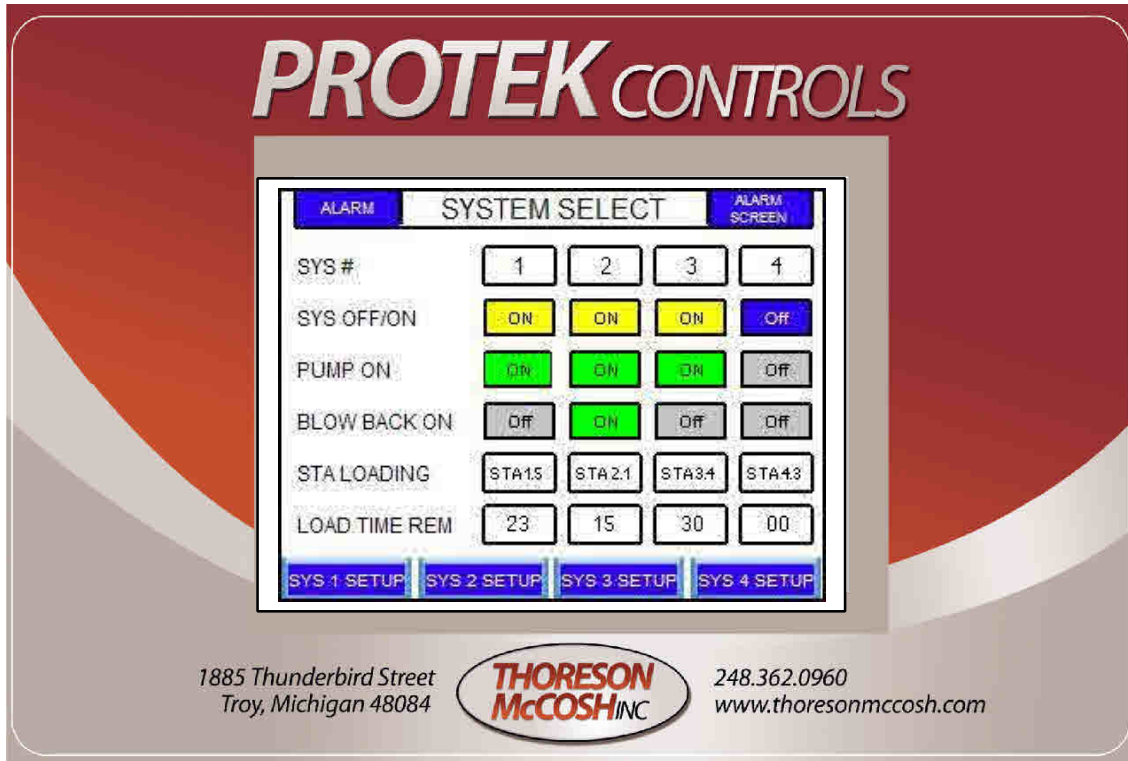


Thoreson-McCosh Inc

Vacuum Loading System ALLEN-BRADLEY PLC



INSTRUCTION MANUAL

IB201205

THORESON-McCOSH INC
1885 Thunderbird St. Troy MI. 48084
Phone 1-248-362-0960
Fax 1-248-362-5270
sales@thoresonmccosh

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.	_____

Table of Contents

SECTION 1: WARRANTY.....2
SECTION 2: OPERATION.....3
 2.1: QUICK START3
SECTION 3: SYSTEM OPERATION.....4
 3.1: INTRODUCTION.....4
 3.2: METHOD OF OPERATION4
 3.3: INSTALLATION AND SETUP4
SECTION 4: OPERATING INSTRUCTIONS5
 4.1: HMI TOUCH PANEL.....5
 4.2: START-UP SCREEN.....5
 4.3: SYSTEM SELECT SCREEN.....6
 4.4: SYSTEM SETUP SCREEN7
 4.5: STATION SCREEN8
 4.6: STATION NAMING SCREEN9
 4.7: PUMP & BLOWBACK SETUP SCREEN10
 4.8: ALARM SCREEN11
SECTION 5: MAINTENANCE12
 5.1: FILTER MAINTENANCE12
 5.2: PUMP MAINTENANCE12
SECTION 6: MATERIAL PICK-UP TUBE13
STANDARD PARTS LIST FOR LOADERS AND RECEIVERS.....14
WIRING DIAGRAM

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.
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. Setup the timing 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 creates 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.

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 material and vacuum lines should be properly grounded to the building.

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), Ratio, Conical dump, and Purging valves, require compressed air to operate. 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: OPERATING INSTRUCTIONS

4.1: HMI TOUCH PANEL

The Human Machine Interface (HMI) 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: START-UP SCREEN

After the HMI has initialized, the start-up screen will be displayed for about 5 seconds. This shows the program number that is installed in the PLC. The HMI will have the same Program number.



FIGURE 4.1: START-UP SCREEN

After about 5 seconds, the screen will change to the System Select Screen.

4.3: SYSTEM SELECT SCREEN

The SYSTEM SELECT screen can be used to monitor up to four systems. It displays:

- If the system is enabled.
- When the pump is running.
- When the central filter is cleaning.
- The name of the station that is loading.
- The load time remaining for the station loading.
- Buttons to navigate to the Alarm Screen, or A system setup screen.

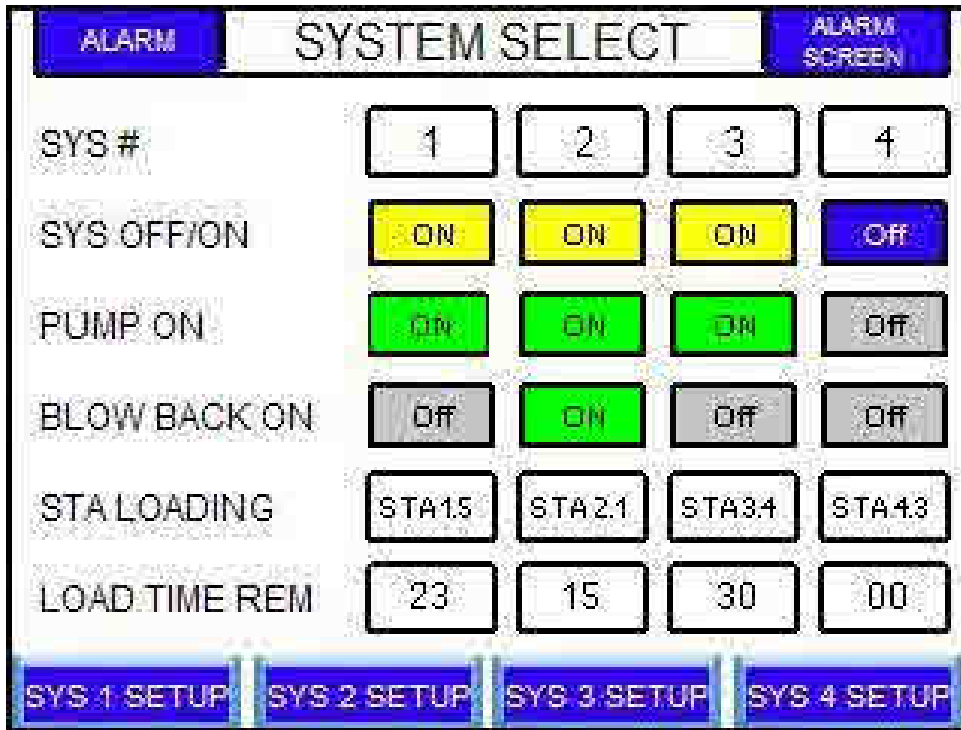


FIGURE 4.2: SYSTEM SELECT SCREEN

If there is a Alarm, the ALARM button on the left will be visible. Pressing the button will disable the Alarm for 1 minute.

Press the ALARM SCREEN button to display the ALARM Screen.

To enable a system, press a SYS _ SETUP button.

4.4: SYSTEM SETUP SCREEN

The SYSTEM SETUP screen displays the following buttons:

AUTO START: Toggles the system Off & On.

STATION SCREEN: Displays the station setup screen.

MANUAL START: Disables the Auto mode and allows a station to be controlled individually.

MANUAL SCREEN: Displays the station manual screen.

STATION NAMING SCREEN: Displays the screen to rename each station.

PUMP & BB SETUP SCREEN: Displays the Pump & Blow Back setup screen.

MAINT ALARM TIME: Displays the time since the last Maintenance alarm.

PUMP RUN TIME: Displays the accumulated run time of the pump.

MAINT ALARM RESET: Resets the time Maintenance alarm time to zero. Button must be held for 3 seconds to reset.

SYS SELECT SCREEN: Returns to the System Select screen.

ALARM SILENCE: This button will silence the audible alarm momentarily.

ALARM SCREEN: Displays the Alarm screen.

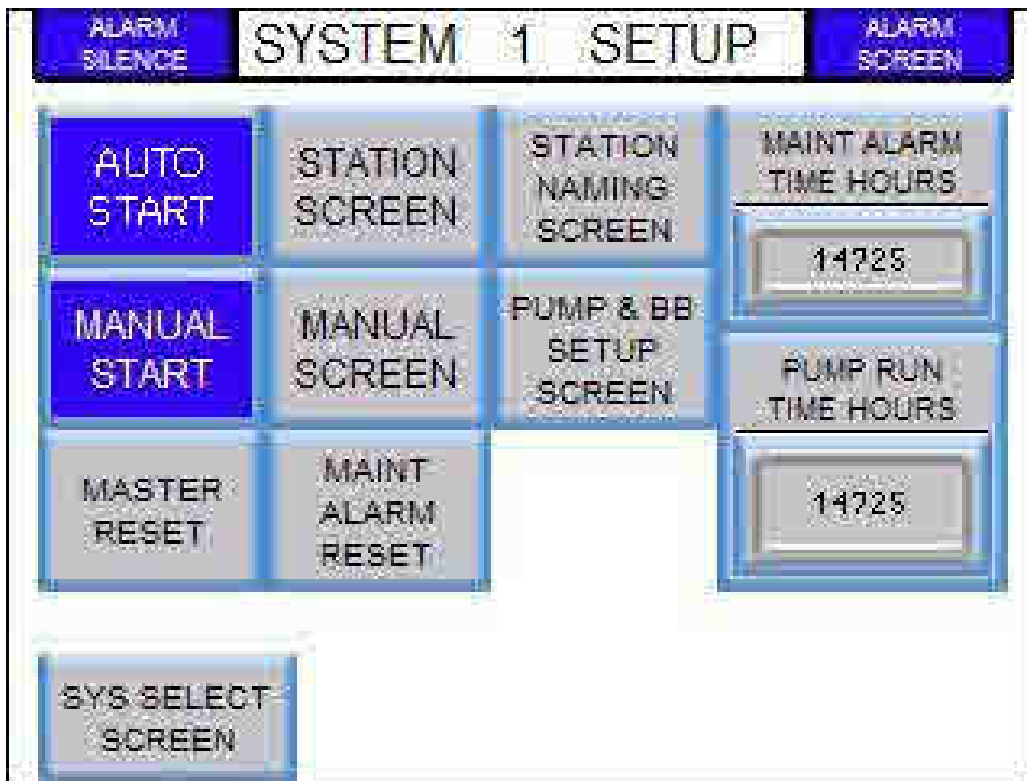


FIGURE 4.3: SYSTEM SETUP SCREEN

Press the Auto Start button to enable the system. Press the station screen to display the Station setup screen to enable or disable a station.

4.5: STATION SCREEN

The Station screen displays the following:

STATION NAME: This is a button to enable or disable a station.

LOAD REQ: Displays if the station needs to load or not.

LOAD STPT: Displays the Load time set point in seconds. Press to edit the load set point value.

LOAD TIME: Counts down from set point to zero as station loads.

DUMP STPT: Displays the Dump time set point in seconds. Press to edit set Point.

DUMP TIME: Counts down from set point to zero as station dumps

NO-LOAD: Displays the NO-LOAD set point to turn on the alarm.

REGRIND %: Displays the % of Regrind set point. If the station has the ratio Option, this sets the % of Regrind to Virgin material loaded per

the

Load time set point.

PREVIOUS/NEXT SCREEN: Use these buttons to display next set of 4 stations.

SYS SELECT SCREEN: Press this button to return to the System Select screen.

SYS SETUP SCREEN: Press this button to return to the System Setup screen.

STA NAME	STA 1.1	STA 1.2	STA 1.3	STA 1.4
LOAD REQ	EMPTY	FULL	FULL	EMPTY
LOAD STPT	20	20	20	20
LOAD TIME	18	0	0	0
DUMP STPT	10	10	10	10
DUMP TIME	0	0	0	5
NO-LOAD	3	3	5	3
REGRIND %	20	20	20	20
<div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px;">SYS SELECT SCREEN</div> <div style="border: 1px solid black; padding: 5px;">SYS SETUP SCREEN</div> <div style="border: 1px solid black; padding: 5px;">PREVIOUS SCREEN</div> <div style="border: 1px solid black; padding: 5px;">NEXT SCREEN</div> </div>				

FIGURE 4.4: STATION SETUP SCREEN

4.6: STATION NAMING SCREEN

The Station naming screen displays the following:

The column on the left is the logical name of a station.

The column on the right is the current name.

Pressing the current name will display a alpha numeric keypad that can be used to enter a new 6 character name.

The previous and next buttons are used to scroll through additional station screens.

The SYS SELECT SCREEN button will return to the System Select screen.

The SYS SETUP SCREEN button will return to the System Setup screen.

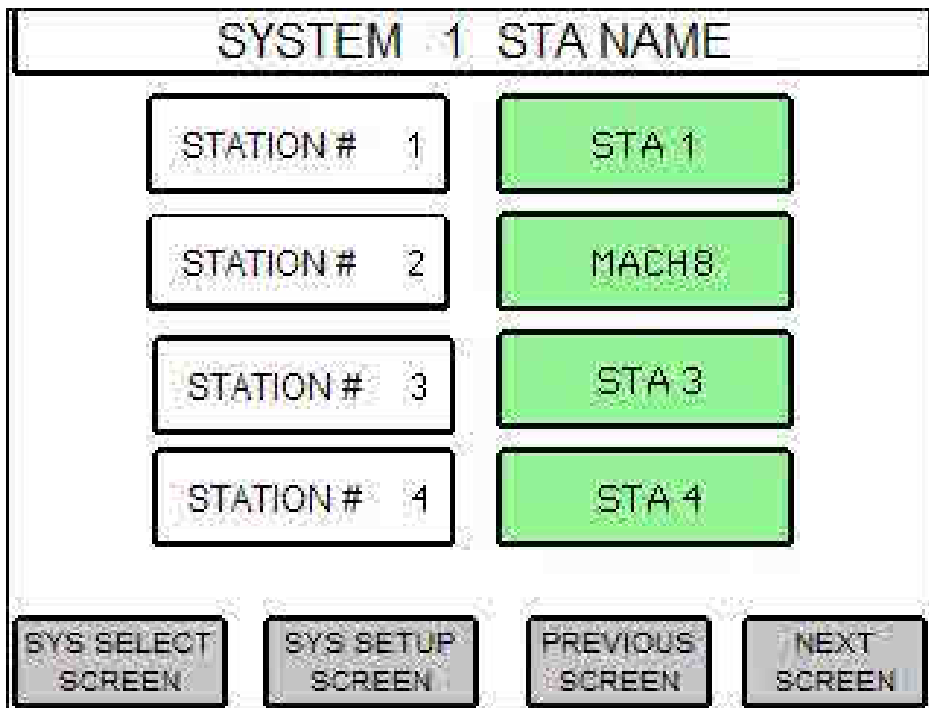


FIGURE 4.5: STATION NAMING SCREEN

4.7: PUMP & BLOWBACK SETUP SCREEN

The Pump & Blowback setup screen displays the following:

OF LOADS BEFORE BLOWBACK: This is the amount of stations that you would like to load before the central filter goes into a blowback (cleaning) cycle. It could be 10 separate stations, 1 station loading 10 times, or any combination.

BLOWBACK PULSES: This is the number of pulses to clean the central filter during the blowback cycle.

AIR RECHARGE TIME: The blowback solenoid normally has a small recharge tank that needs time to recharge. This varies from facility to facility depending on the size of the compressor and the volume of usage.

PUMP OFF DELAY TIMER: For pumps equipped with a Vacuum Break valve (VB), the pump will run continuously and the VB solenoid cycles on and off to cause the system to load, but if no stations call for a load cycle after a period of time, this timer will turn the pump off.

SET MAINT ALARM HOURS: Press this button to adjust the Maintenance Alarm Set point.

SYS SELECT SCREEN: Press this button to return to the System Select screen.

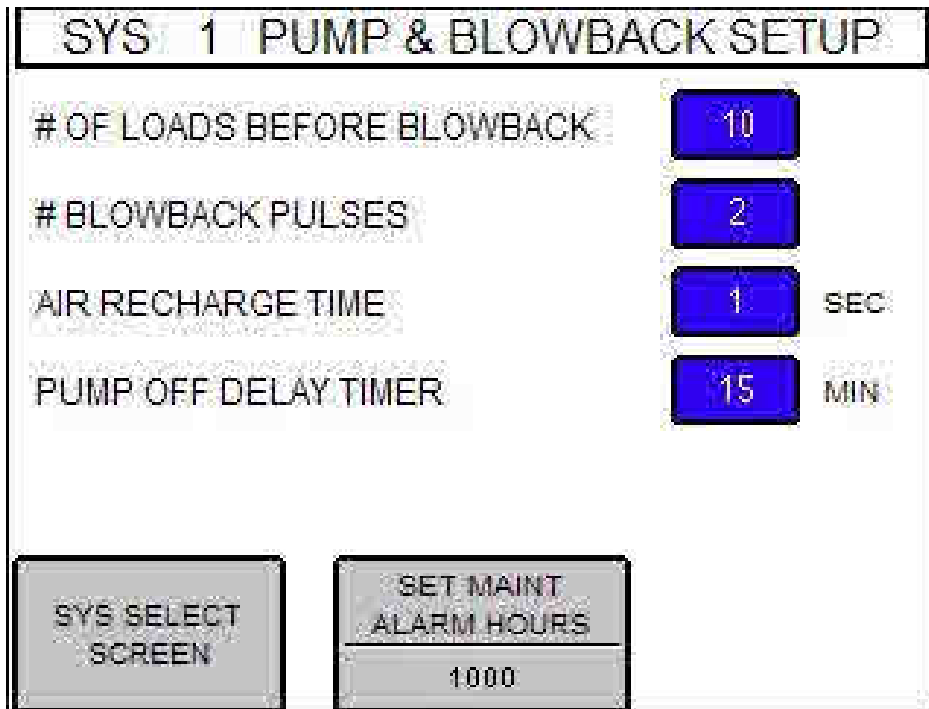


FIGURE 4.6: PUMP & BLOWBACK SETUP SCREEN

4.8: ALARM SCREEN

The Alarm screen displays the following:

A LIST OF THE SYSTEM ALARMS:

NO-LOAD ALARM:..... A STATION HAS EXCEEDED
..... THE NO-LOAD ALARM SET POINT.
PUMP OVERLOAD TRIPPED..... THE OVERLOAD RELAY IS OPEN

All alarms need to be cleared by pressing the CLEAR SYS NO-LOAD button.

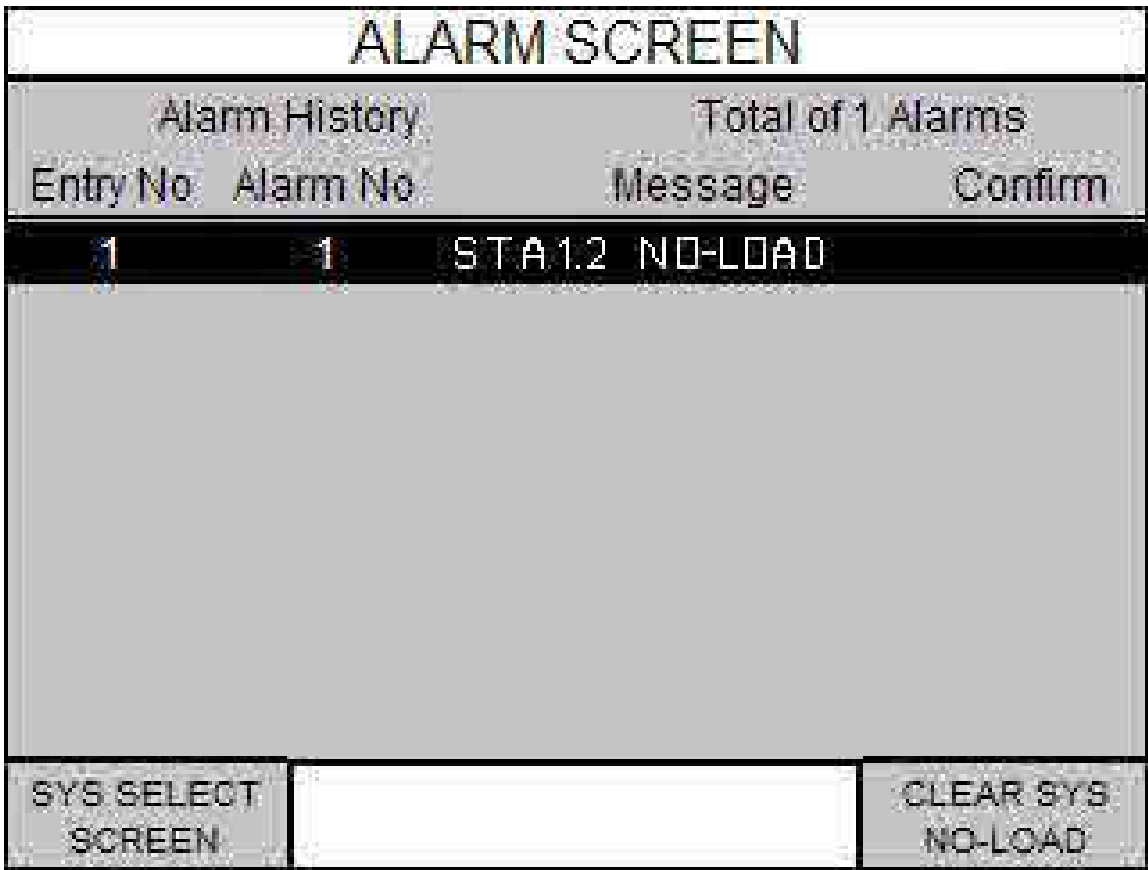


FIGURE 4.7: ALARM SCREEN

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

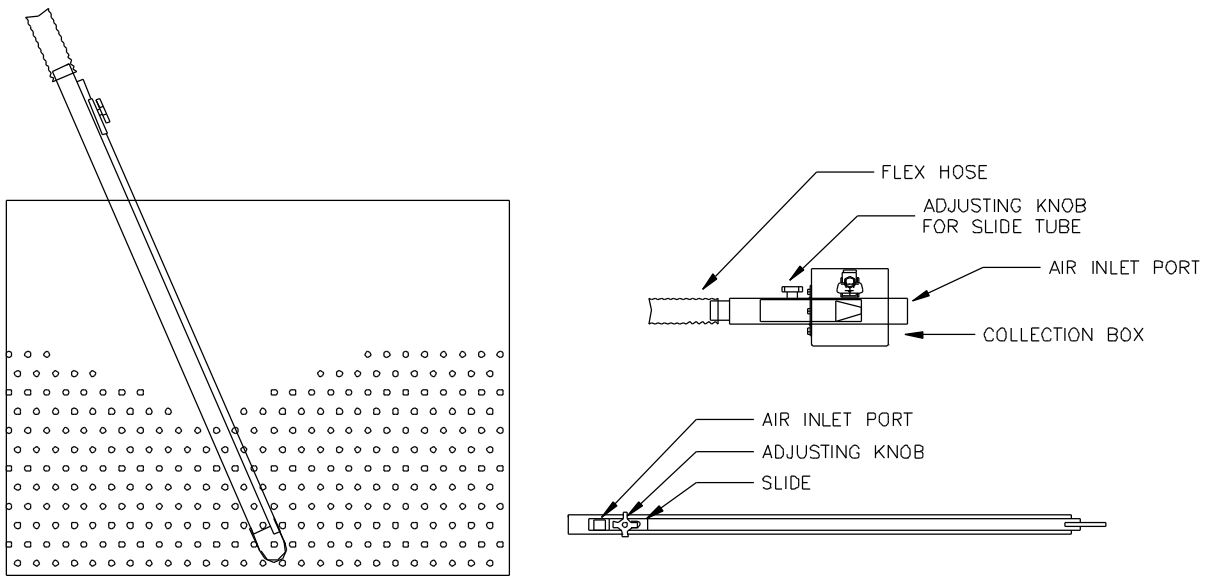
- Add fresh oil to the pump as required to maintain proper oil level. (See pump maintenance manual for correct procedure).
- The gear case of the pump should be drained, flushed and refilled with fresh oil after the first 100 hours of run time, then every 1000 hours after that. Use a ISO 100 grade oil 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	

