

Thoreson-McCosh Inc

Vacuum Loading System SIEMENS PLC

SIEMENS

Main Screen

THORESON
McCOSH INC

01/29/2008 11:01:59 AM

SYS. "A" STA#	SYS. "B" STA#	SYS. "C" STA#	SYS. "D" STA#	SYS. "E" STA#	SYS. "F" STA#
3	1	5	2	1	4
TMR	TMR	TMR	TMR	TMR	TMR
15	7	0	23	4	1
P1 AUTO	P2 AUTO	P3 AUTO	P4 MAN	P5 AUTO	P6 AUTO
P1 ON	P2 ON	P3 OFF	P4 ON	P5 ON	P6 OFF

Alarm
Screen

PG200601
01-29-2008

INSTRUCTION MANUAL

IB200603

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Thoreson-McCosh Inc

FORWARD

The information contained in this Instruction Manual is provided to you for the maintenance of your Thoreson McCosh equipment.

Also included in this manual are operating instructions, a service parts list, and wiring diagrams. Please file this manual for future use.

For additional information, please contact:

THORESON-McCOSH Inc. 1885 Thunderbird Street Troy, MI 48084 Phone: (248) 362-0960 Facsimile: (248) 362-5270 sales@thoresonmccosh.com

CUSTOMER RECORDS

Upon receipt of your Thoreson McCosh equipment, it is very important that you complete the table below. The information will be needed to best serve you when you call the Thoreson McCosh Service Department with questions or to order replacement parts. The information is located on the Serial Tag on the unit and inside the door of the control box.

Model Name	_____
Serial No.	_____
Wiring Diagram No.	_____
Insert No.	_____
Program No.	_____
Layout No.	_____

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SECTION 1: THORESON MCCOSH PRODUCT WARRANTY

Thoreson-McCosh warrants each product of its manufacture to be free from defects in material and workmanship for a period of 12 months from the date of delivery to the original purchaser. Thoreson-McCosh's obligation under this warranty is limited to repairing or replacing any part returned to the Thoreson-McCosh factory with transportation charges prepaid, and which, on examination by Thoreson-McCosh, shall disclose to Thoreson-McCosh's satisfaction to have been defective.

The purchaser must notify Thoreson-McCosh of such defects and promptly deliver the defective part(s) in accordance with Thoreson-McCosh's shipping instructions, delivery prepaid. Parts will be replaced F.O.B. Thoreson-McCosh factory, by Thoreson-McCosh, and will be invoiced to the purchaser with "credit on return of defective part", if the part is returned within fifteen (15) days after shipment of replacement part. Thoreson-McCosh is not liable for installation or cost to install the replacement part or removal of the defective part.

Thoreson-McCosh is not responsible for any failure of its product due to improper use, installation, or operation. Thoreson-McCosh shall not assume any expense or liability for repairs made to any Thoreson-McCosh unit or equipment outside Thoreson-McCosh's own factory unless specifically agreed to in writing by Thoreson-McCosh.

Equipment and accessories furnished by us, but manufactured by others, are guaranteed to the extent of the original manufacturer's guarantee to Thoreson-McCosh, if that guarantee exceeds one (1) year.

It is expressly understood that Thoreson-McCosh is not responsible for damage and/or injury caused to buildings, contents, products, or persons by reason of installation or use of any of our products. Thoreson-McCosh shall not be liable for loss, damage or expenses arising directly or indirectly from, or being consequential or incidental to, the use of its products or from any other cause.

The above warranty supersedes, and is in lieu of all other warranties expressed or implied; and no person, agent, representative or dealer is authorized to give any warranties on behalf of Thoreson-McCosh, not to assume for Thoreson-McCosh any other liability in connection with Thoreson-McCosh products.

SECTION 2: OPERATION

2.1: QUICK START

1. Uncrate Loading System.
2. Mount receivers on machines and hoppers (see Section 3.3).
3. Mount T-valves above receivers.
4. Mount all external ratio and purge valves.
5. Connect vacuum and material lines (see plant layout if applicable).
6. Connect compressed air to system.
7. Wire the loading system, running all inputs and outputs back to the central loading system control panel (see wiring diagram).
8. Connect 3-phase high power to the pump(s).
9. Check pump motor phasing; change any two wires (L1, L2, L3) if phase is incorrect.
10. Set time setpoints for all stations, ratios, and purging valves.

SECTION 3: SYSTEM OPERATION

3.1: INTRODUCTION

The Thoreson-McCosh Vacuum Loading system is designed to efficiently deliver plastic pellets with a minimum of maintenance.

3.2 METHOD OF OPERATION

The operation of the vacuum loading system is quite simple. The positive displacement air pump creates a "vacuum effect" when the pump is driven. This vacuum results in airflow through the vacuum hose, creating a reduced pressure in the vacuum receiver, which causes the discharge valve on the material outlet of the receiver to close, causing a further reduction in pressure within the receiver. The reduced pressure within the receiver results in airflow through the pick-up tube or material take-off, then through the material delivery tube and into the vacuum receiver. The high velocity of this air flow results in material pickup, and the consequent delivery of a mixture of material and air into the receiver. Once this mixture is delivered to the receiver, the material and air must be separated, and the air pumped out of the receiver to maintain the reduced pressure necessary for conveying. A filter screen in the receiver accomplishes the separation of the air from the material.

If a purging valve is included part of the system, the valve, when activated, will shut off the material flow, and open a second port that only allows airflow. This is designed to move all material in the material delivery tube to be deposited in the receiver. The purging valve is typically located between the material take-off and the material delivery tube. Ratio valves work similarly, except the second port would allow material from a second source to be loaded. Ratio valves can be mounted anywhere, including being an integral part of the receiver.

3.3: INSTALLATION AND SETUP

The loading system will perform best when the material and vacuum lines are hooked up in the most direct manner possible with a minimum of bends. Care should be taken to insure that all the couplings are tight in order to minimize air leakage.

The vacuum receiver should be mounted on the lid of the machine hopper over a circular hole and secured to the lid of the machine hopper by bolting through the mounting holes in the receiver flange.

The vacuum line is to be connected from the top of the receiver to the central vacuum line or the inlet on the filter housing. The material line is to be connected from the inlet on the side of the receiver to a central material line or a material pick-up tube. The Sequencing (Tee) valves require compressed air to operate. If a ratio receiver or a purging valve is being used, a source of compressed air is required in order to operate the solenoid. The pressure of the air should be regulated between 60 psi and 90 psi in order to obtain maximum valve operation durability. This regulated air supply should be connected directly to the solenoid valve.

SECTION 4: SIEMENS INSTRUCTIONS

4.1: HMI TOUCH PANEL

The Human Machine Interface Touch panel is used to Modify and Monitor the entire loading system with a series of easy to follow screens. A simple touch with your finger or a clean blunt object actuates the push buttons.

4.2: MAIN SCREEN

The main screen will allow the user to select the system to be monitored or modified. The Main Screen consists of the following items:

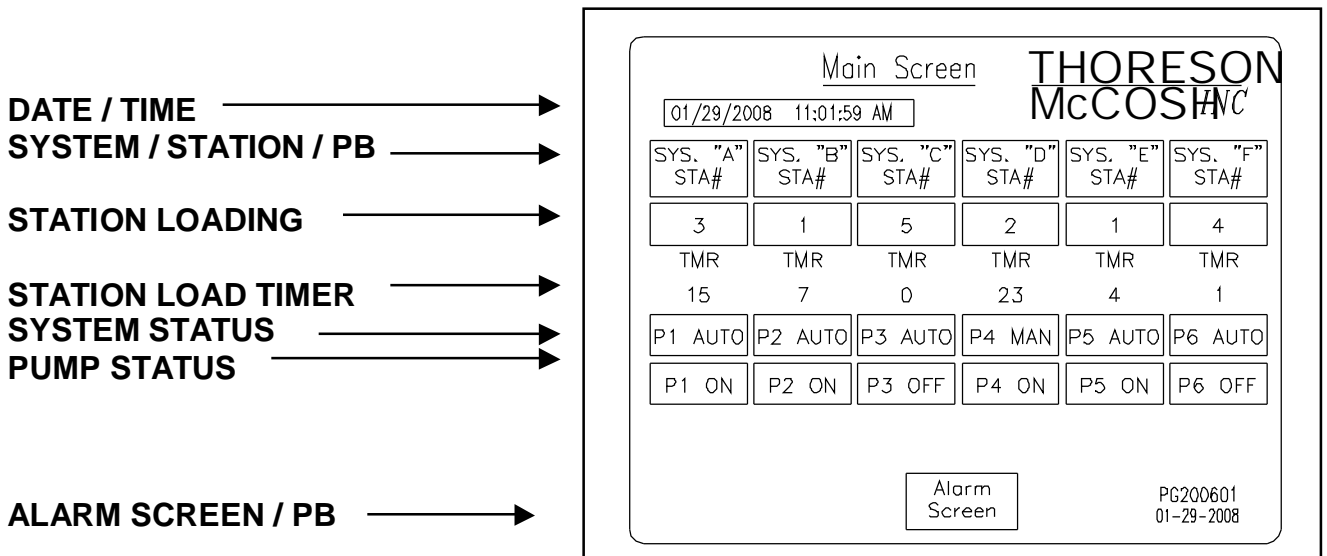


FIGURE 4.1: MAIN SCREEN

DATE / TIME: Displays the Date and time. Press this item to modify the Date/Time

SYSTEM STATION PB: Press this push button to go to the System Control screen.

STATION LOADING: Indicates the station that is loading or last loaded.

STATION LOAD TIMER: Displays the load time of the current station loading.

SYSTEM STATUS: Indicates if the system is in AUTO mode or MAN (manual) mode.

PUMP STATUS: Indicates if the pump for that system is OFF or ON

ALARM SCREEN PB: Press this push button to select the Alarm screen.

4.3: SELECTING A SYSTEM

To turn a SYSTEM on, press a SYS “_” button.

This will bring up the SYSTEM CONTROL screen.

The System screen has a AUTO and a MANUAL mode with a Push-Button to Start and Stop the individual system. A light above the Push-Buttons indicates the status of the SYSTEM.

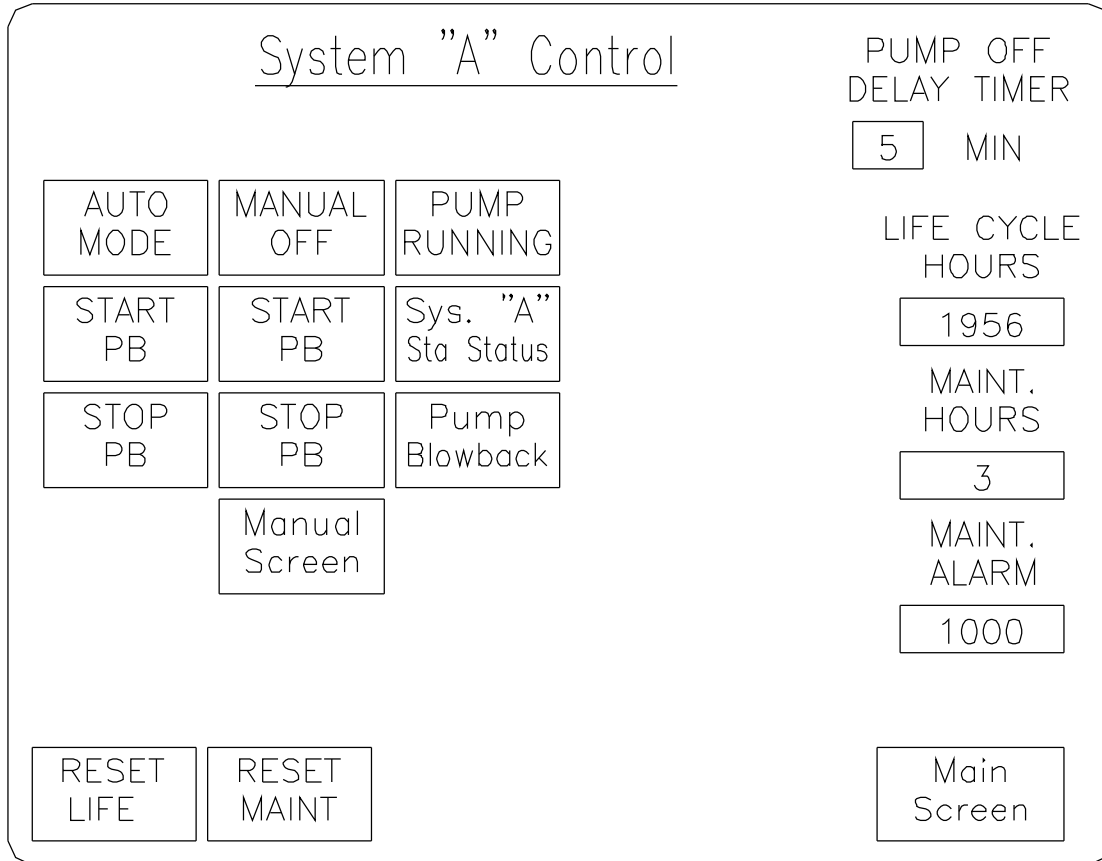


FIGURE 4.2: SYSTEM CONTROL SCREEN

AUTO: Is the first column. This consists of a status light, and a Start and Stop Push-Button. Press the START PB to start the system running. The system will operate automatically and will load each station that is requesting material. The stations will load by a FIFO (first in first out). Press the STOP PB to stop the system.

MANUAL: Is the second column. This consists of a status light, and a Start and Stop Push-Button. Press the START PB to start the PUMP running. Press the STOP PB to stop the PUMP.

MANUALSCREEN BUTTON: Press this button to go to the manual screen. Each station can be loaded manually, if needed.

PUMP STATUS: Is the third column. This shows the status of the pump. Running or Stopped.

SYS “_” STA STATUS PB: Is below the pump status light. Press this push-button to go to the Station Status screen. Here, the station load times can be edited, turned off or on and the limit switch can be monitored.

PUMP BLOWBACK PB: Is below the sys station status PB. Press this push-button to go to the pump blowback screen. Here the amount of stations that you want to load before a filter cleaning cycle.

PUMP OFF DELAY: Is in the fourth column. Press the # box to adjust the amount of time you want the pump to run with out a station calling for a load. This is adjustable from 5 to 30 minutes. This saves wear on the motor starter.

MAINTENANCE HOURS: Is located under the LIFE CYCLE HOURS WINDOW. This window displays the pump run time since the last maintenance hours reset. This time can be set for normal pump maintenance and is factory set for the first pump oil change at 100 hours. After the first oil change, reset the alarm and change the alarm set point to 1000 hours. Press the set point window and the set point keypad will open. Select the new time, and press enter.

LIFE CYCLE HOURS: Is located under the PUMP OFF DELAY. This window displays the total run time of the pump. To reset this counter, press the RESET LIFE push-button. This will prompt you for a password. Press the password window. This will open a password keypad. Select **1 8 8 5**, then press enter. Then press the reset life push-button again to get to the reset pump life screen.

NOTE: THIS SHOULD ONLY BE RESET WHEN A PUMP IS BEING REBUILT OR REPLACED.

4.4: PASSWORD LOGON SCREEN

Press the window next to Password to open password keypad. **DO NOT CHANGE THE USER.**

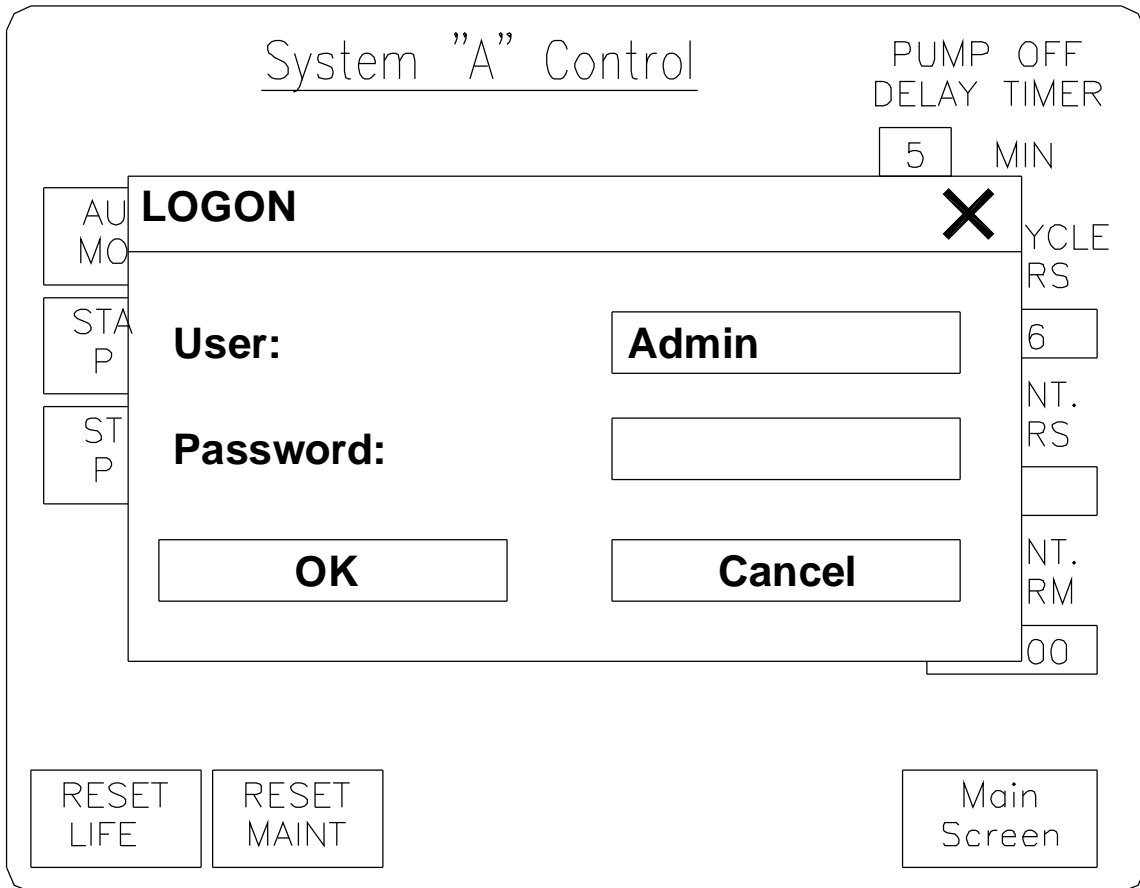


FIGURE 4.3: PASSWORD LOGON SCREEN

4.5: PASSWORD KEYPAD

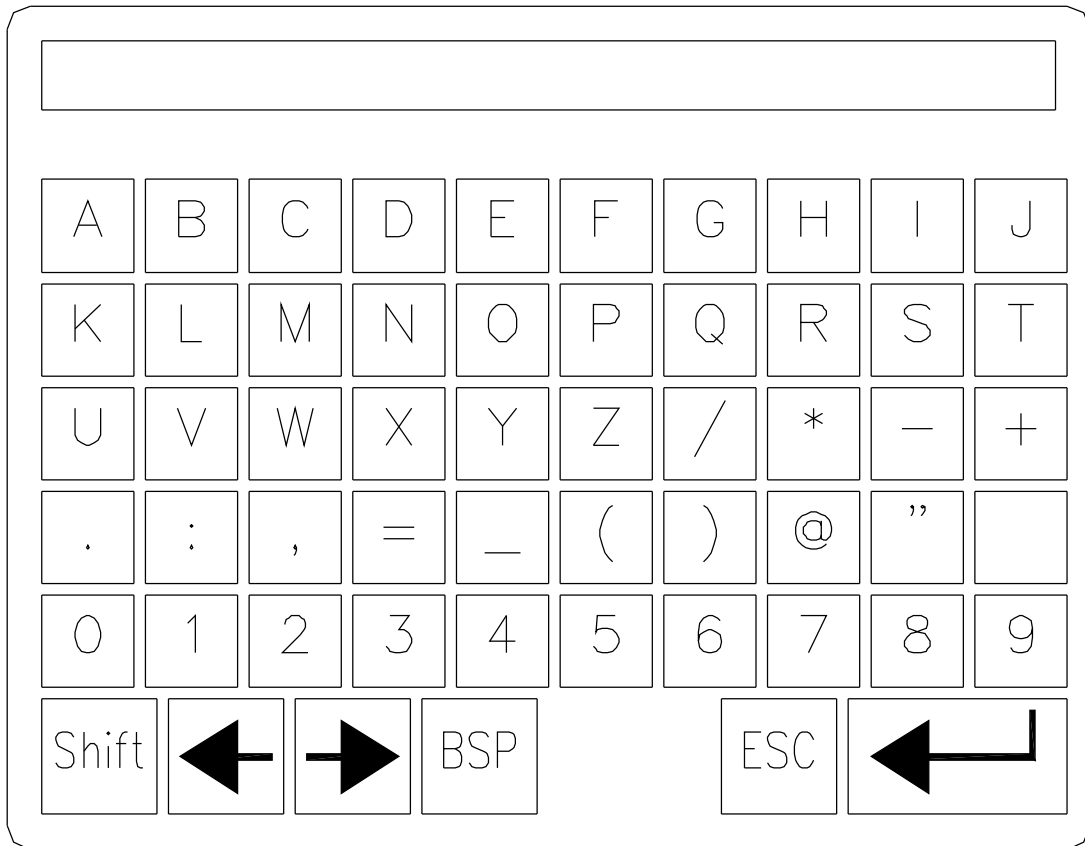


FIGURE 4.4: PASSWORD KEYPAD

4.6: MODIFYING THE STATION SETTINGS

To modify the station settings, from the System Control screen, press the Sys “_” Sta Status PB. This will take you to the SYS “_” STATION STATUS screen.

This screen consists of the following:

STATION SET POINT: Is the Top button.
Press this button to edit the load time.

ACTUAL LOAD TIME: Is the second light down.
Indicates the actual load time of the station during its load cycle.

STATION OFF/ON PB: Is the next push button.
Press this button to turn the station OFF or ON.

MATERIAL LEVEL INDICATOR: Indicates if the limit switch in the vessel the station is dumping into is EMPTY or FULL.

MAIN SCREEN PB: Returns to the Main Screen

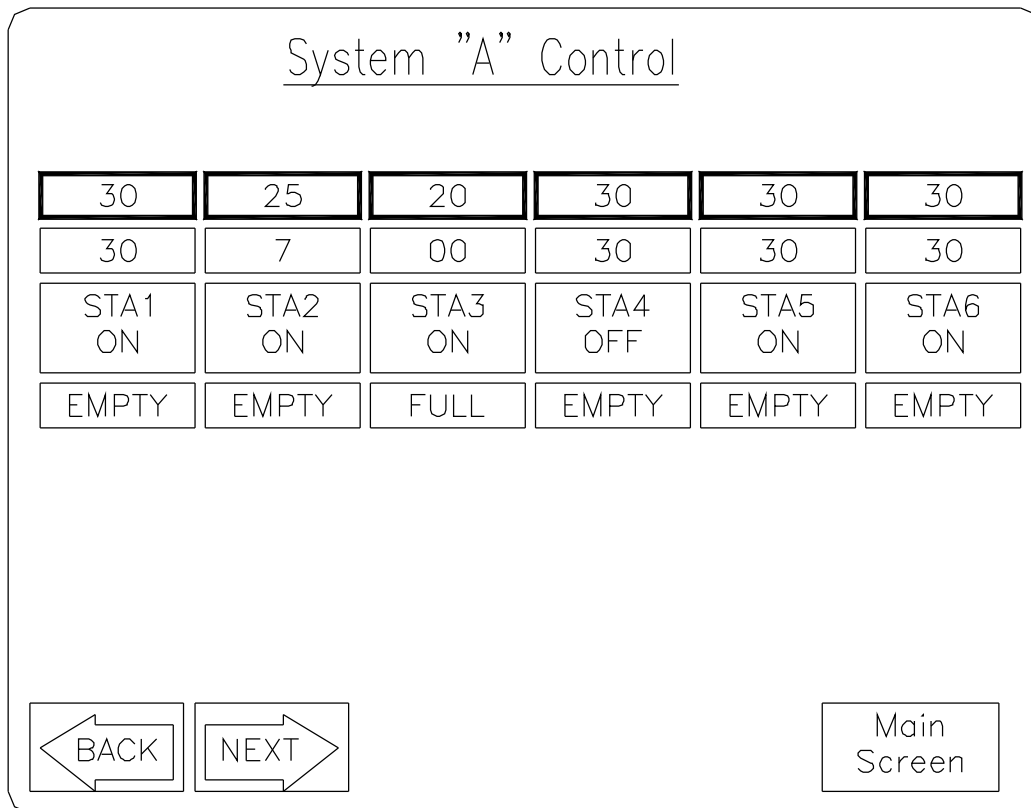


FIGURE 4.5 SYSTEM STATION STATUS

4.7: STATION SET POINT SCREEN

Use this number pad to enter a new station load time from 1 to 999 seconds. Press the ENTER symbol to accept the value and to return to the previous screen.

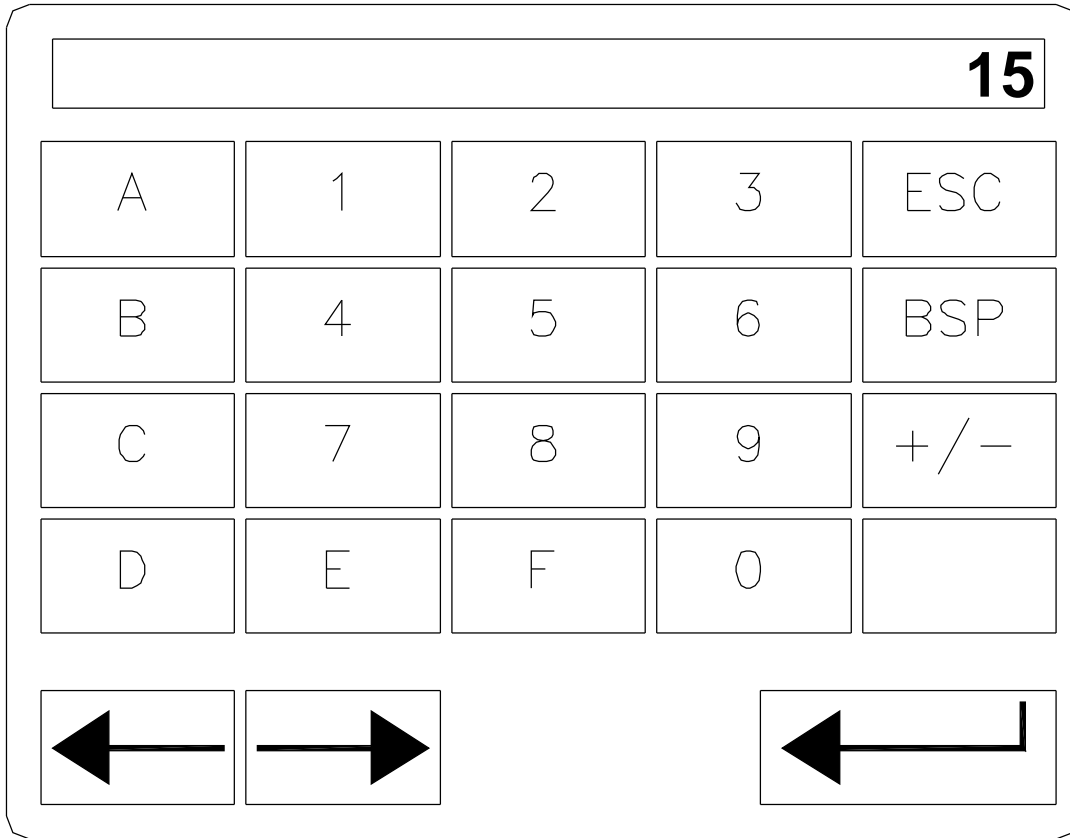


FIGURE 4.6: STATION SET POINT SCREEN

4.8: MANUAL LOAD SCREEN

This screen consists of a push-button for each station in the system and a push-button to go back to the System Control screen or the Main screen.

LOADING A STATION: Press the push-button for the station that you want to load. The T-valve and the Vacuum Break valve will energize, loading only the station selected. Press the push-button again to turn the station off.

NOTE: INSURE ALL STATIONS ARE IN THE OFF POSITION BEFORE LEAVING THIS SCREEN.

Press the Sys Control push-button to return to the System control screen, where you can place the system back in the AUTO mode.

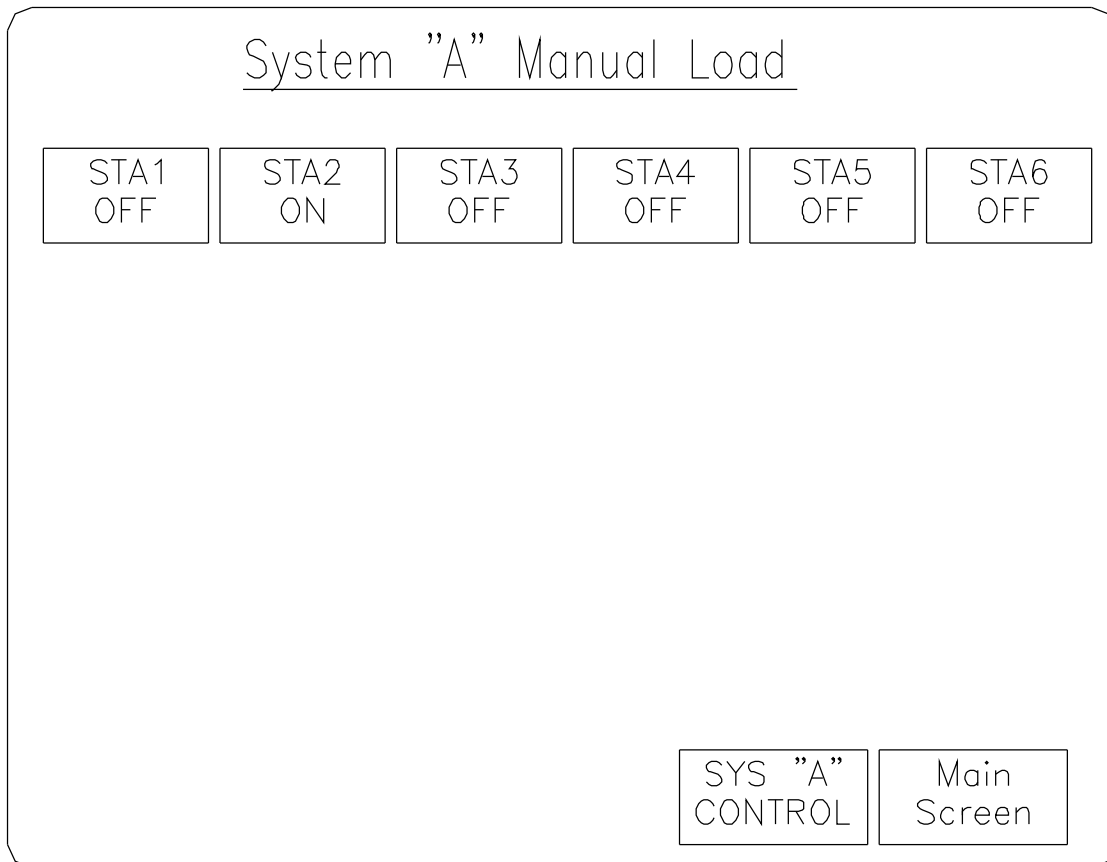


FIGURE 4.7: MANUAL LOAD SCREEN

4.9: PUMP BLOWBACK SCREEN

Press the dark area under the System Load Cycle Control to open up the number pad and enter the amount of stations you want to load before the blowback cycle will start. This value is from 3 to 32.

Press the ENTER symbol to accept the value and to return to the previous screen.

Press the dark area under the CB OFF Delay to open up the number pad and enter the amount of seconds that you want the Compressed Air Blow Back Filter tank to charge.

Press Main Screen button to return to the Main Screen.

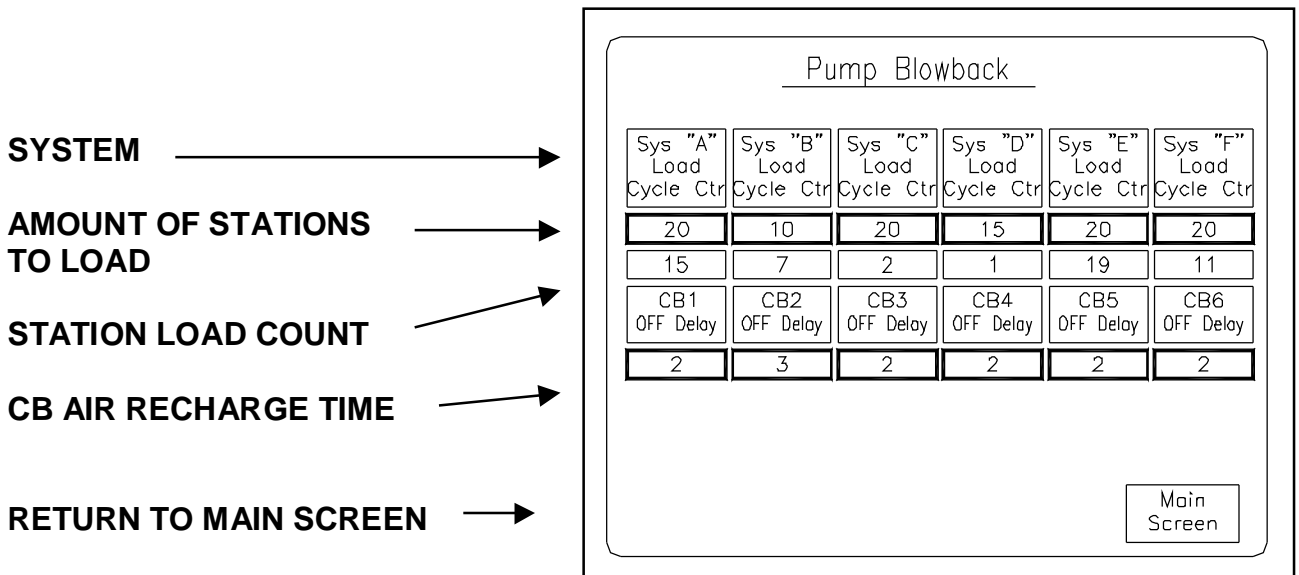


FIGURE 4.8: PUMP BLOWBACK SCREEN

4.10: ALARM SCREEN

An indication of an alarm condition is printed on the “First Screen” The ALARM SCREEN PB will flash Alarm Fault when there is an alarm present. Press the Alarm Screen push button to show the Alarm Screen.

Alarm Faults

MOTOR OVERLOAD FAULT

MOTOR OVERLOAD OPEN

MAINTENANCE ALARM

MAINTENANCE ALARM SET POINT HAS BEEN REACHED

NO-LOAD ALARM

STATION HAS NOT LOADED FOR 3 CYCLES

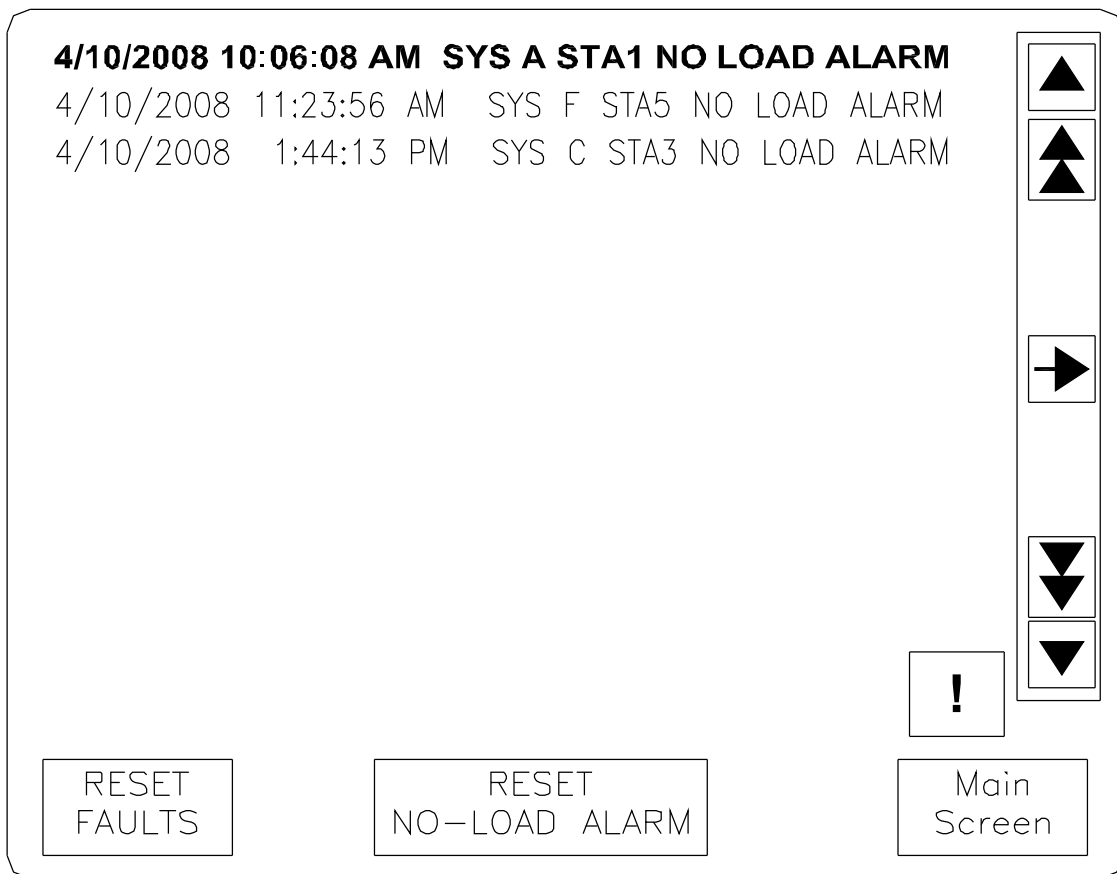


FIGURE 4.9: ALARMS

Press the Acknowledge (!) button to clear the Motor Overload Alarm.

4.9: CLEARING ALARMS

MOTOR OVERLOAD FAULT: The overload heater for the pump is open, indicating a malfunction of the pump motor. To clear the alarm, check the motor for any problems it may have. Over restricted airflow, low oil in pump, any obvious abnormalities. After fixing the problem, reset the overload. When the pump comes back on, check amp draws to see if they are within the normal operating parameters. (See the wiring diagram, or the motor information tag) After fixing the problem, press the Acknowledge (!) button to clear the Motor Overload Alarm from the screen.

MAINTENANCE ALARM: The maintenance alarm set point has been achieved. This was set at the factory for the first pump oil change, but can be set by maintenance personnel for any pump maintenance period that they wish. Press the RESET MAINT button on the System control screen.

NO LOAD ALARM: This alarm means that a station has loaded 3 times with out changing the state of the limit switch. This alarm is self-clearing with 1 good load. If a station does not clear itself, check the material supply, the location of the wand in the material or the condition of the material and vacuum hoses and lines for holes or missing clamps. All of the stations can be cleared by pressing the RESET NO-LOAD ALARM on the Alarm Screen.

4.10: EDITING THE TIME/DATE

Press the TIME/DATE item on the Main Screen.

This screen will allow you to edit the Time and the Date

Press the box under the item that you want to edit. Enter the value.

After all boxes have been edited, press the enter button. There will be a momentary pause before the Time and Date are updated.

Press the Main Screen button to return to the Main Screen.

12:31:00 PM 12/18/2008

PRESS AND ENTER A VALUE IN EACH BOX
THEN PRESS ENTER

HOUR MIN MONTH DAY YEAR

00 00 00 00 00

ENTER MAIN SCREEN

TIME-DATE WILL UPDATE IN A FEW MOMENTS.
PRESS MAIN SCREEN TO EXIT

FIGURE 4.10: EDITING THE TIME AND DATE SCREEN.

SECTION 5: MAINTENANCE

5.1: FILTER MAINTENANCE

- It is recommended that filters be checked periodically for material residue accumulation, and cleaned before the loader's performance is reduced.
- Inspect and clean the filter screen in the receiver hopper at least once a month (more often if dusty materials are being conveyed).
- If a central filter is being used, inspect the filters in the unit at least once a month.
- Inspect the filter on the pump weekly. These are cartridge type filter elements and may be cleaned with compressed air several times before a new element must be installed. When filter material becomes worn, a new filter should be installed. Replacement filters are available from **Thoreson-McCosh, Inc.**

5.2: PUMP MAINTENANCE

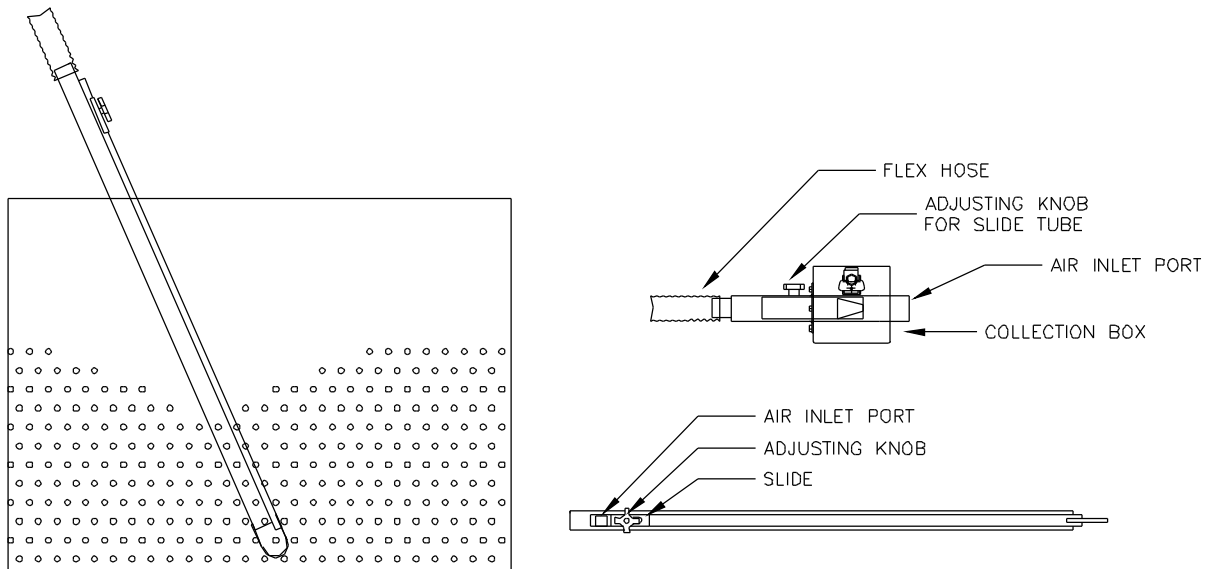
- Add fresh oil to the pump as required to maintain proper oil level. (See pump maintenance manual for correct procedure).
- The gear case of the pump should be drained, flushed and refilled with fresh oil after the first 100 hours of run time, then every 1000 hours after that. Use a ISO 100 grade oil or equivalent.
- The grease fittings on the shaft end of the pump should be charged with a medium type bearing grease weekly.
- Check the belt periodically for tension and wear.

SECTION 6: MATERIAL PICK-UP TUBE/ TAKE-OFF

The material pick-up tube/vacuum take-off has an adjustable slide to regulate the material conveying air. The material is aerated at the bottom of the tube so that various densities of materials can be handled with one pick-up tube/vacuum take off.

The pick-up tube should be positioned at or near the bottom of the container. The loading rate should have a continuous noise of material passing through the conveying pipe as long as the loader is in operation.

If slugging occurs, the slide is incorrectly adjusted. To correct the problem, adjust the slide to let more air pass through the air inlet port.



Thoreson-McCosh Inc

STANDARD PARTS LIST FOR LOADING SYSTEM & RECEIVERS

MODEL NUMBER	VACUUM FILTER	SNUBBER FILTER	RECEIVER FILTER	LID SEAL	DOOR SEAL	FINES FILTER	LID CLAMPS
MARK 3	404662	404661		409401			
MARK 4	404662	404661		409401			
MARK 5	404662	404661		409401			
MARK 7	404662	404661		409401			
MARK 7XP	404662	404661		409401			
MARK 10	405897	404365		409401			
7" DIA RECEIVER			413001	412257	412265		411402
10" DIA RECEIVER			407095	409402	413091		405824
15" DIA RECEIVER			409002	409401	413091		407409
RB-1 FILTER	408433			409402	413091	407402	
RB-4 FILTER	407009			409401	413091	407402	
RB-6 FILTER	405895			409401	413091	407402	
CB-1 FILTER	408433			409402	413091	407402	
CB-4 FILTER	407009			409401	413091	407402	
CB-6 FILTER	405895			409401	413091	407402	

