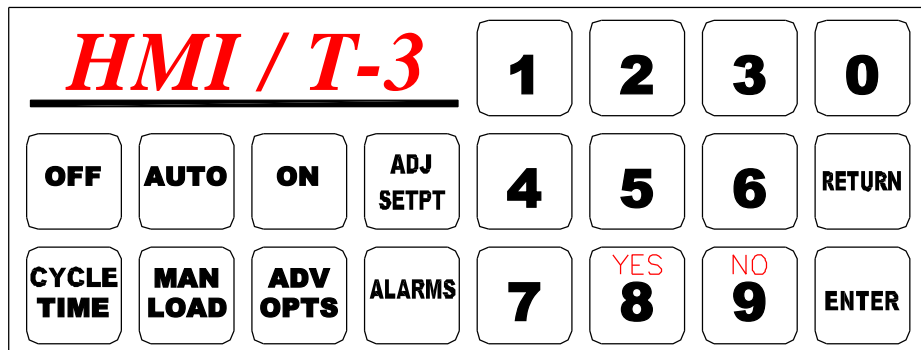


Thoreson McCosh Inc

HMI/T-3 LOADER

Thoreson—McCosh Inc.
PG2010XX 01/29/10
1 PUMP, CB, VB, PSO
16S, 16R



Instruction Manual

IB201002

THORESON-McCOSH INC
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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
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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. Assign purging valves to stations.

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 air flow 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 as 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 still 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: HMI/T-3 INSTRUCTIONS

4.1: START-UP SCREEN

When the Loader Control is first powered up, for a few seconds, the Start-up screen will display the Program # and the Loader system description.

4.2: OPERATOR INTERFACE TERMINAL (HMI)

The operator interface terminal includes:

- 20 key touchpad with dual functions;
- Four line by 20 character Liquid Crystal Display.

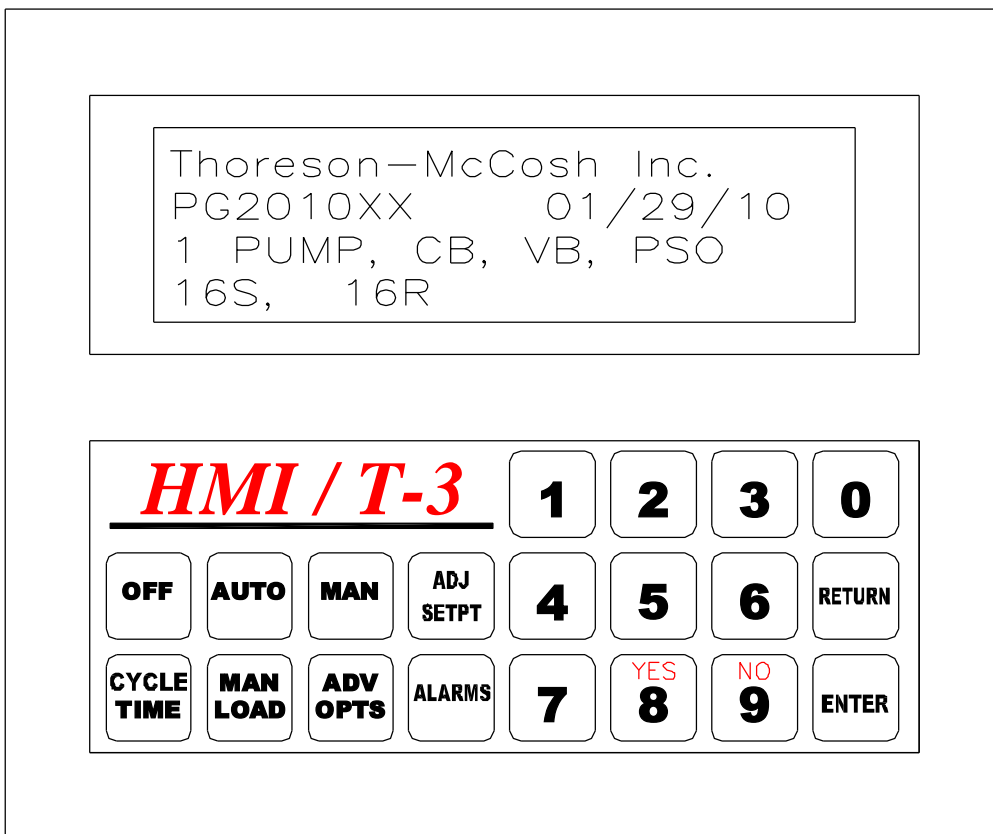


FIGURE 4.1: OPERATOR INTERFACE TERMINAL

Display shows the keypad and the start-up screen.

4.3 DESCRIPTION OF KEYPAD

The keypad consists of twelve regular function keys, similar to a pocket calculator, and eight special keys, that allow monitoring and adjusting of the setpoints.

4.4 SPECIAL KEYS

- OFF Turns the Loading System Off
 - AUTO Puts the Loading System into Auto or Run Mode.
 - MAN Puts the Loading System into the Manual Mode.
 - ADJ SETPT Toggles off and on to enable the ability to change or just view the setpoints
 - CYCLE TIME Is used to adjust or view each stations setpoints.
 - MAN LOAD Is used to Manually load a station or one of its options.
 - ADV OPTS Is used to adjust or view the Loading System setpoints.
 - ALARMS Is used to view and clear System and Station alarms.
- NOTE:** Pressing the "RETURN" key in most cases will abort the current operation and return the display to the First Screen

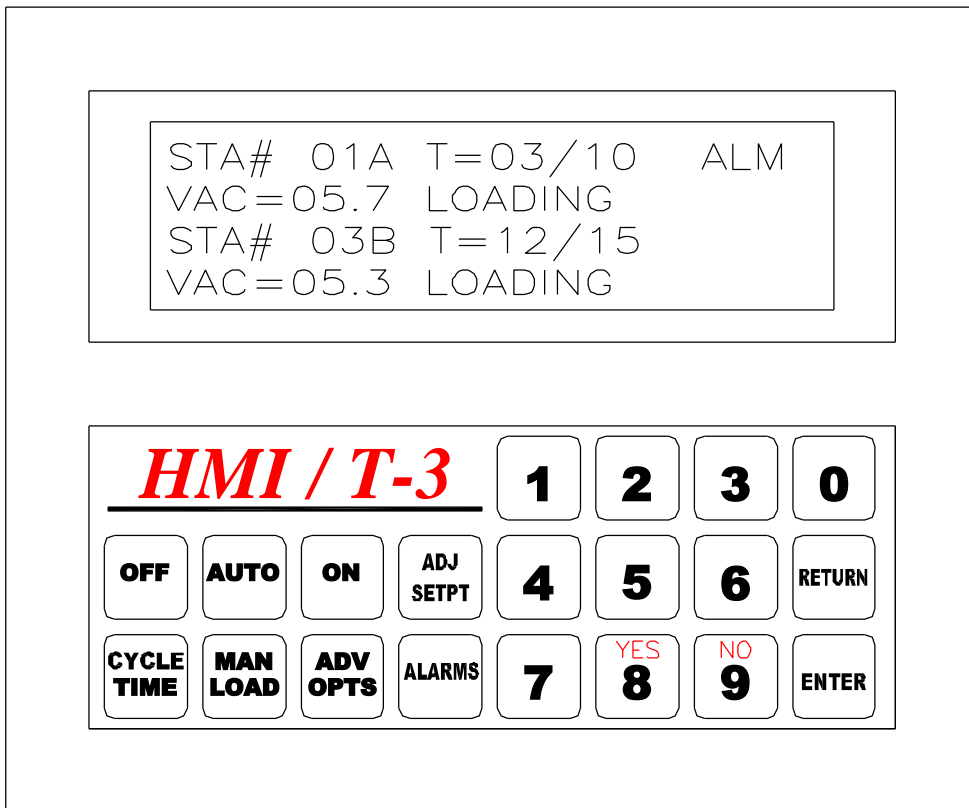


FIGURE 4.5: THE FIRST SCREEN

4.5: THE FIRST SCREEN

This screen is what appears when the loading system is started, and is the default screen, after any changes have been completed. The display shows the current condition of the system, and information about the station that is currently loading as well as the vacuum reading. The system that is displayed on the top line, is the system that is selected to be modified.

If there is more than one loading system controlled with this control box, line 3 & 4 will display the other system's information.

4.6: SYSTEM SELECTOR

The System Selector Switch points to the system whose setpoints can be edited, or whose stations can be manually controlled (if the MAN button has been pushed). The system that is displayed on the top line, is the system that is selected to be modified.

4.7: MODIFYING THE STATION SETTINGS

When the "CYCLE TIME" key is pressed, the display shows the system letter currently selected by the System Selector Switch and requests that the user input the station number to be edited

```
S y s t e m  A
E n t e r  S t a t i o n  # :   2
P r e s s  E N T E R
```

FIGURE 4.7A: MODIFYING THE STATION SETTINGS

Once the user inputs the station to be edited, and presses the ENTER key, the screen now displays:

```
S t a t i o n  0 2  A  i s  O N
0 =  O F F
1 =  O N
_      P r e s s  E N T E R
```

FIGURE 4.7B: TURNING A STATION OFF OR ON

Press 0 to turn the station OFF then press ENTER

Press 1 to turn the station ON then press ENTER

NOTE: Pressing the "ENTER" key before entering a new value will preserve the current value.

After the user presses the ENTER key, the screen now displays;

```
S t a t i o n   0 2 A
L o a d   T i m e =           1 0 s
N e w   L o a d   T i m e =     _ _ s
P r e s s   E N T E R
```

FIGURE 4.7C: MODIFYING THE STATION LOAD TIME SETPOINT

To modify the station load time setpoint, enter the new setpoint in seconds. Then press ENTER to go to the next screen.

NOTE: Pressing the “ENTER” key before entering a new value will preserve the current value.

After the user presses the ENTER key, the screen now displays;

```
S t a t i o n   0 2 A
R e g r i n d =               2 0 %
N e w   R a t i o =           _ _ %
P r e s s   E N T E R
```

FIGURE 4.7D: MODIFYING THE STATION REGRIND RATIO SETPOINT

By default, the Ratio percentage is set to 20%. This can vary from 0%, all the way to 100% Regrind. The Ratio percentage is a percent of the load time that regrind material will be loaded.

NOTE: Pressing the “ENTER” key before entering a new value will preserve the current value.

After entering the new Ratio percentage, press the ENTER key. The screen now displays;

```
S t a t i o n   0 2 A
P u r g e   T i m e =         2 0 s
N e w   P u r g e   T i m e =   _ _ s
P r e s s   E N T E R
```

FIGURE 4.7E: MODIFYING THE STATION PURGE VALVE SETPOINT

To modify the station purge time setpoint, enter the new setpoint in seconds, Then press ENTER to go to the first screen.

NOTE: Pressing the “ENTER” key before entering a new value will preserve the current value.

4.8: MODIFYING THE SYSTEM ADVANCED OPTIONS

When the “ADV OPTS” key is pressed, the display shows the system letter currently selected by the System Selector Switch and requests that the user input the advanced option to be modified.

```
S y s A A d v O p t i o n s :  
1 = P u r g e V a l v e  
2 = B l o w b a c k  
3 = P u m p O f f D e l a y
```

FIGURE 4.8: MODIFYING THE SYSTEM ADVANCED OPTIONS

At this point, editing of three options is allowed. Depending on if you have a Vacuum Brake Valve (VB), the options will be different. With a VB, there will be a Pump Off Delay, without VB, there will be a coastdown option. However, the coastdown time and blowback time are factory set, and should not need to be modified. The purge valve assignment should only need to be set when first setting up the system. Pressing the “1” key allows you to set a purge valve to a particular station on a system.

4.8.1: ASSIGNING A PURGE VALVE

To select a purge valve, Press 1. Then enter the station to be purged.

```
S y s t e m A  
E n t e r S t a t i o n # : _ _  
  
P r e s s E N T E R
```

FIGURE 4.8.1A: ASSIGNING A STATION TO BE PURGED

After entering the station #, you will be prompted for the Purge Valve #
Type in the Purge Valve # that you want to assign to the station you selected.
Then press ENTER to enter the purge valve # and return to the first screen.

```
P u r g e v a l v e i s # 0 0  
  
N e w p u r g e v a l v e # = _ _  
P r e s s E N T E R
```

FIGURE 4.8.1B: ASSIGNING A PURGE VALVE TO A STATION

4.8.2: MODIFYING THE BLOWBACK SETPOINT

The blowback setpoint is the amount of seconds that you want the blowback pulse to last.

```
S y s t e m   A
B l o w b a c k = 0 2   1 - 1 0   s e c
N e w   b l o w   t i m e = _ _   s e c
P r e s s   E N T E R
```

FIGURE 4.8.2: MODIFYING THE BLOWBACK SETPOINT

4.8.3: MODIFYING THE COASTDOWN

The coastdown setpoint is the amount of seconds that you want the pump off before the blowback pulse starts.

```
S y s t e m   A
C o a s t d o w n = 0 2   1 - 2 5 s e c
N e w   t i m e = _ _   s e c s
P r e s s   E N T E R
```

FIGURE 4.8.3: MODIFYING THE COASTDOWN SETPOINT

4.8.4: MODIFYING THE PUMP OFF DELAY SETPOINT

The Pump Off Delay time, is the amount of minutes that you want the pump to stay running at idle before the pump turns off.

```
S y s t e m   A
P u m p   O f f   d e l a y = 0 5
N e w   d e l a y   t i m e = _ _ m i n
P r e s s   E N T E R
```

FIGURE 4.8.4: MODIFYING THE PUMP OFF DELAY SETPOINT

4.9: ALARMS

An indication of an alarm condition is printed on the “First Screen”. To determine the nature of the alarm, set the System Selector Switch to the system that is alarming and press the “ALARM” key. The screen will then inform the user of the type of alarm and the action needed to clear the alarm.

Keep in mind that when ever there is a station alarm, the screen will show a system alarm.

```

A : 1 S y s a l a r m s
0 5   S t a t i o n s a l a r m i n g
1 = S Y S T E M   2 = S T A T I O N
R E T = e x i t
    
```

FIGURE 4.9A: SYSTEM AND STATION ALARMS

Pressing the 2 key will allow you to view the type of alarm and which stations are alarming. Press ENTER to scroll through all of the stations that are alarming.

Press YES to clear the individual station alarms. Press RETURN to return to the first screen.

```

S t a # 0 1 A   a l a r m s :
N O L O A D   R E T = e x i t
P r e s s Y E S   t o   c l e a r
S t a t i o n   a l a r m
    
```

FIGURE 4.9B: CLEARING ALARMS

4.10: ALARM MESSAGES

Alarm Message	Definition
No Load	Receiver has failed to change the state of its limit switch after three attempts at loading.
High Amps	The pump has kicked out its Overload (Check Motor)
Global Vars	Memory corruption, all setpoints and settings of any values under “Advanced Options” are suspect, values will be reset to default values. Turn on dip switch #8.
Purge Collision	Two purge valves have been assigned to the same station.

4.11: GLOBAL VARS ALARM

To clear the GLOBAL VARS alarm, Turn the #8 dipswitch on, press the reset button (green) on the main control board, then follow the directions on the screen.

When a new EPROM chip is installed into the main control board, the GLOBAL VARS will need to be reset to the new default settings in the new chip.

Write down all station settings before switching chips, because they will all be reset to the default settings.

SECTION 5: PUMP SWITCH OVER

Section 6: Maintenance

6.1: 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.**

6.2: PUMP MAINTENANCE

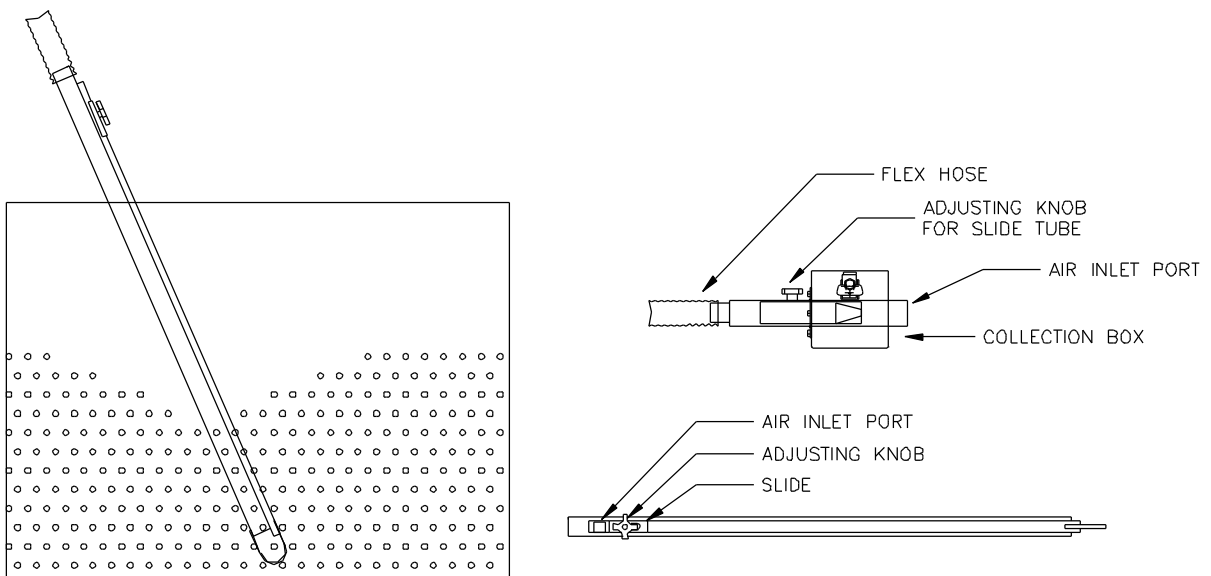
- Add fresh oil to the pump as required to maintain proper oil level. (See pump maintenance manual for correct procedure).
- The gear case of the pump should be drained, flushed and refilled with fresh oil every 1000 hours. . Use a ISO 100 grade oil or equivalent.
- The grease fittings on the shaft end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

SECTION 7: 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.



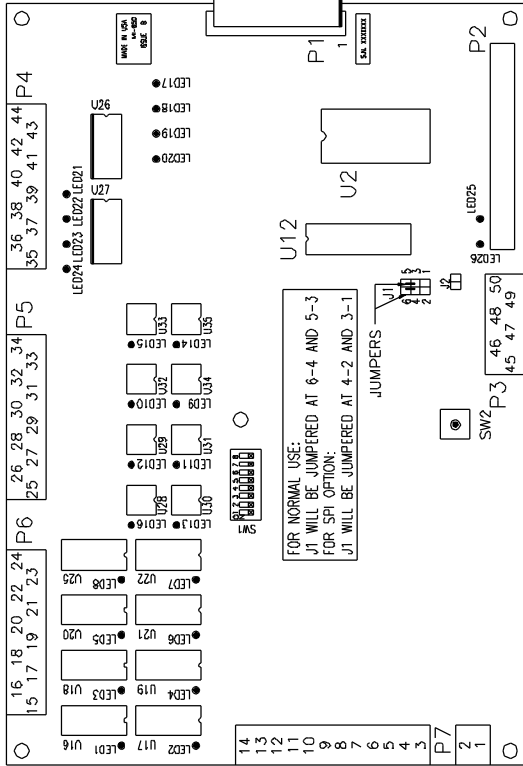
Thoreson-McCosh Inc

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	404656	404662		409401			
MARK 15	404656	404662		409401			
MARK 20	404656	404656		409401			
MARK 25	404656	404656		409401			
MARK 30	N 414819 O 405897	404662		409401			
7" DIA RECEIVER			F 414234 P 413001	412257	412265		412424
10" DIA RECEIVER			F 408053 P 409001	409402	413091		405824
15" DIA RECEIVER			F 401354 P 409002	409401	413091		407409
	CLOTH	CARTRIDGE					
RB-1 FILTER	408433	414173		409402	413091	407402	
RB-4 FILTER	407009	414173		409401	413091	407402	
CB-1 FILTER	408433	414173		409402	413091	407402	
CB-4 FILTER	407009	414173		409401	413091	407402	

413731

A



P4	5VDC TB#	LED#	CHIP LOCATION	FUNCTION
	35	24	U27	OUTPUT COM
	36	23	U27	-5VDC OUTPUT
	37	22	U27	-5VDC OUTPUT
	38	21	U27	-5VDC OUTPUT
	39			WATCH DOG
	40			INPUT COM
	41	20	U26	-5VDC INPUT
	42	19	U26	-5VDC INPUT
	43	18	U26	-5VDC INPUT
	44	17	U26	-5VDC INPUT

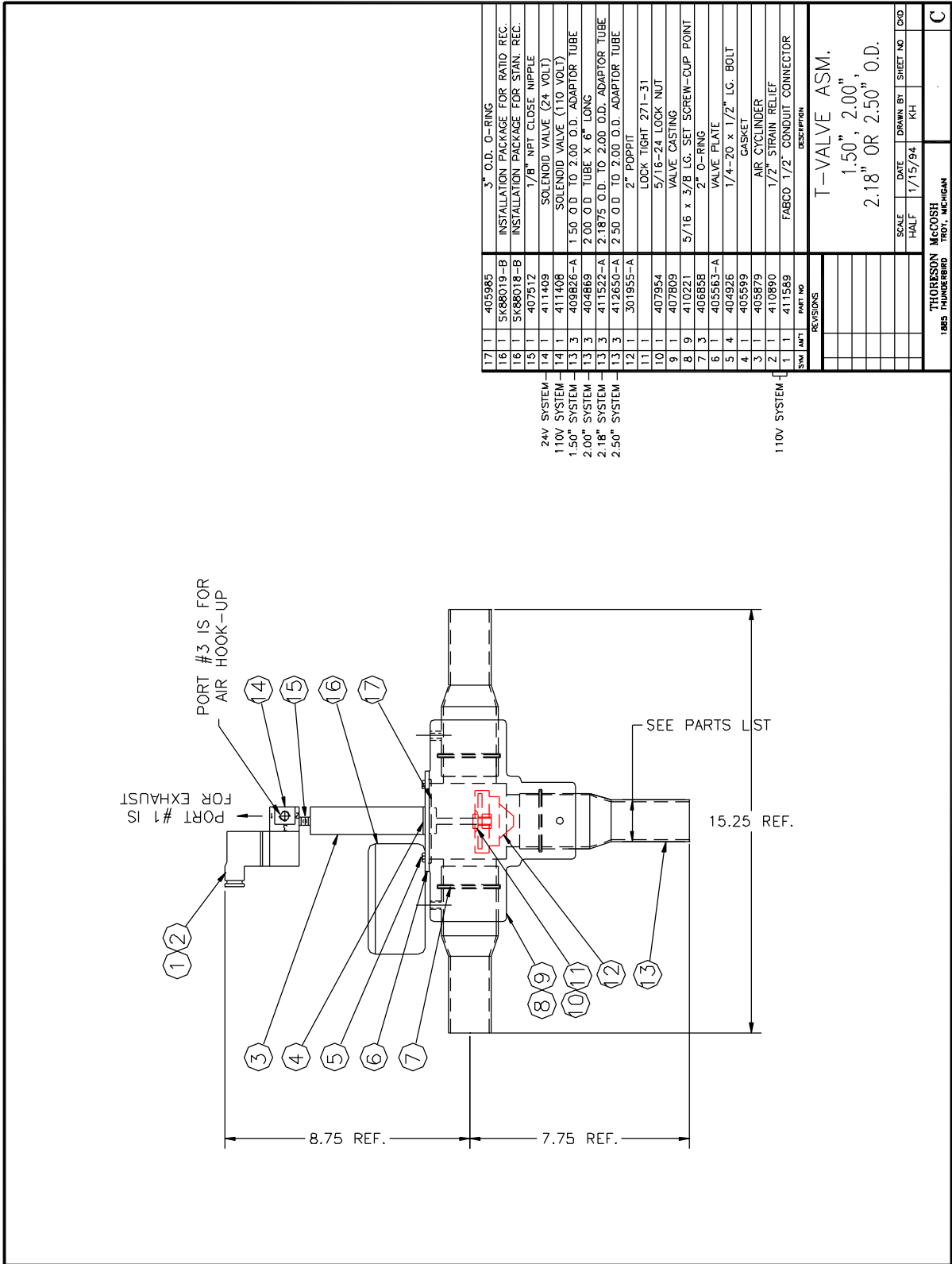
RED LINE MUST CONNECT TO PIN 1 ON THE BOARD OR DAMAGE TO THE BOARD WILL RESULT.

SYM.	AMT	PART NO.	DESCRIPTION
P1	1	xxx	RIBBON CABLE PLUG TO EXPANDER BOARD
P2	1	413905	RIBBON CABLE PLUG TO DISPLAY BOARD
P3	1	xxx	6 PIN PC PLUG
P4,5,6	3	xxx	10 PIN PC PLUG
P7	1	xxx	2 PIN PC PLUG
P7	1	xxx	12 PIN PC PLUG
U2	1	413892	EPROM CHIP, 270512
U12	1	xxx	PIC
U16-U25	8	411282	DPA4111 AC SWITCH CHIP
U26, U27	2	412682	PC817 OPTO ISOLATOR
U28-U35	8	xxx	MID400 SWITCH CHIP
LOCATION	AMT	PART NO.	DESCRIPTION

SYM.	AMT	PART NO.	DESCRIPTION
MAIN CONTROL BOARD (LOADER)			
MIQUEST			
THORESON McCOSH			
1885 THUNDERBIRD ST. TROY, MICHIGAN			
PH. 248-362-0960 FAX 248-362-5270			
SCALE	DATE	DR. BY	DRAWING NO.
NOT TO SCALE	02-08-01	G L K	413731-A

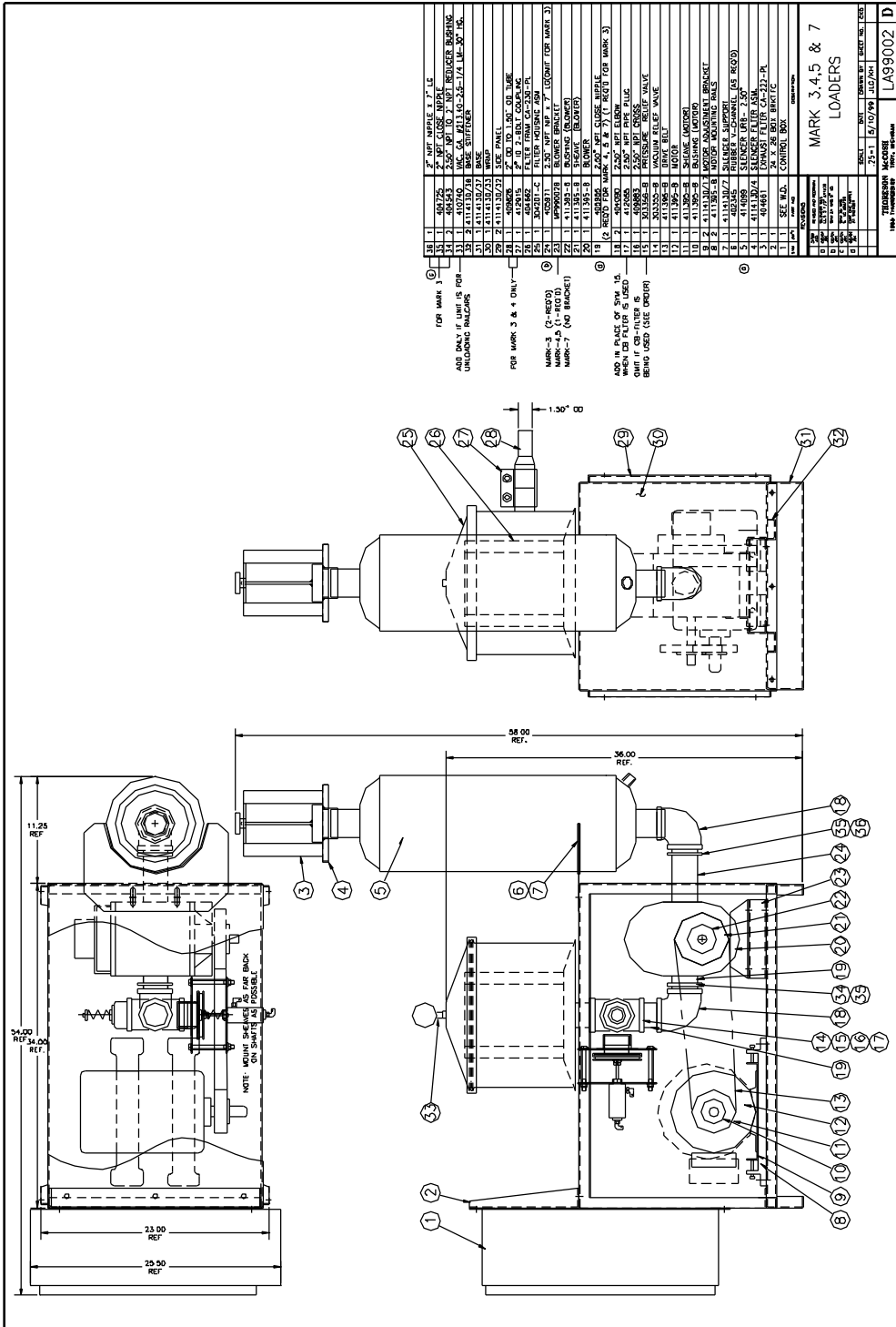
P6	AC INPUTS	TB#	LED#	CHIP LOCATION	FUNCTION
15	1			U16	SYSTEM A MOTOR CONTROLS
16	2			U17	SYSTEM A BLOWBACK
17	3			U18	SYSTEM B MOTOR CONTROLS
18	4			U19	SYSTEM B BLOWBACK
19					OUTPUT COM TB15-18
20	5			U20	SYSTEM ALARM
21	6			U21	xxx
22	7			U22	xxx
23	8			U25	xxx
24					OUTPUT COM TB20-23

P7	A/D	TB#	FUNCTION
1	1		POWER 8VDC
2	2		POWER 8VDC
3	3		SPARE
4	4		SPARE
5	5		ANALOG GROUND (-)
6	6		SPARE
7	7		SPARE
8	8		VACUUM SENSOR PUMP D
9	9		VACUUM SENSOR PUMP C
10	10		VACUUM SENSOR PUMP B
11	11		SPARE
12	12		SPARE
13	13		VACUUM SENSOR PUMP A
14	14		ANALOG COM (-)



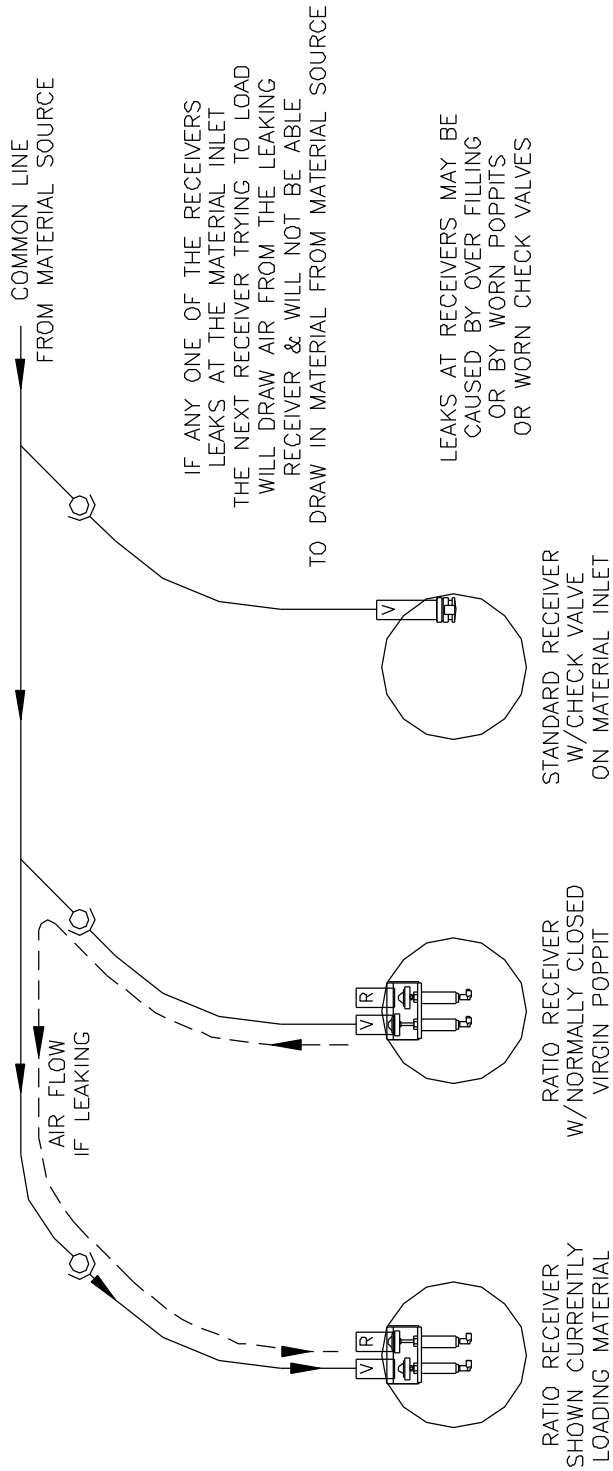
SYM	QTY	PART NO	DESCRIPTION
17	1	405985	3" O.D. O-RING
16	1	5K88019-B	INSTALLATION PACKAGE FOR RATIO REC.
16	1	5K88018-B	INSTALLATION PACKAGE FOR STRAIN REC.
15	1	407512	1/8" NPT CLOSE NIPPLE
14	1	411409	SOLENOID VALVE (24 VOLT)
14	1	411408	SOLENOID VALVE (110 VOLT)
13	3	409826-A	1.50" O.D. TO 2.00" O.D. ADAPTOR TUBE
13	3	404869	2.00" O.D. TUBE X 6" LONG
13	3	411522-A	2.1875" O.D. TO 2.00" O.D. ADAPTOR TUBE
13	3	412650-A	2.50" O.D. TO 2.00" O.D. ADAPTOR TUBE
12	1	301955-A	2" POPPET
11	1	407954	LOCK TIGHT 271-31
9	1	407809	5/16"-2# LOCK NUT
8	9	410221	VALVE CASTING
7	3	406858	5/16 x 3/8 LG. SET SCREW-CUP POINT
6	1	405563-A	2" O-RING
5	4	404926	VALVE PLATE
4	1	405599	1/4"-20 x 1/2" LG. BOLT
3	1	405879	CASKET
2	1	410890	AIR CYLINDER
1	1	411589	1/2" STRAIN RELIEF
			FABCO 1/2" CONDUIT CONNECTOR
REVISIONS			
			T-VALVE ASM.
			1.50", 2.00",
			2.18" OR 2.50" O.D.
THORESON MCCOSH 1885 HUNDEBARD			DATE 1/15/94 DRAWN BY KH SHEET NO C

Thoreson-McCosh Inc

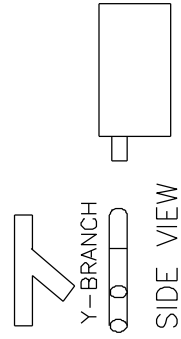


SK95028 A

TOP VIEW



SYM.	AM'T	DESCRIPTION	PART NO.
		REF. DRAWING OF POSSIBLE PROBLEMS WITH COMMON LINE SYSTEMS	
THORESON McCOSH			
1885 THUNDERBIRD ST. TROY, MICHIGAN			
SCALE	DATE	DR. BY	DRAWING NO.
1/16=1	3/95	KH	SK95028A



NOTE:
WHEN INSTALLING Y-BRANCHES 90, OR 45 DEGREE PLUMBING INSTALL PLUMBING IN HORIZONTAL POSITION AS SHOWN

