime a pump, if the PRIME/CAL button is not pushed again to stop the pump, it will simply "time-out" after running for 255 seconds.

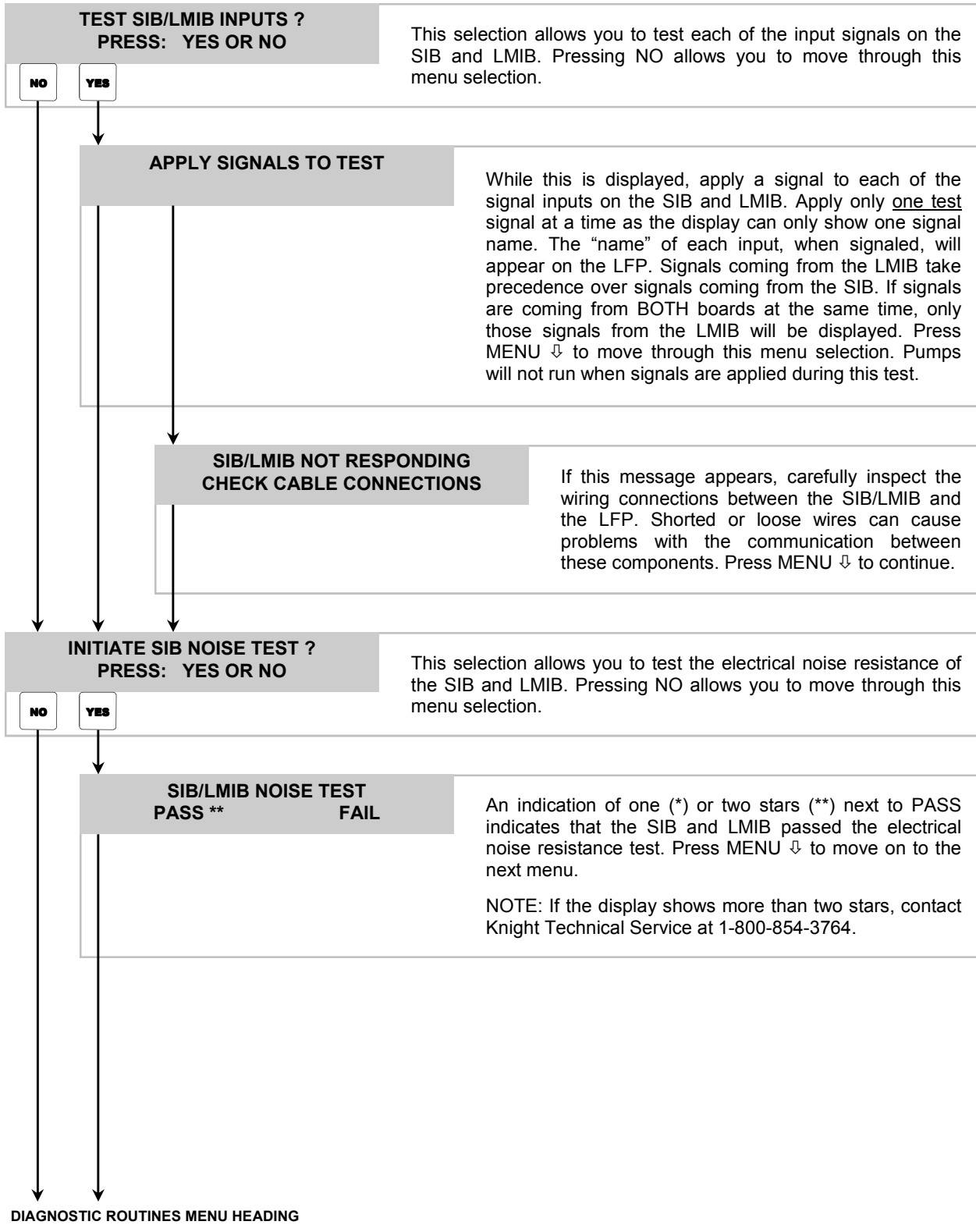


TEST ROUTINES MENU HEADING

6

*** DISPENSER ***
DIAGNOSTIC ROUTINES

- Test SIB/LMIB signal inputs
- Perform SIB noise test



DISCLAIMER

Knight LLC does not accept responsibility for the mishandling, misuse, or non-performance of the described items when used for purposes other than those specified in the instructions. For hazardous materials information consult label, MSDS, or Knight LLC. Knight products are not for use in potentially explosive environments. Any use of our equipment in such an environment is at the risk of the user, Knight does not accept any liability in such circumstances.

WARRANTY

All Knight controls and pump systems are warranted against defects in material and workmanship for a period of ONE year. All electronic control boards have a TWO year warranty. Warranty applies only to the replacement or repair of such parts when returned to factory with a Knight Return Authorization (KRA) number, freight prepaid, and found to be defective upon factory authorized inspection. Bearings and pump seals or rubber and synthetic rubber parts such as "O" rings, diaphragms, squeeze tubing, and gaskets are considered expendable and are not covered under warranty. Warranty does not cover liability resulting from performance of this equipment nor the labor to replace this equipment. Product abuse or misuse voids warranty.

FOOTNOTE

The information and specifications included in this publication were in effect at the time of approval for printing. Knight, LLC reserves the right, however, to discontinue or change specifications or design at any time without notice and without incurring any obligation whatsoever.