

MULTI-PHASE PRODUCT PUMP

Installation, Operation, and
Maintenance Manual



**THE
Young®**

INDUSTRIES, INC.
16 PAINTER STREET
MUNCY, PA 17756

FOREWORD

This manual contains instructions for installation, operation and maintenance of The Young Industries Multi-Phase Product Pump equipped with a vent valve. The care taken during receiving, storage, installation, operation and continued maintenance will add to the reliable operation and long service life of this equipment.

This manual must be read and understood in its entirety by the operator and the director of plant safety before performing any work on or operating a Multi-Phase Product Pump. Contact Young Industries for additional copies of this manual if needed.

TABLE OF CONTENTS

FOREWORD..... 2
SAFETY.....3
INSTALLATION..... 4
 Receiving and Inspection..... 4
 Supports..... 5
 Assembly..... 5
 Electrical Installation..... 6
 Compressed Gas Installation..... 6
 Pre-commissioning..... 7
OPERATION..... 8
 Start-Up..... 8
 Loading..... 8
 Continuous Operation..... 8
 System Adjustment..... 9
 Shut-Down..... 10
MAINTENANCE..... 10
 Lubrication..... 10
 General Inspection..... 10
 Troubleshooting..... 11
 Spare Parts..... 11
APPENDIX..... 13
 PLC Timer Adjustment Instructions..... 13
 Optional High Pressure Switch Instructions..... 13

LIST OF TABLES

TABLE TWO - TROUBLESHOOTING PRODUCT PUMPS 12

LIST OF FIGURES

FIGURE THREE – EXPLODED VIEW..... 14

SAFETY

READ AND FULLY UNDERSTAND THIS MANUAL BEFORE INSTALLING, OPERATING OR WORKING ON ANY YOUNG MULTI-PHASE PRODUCT PUMP. FAILURE TO OBSERVE AND FOLLOW SAFETY PRECAUTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR PROPERTY DAMAGE.

If you have previously received delivery of a Young Industries Multi-Phase Product Pump and have just received this manual, insist that both the pump operator and the director of plant safety read and fully understand this manual before continued use of or performing any maintenance on the pump.

Notify Young Industries if your Multi-Phase Product Pump does not include safety warning labels or devices recommended within this manual. Contact the Engineering Manager for assistance at (570)546-3165 before continued use or maintenance.

Notify Young Industries if you transfer any Young Industries Multi-Phase Product Pump to another user. Your assistance will allow Young Industries to contact the new user with updated safety and operational recommendations.

Operator safety must be considered at all times in the operation and maintenance of mechanical equipment. Use of proper tools and procedures can prevent serious accidents. Always lock out and release stored energy of all energy sources before working on any Product Pump.

Safety precautions are listed throughout this manual. Study them carefully and follow them and insist that those working with you do the same.

The various precautions and recommendations detailed within this manual are not necessarily all-inclusive. Young Industries has attempted to provide SAFETY AND OPERATIONAL GUIDANCE relating to typical installations. You must review your particular Multi-Phase Product Pump installation and determine if there are potential hazards not addressed by the warnings of this manual.

If you have any safety or operational questions about the design or application of any Young Multi-Phase

Product Pumps, please contact the Engineering Manager, Young Industries, telephone (570) 546-3165.

WARNING:
IF THE PRODUCT PUMP WILL BE HANDLING COMBUSTIBLE MATERIALS

It may be necessary to convey using inert gas, install automatic explosion suppression systems, and/or explosion venting systems.

To minimize danger of explosion and fire when handling combustible materials, Young Industries recommends that the installation, operation and maintenance of all equipment be done in compliance with the requirements of the following National Fire Codes and any other National, State and Local codes which may be in effect.

NFPA 654 Prevention of Fire and Dust Explosions from Manufacturing Combustible Particulate Solids

NFPA 68 Venting of Deflagrations

NFPA 69 Explosion Prevention Systems NFPA 77 Static Electricity

NFPA 70 National Electrical Code

WARNING:
ELECTRICAL GROUNDING AND BONDING ARE REQUIRED

All ungrounded machinery presents a potential hazard of fatal electrical shock from electrical power sources. Static electricity may also accumulate on equipment which has not been grounded and bonded. Static electricity sparks from ungrounded equipment or between unbonded pieces of equipment can cause explosion or fire if flammable vapor and/or dust are present. Ungrounded/unbonded pneumatic conveying equipment is capable of accumulating considerable static electricity charge.

SAFETY & INSTALLATION

Electrical equipment must be installed by a certified professional electrician in accordance with all electrical codes in effect at the installation location.

Before operating the equipment described by this manual and any other equipment in the same processing system, grounding and bonding must be completed in accordance with the National Electrical Code (NFPA 70) published by the National Fire Protection Association, One Batterymarch Park, Quincy, Massachusetts 02269-9101, and any other applicable National, State or Municipal codes. Codes for safe control of static electricity must also be observed, including the National Fire Code "Recommended Practice on Static Electricity" (NFPA 77) and any other applicable National, State or Municipal codes.

To avoid hazardous static discharge, all mobile, movable or portable equipment which may attach to or come near to other equipment, and which is not prohibited by codes from being connected to ground, must be safely grounded and bonded

before close approach or contact is made. This warning also applies to movable containers such as drums, totes, boxes and bags.

Sections of pipe, duct, and gravity spout must be bonded to adjacent sections of pipe, duct, spout, or equipment, and must have an uninterrupted conductive path to electrical ground.

Regular periodic safety inspections of electrical systems and grounding/bonding systems are necessary.

WARNING:
ILLUSTRATIONS IN THIS MANUAL ARE INTENDED TO BE USED AS PARTS IDENTIFICATION AIDS ONLY. ILLUSTRATIONS CONTAINED IN THIS MANUAL ARE NOT INTENDED TO DEPICT RECOMMENDED INSTALLATION OR OPERATION CONDITIONS OF ANY PRODUCT PUMP OR OTHER EQUIPMENT.

INSTALLATION

A. RECEIVING AND INSPECTION

1. When receiving equipment and material from Young Industries the following basic steps should be taken:

a. Use the packing list to determine that all the items shipped have been received. Your equipment order was carefully crated or packaged for safe shipment when given to the carrier. Check for damage.

(1) Damage in transit is the responsibility of the carrier. Be sure to have the driver sign a copy of the freight bill with a notation about any damage.

(2) If a shipment was sent to you by parcel post, have the postmaster complete a damage claim report.

(3) Concealed damage: If equipment or goods are discovered to be damaged by shipment at a later date, contact the carrier and Young Industries immediately.

(4) IN ALL CASES OF DAMAGE IN

TRANSIT, CONTACT THE YOUNG INDUSTRIES' ENGINEERING MANAGER AT (570) 546-3165 FOR ASSISTANCE IN DETERMINING WHETHER OR NOT THIS DAMAGE MAY IN ANY WAY AFFECT SAFETY OR PROPER OPERATION OF A PRODUCT PUMP.

(5) If shipped via UPS or other parcel carrier, DO NOT THROW ORIGINAL CARTON AWAY. Keep all evidence for the inspector.

NOTE:

YOUNG INDUSTRIES CANNOT ASSUME ANY LIABILITY FOR SHORTAGES OR DAMAGED GOODS. CLAIMS MUST BE NEGOTIATED WITH THE CARRIER. CONTACT THE YOUNG INDUSTRIES ENGINEERING MANAGER AT (570) 546-3165 OR (800) 546-3165 FOR ASSISTANCE IN RECTIFYING ANY SHORTAGE OR DAMAGE AS IT RELATES TO SAFE AND PROPER PPRODUCT PUMP OPERATION.

2. Moving the Multi-Phase Product Pump.
 - a. Moving and installation must always be performed by trained, experienced personnel, using safe and accepted rigging practices.
 - b. Care and caution must be exercised to prevent damaging the housing, flanges, compressed air and electrical components.

CAUTION:

WHEN MOVING A PRODUCT OR COMPONENT PARTS, BE SURE THAT MOVING PRACTICES ARE SAFE FOR BOTH PERSONNEL AND EQUIPMENT. CONTACT THE YOUNG INDUSTRIES ENGINEERING MANAGER IF THERE ARE ANY QUESTIONS RELATING TO WHAT CONSTITUTES SAFE AND ACCEPTED RIGGING PRACTICES FOR MOVEMENT AND/OR INSTALLATION OF A PRODUCT PUMP.

3. Storing the Multi-Phase Product Pump.
 - a. If moved to storage, the equipment must be located in a dry area, preferably indoors. Outdoor storage will require adequate protection from the weather.
 - b. The product pump has been shipped with a temporary guard or cover over all pump openings. Do not remove these guards or covers while the product pump is in storage.
 - c. After prolonged storage and before startup, the product pump must be inspected by a qualified person. Contact Young Industries Engineering Manager at (570) 546-3165 for assistance.
 - d. Butterfly valves should be stored in a partially open position.

CAUTION:

USE CAUTION TO PROTECT AGAINST OBJECTS OR DEBRIS FROM ENTERING OR DAMAGING THE PRODUCT PUMP.

B. SUPPORTS

1. The Young Industries Multi-Phase Product Pump is designed to be supported by the product inlet flange.
2. Securely anchor the product pump by bolting.
 - a. The connecting flange supporting the product pump must be structurally adequate to support an operating product pump and the product inlet valve under full pressure load.

C. ASSEMBLY

1. Before installing the Multi-Phase Product Pump, and with the compressed air and power disconnected, check the pump internally for cleanliness.
2. Connect the product fill valve and the vent valve to the product pump flanges. Refer to the product pump assembly drawing furnished as a separate document.
 - a. Assemble the product fill valve with the actuator on the side opposite the vent line
 - b. When facing the actuator, the butterfly valve must turn clockwise to open
3. If required, install the pressure relief valve on the product pump or incoming conveying gas line. Inspect the pressure relief valve to determine that it is not damaged and that it will operate properly.

NOTE:

IF CONVEYING GAS SUPPLY HAS RELIEF VALVE SET AT 150 PSIG OR LESS, A PRODUCT PUMP RELIEF VALVE IS NOT REQUIRED.

CAUTION:

THE PRESSURE RELIEF VALVE MUST BE SET TO OPEN AT 150 PSI OR LESS. DO NOT CHANGE THE RELIEF VALVE SETTING.

4. Locate the product pump with sufficient clearance to allow access for proper maintenance.

INSTALLATION

5. Connect the product pump and valve assembly to the connecting flanges.

DANGER:

DO NOT CONNECT COMPRESSED AIR TO BUTTERFLY VALVES UNTIL AFTER THEY HAVE BEEN FASTENED SECURELY BETWEEN CONNECTING FLANGES.

6. Assemble the conveying line to the product pump. Place the check valve in the vertical line as close to the product pump as possible. The distance from the product pump to the check valve should not exceed ten feet.

NOTE: THE PRODUCT LINE CHECK VALVE MUST BE INSTALLED IN A VERTICAL POSITION.

7. Make the appropriate compressed gas and electrical connections.

DANGER:

BEFORE DISCONNECTING OR WORKING INTERNALLY ON A PRODUCT PUMP, DISCONNECT THE POWER AND SHUT OFF AND BLEED THE COMPRESSED GAS SYSTEM. BOTH POWER AND GAS MUST BE LOCKED OUT BEFORE MAINTENANCE. USE SPECIAL CARE TO AVOID THE PINCHING ACTION THAT MAY OCCUR FROM THE PRODUCT INLET AND AIR VENT BUTTERFLY VALVES.

8. Complete the assembly of the conveying line to the discharge point. Use caution when assembling the pipe, couplings, and flanges of the system to assure the bolts are tightened to safely handle the system design pressure of 150 PSI. Normal maximum operating pressure is 40 PSIG.

D. ELECTRICAL INSTALLATION

1. Refer to the wiring diagram furnished as a separate document for your Multi-Phase Product Pump.
2. For a prewired product pump connect your

power source and make any other required connection as shown on the wiring diagram.

3. Check all safety interlocks to assure they are wired and working properly.

CAUTION:

DISCONNECT POWER, BLEED COMPRESSED GAS SYSTEM, AND LOCK OUT BEFORE SERVICING.

4. In addition to following the manufacturer's installation instructions, care must be taken to ensure compliance with Federal, State and Local Government requirements.

E. COMPRESSED GAS INSTALLATION

1. Connect the plant compressed gas supply to the product pump fill valve solenoid, vent valve solenoid and pressure regulator.

- a. The compressed gas supply must be clean and dry with a minimum pressure of 80 PSI. Use a minimum 1" IPS supply line.
- b. The fill and vent valve actuators do not require lubricated compressed air.

2. If aeration pads and/or a hopper vibrator have been supplied for your installation, connect these items to the plant compressed gas supply.

3. For compressed gas installation, refer to the product pump assembly drawing furnished as a separate document for your order.

When a Multi-Phase Product Pump is furnished as an integral part of a Young Industries Filter/Bag Dump, the electrical wiring and interconnecting air lines are normally factory installed. Refer to the Bag Dump assembly drawing and wiring diagram furnished as separate documents for your order.

CAUTION:
DISCONNECT POWER, BLEED COMPRESSED GAS SYSTEM AND LOCK OUT BEFORE SERVICING.

F. PRECOMMISSIONING

1. Before operating or test running the Multi-Phase Product Pump, and with the power and compressed gas shut off, check internally for cleanliness, using caution to avoid physical harm to personnel and equipment.
2. Inspect the product pump, convey lines and system discharge to assure that all equipment is installed properly and mounted securely.
3. Inspect the pressure relief valve, if one is required, to determine that it is not damaged and that it will operate properly.

CAUTION:
THE PRESSURE RELIEF VALVE MUST BE SET TO OPEN AT 150 PSI OR LESS. DO NOT CHANGE THE RELIEF VALVE SETTING.

4. Check all flanges, pipe couplings, and bolts in the conveying system to assure the system is installed properly and that it will safely handle an air pressure of 150 PSIG.

CAUTION:
THE MAXIMUM OPERATING PRESSURE FOR THE YOUNG INDUSTRIES MULTI-PHASE PRODUCT PUMP IS **40 PSIG** UNLESS A HIGHER PRESSURE HAS BEEN AUTHORIZED

8. Adjust the product pump PLC timers to the following settings. The timers may be readjusted as described under "System Adjustment".

<u>TIMER</u>	<u>FUNCTION</u>	<u>MODEL ***-050</u>	<u>MODEL ***-125</u>	<u>MODEL ***-350</u>
TD1	Fill	0.8 seconds	1.2 seconds	1.5 seconds
TD2	Delay to Convey	0.8 seconds	0.8 seconds	0.8 seconds
TD3	Convey	3.0 seconds	6.0 seconds	10 seconds
TD4	Delay to Vent	1.0 seconds	1.0 seconds	1.0 seconds
	Delay to Fill	0.5 seconds	0.5 seconds	0.5 seconds

IN WRITING BY YOUNG INDUSTRIES ENGINEERING MANAGER.

IF YOU HAVE ANY QUESTIONS CONCERNING THE SAFE OPERATION OF YOUR MULTI-PHASE PRODUCT PUMP SYSTEM, CONTACT THE ENGINEERING MANAGER AT YOUNG INDUSTRIES, TELEPHONE (570) 546-3165.

5. Determine that the electrical power and compressed air supplies are properly installed and operating.
 - a. Check the product fill valve for proper rotation. With the actuator assembled on the side opposite the vent line, the fill valve butterfly should turn clockwise to open when facing the actuator.
6. Inspect the product pump and associated equipment to assure that all guards, covers and safety equipment are in place and working properly.
7. Set the pressure regulator to deliver a gas pressure of 30 PSI. This pressure may be reset as described under "System Adjustment." The product pump has a normal operating range of 20 to 40 PSIG.
 - a. The pressure shown on the gauge at the pressure regulator will dip each time the compressed gas valves are open for conveying.

INSTALLATION & OPERATION

NOTE:

PLEASE REFER TO APPENDIX FOR ADJUSTMENT INSTRUCTIONS.

9. We urge the installation crew to notify the plant safety committee and or the plant engineer when installation is complete and before initial operation. Those in your plant responsible for plant safety should review your product pump installation before operation for safety in light of the extensive operating

recommendations made within this manual. Contact the Engineering Manager at Young Industries, telephone (570) 546-3165, if this review results in additional questions or uncertainty.

CAUTION:

THE PRESSURE RELIEF VALVE MUST BE SET TO OPEN AT 150 PSI OR LESS. DO NOT CHANGE THE RELIEF VALVE SETTING.

OPERATION

A. STARTUP

1. Before actual operation, the operator must familiarize himself with the method of starting and stopping the product pump and the status of supporting utilities.

2. The general appearance of the product pump and the surrounding area should be visually inspected to determine that the product pump system can be operated safely and without damage.

3. Guards, doors, covers and all safety interlocks must be in place and working whenever the product pump is in service.

CAUTION:

DISCONNECT POWER, BLEED COMPRESSED GAS SYSTEM AND LOCK OUT BEFORE SERVICING.

4. If your particular installation has an unsafe condition unforeseen by Young Industries and beyond typical operating conditions, CEASE FURTHER OPERATION of the product pump and immediately notify both your safety committee and the Engineering Manager at Young Industries, telephone (570) 546-3165. The Young Industries' Engineering Manager can assist you in speeding the return of your product pump to a recommended operating condition.

B. LOADING

1. Ingredients must be loaded into the Multi-

Phase Product Pump through an enclosed spout or hopper that is protected by an approved safety guard such as a fixed grate.

a. Safety guard or grates must be sized and arranged to prevent the operator from making contact with the fill valve and vent valve gates.

C. CONTINUOUS OPERATION

1. During product pump operation the operator should recognize and report any unusual noise or vibration. Notify your maintenance personnel or call Young Industries for assistance or additional guidance in defining these conditions. Refer also to the maintenance section of this manual.

2. Guards, covers, and safety equipment must be in place whenever the product pump is in service.

CAUTION:

DISCONNECT POWER, SHUT OFF COMPRESSED GAS, BLEED SYSTEM AND LOCK OUT BEFORE SERVICING.

D. SYSTEM ADJUSTMENT

1. After a period of operation, it may be desirable to adjust the conveying air pressure and the Multi- Phase Product Pump timers to obtain their optimum setting.

a. Pressure Regulator - The conveying air pressure may range from 20 to 40 PSI with 30 PSI representing the most common setting. The conveying air pressure may be adjusted by changing the position of the adjusting screw on the pressure regulator. In general, higher air pressure is required for products with characteristics that make them difficult to convey and for systems with long

pipe runs. Also, a higher pressure is required for systems that discharge into liquid or into a pressure vessel that will present a high back pressure to the conveying system. To conserve compressed air, adjust the pressure regulator to the lowest pressure that gives the desired system capacity.

b. Product Pump Timers - The standard setting for the timers is as follows:

<u>TIMER</u>	<u>FUNCTION</u>	<u>MODEL ***-050</u>	<u>MODEL ***-125</u>	<u>MODEL ***-350</u>
TD1	Fill	0.8 seconds	1.2 seconds	1.5 seconds
TD2	Delay to Convey	0.8 seconds	0.8 seconds	0.8 seconds
TD3	Convey	3.0 seconds	6.0 seconds	10 seconds
TD4	Delay to Vent	1.0 seconds	1.0 seconds	1.0 seconds
TD5	Delay to Fill	0.5 seconds	0.5 seconds	0.5 seconds

2. The capacity of the Multi-Phase Product Pump will vary depending upon the bulk weight and the flow characteristics of the product being handled. The number of elbows and length of pipe in the conveying system will also influence the capacity of the system. Products ranging between 10 to 90 lbs. per cubic foot obtain conveying rates of 100 to 500 cubic feet per hour with pipe runs of approximately 50 to 600 feet. Your product pump installation may or may not obtain this rate depending on the particular characteristics of your system and material conveyed.

3. The Multi-Phase Product Pump is designed and selected to meet special operating conditions. Care must be exercised to assure that the pump is operating within safe limits. The product pump must be used only for the purpose for which it is designed. Refer to Young Industries' quotation to determine the application for which this product pump was intended. Contact the Sales Manager at Young Industries, (570) 546-3165, if you need assistance in determining the proper application of this Young Industries Multi-Phase Product Pump.

E. SHUT-DOWN

1. When shutting down the product pump, shut off supporting utilities in accordance with plant operating procedures.

a. To manually fill the product pump, press the manual fill push bottom.

b. To manually convey the product from the product pump and to clear the conveying line, press the manual convey push bottom.

2. When cleaning or servicing is required on the valve, proper lock out of electrical, compressed gas and mechanical equipment must be completed before any work is started.

CAUTION:
DISCONNECT POWER, BLEED COMPRESSED GAS SYSTEM, AND LOCK OUT BEFORE CLEANING OR SERVICING.

MAINTENANCE

A. LUBRICATION

1. None

B. GENERAL INSPECTION

1. Check the pressure regulator to assure that the regulator is set and locked at the desired pressure.
2. Observe the compressed air inlet valves for any unusual noise or vibration.
3. Inspect the product inlet and vent line butterfly valves and actuators. When operating, observe any unusual noise or vibration.
4. If relief valve is required, inspect it to determine that it is in operating order and set to relieve at 150 PSIG or less.

NOTE: RELIEF VALVE MUST BE SET TO OPEN AT 150 PSIG OR LESS.

5. Check all compressed air lines for piping leaks. Replace all air lines that are worn or show signs of damage.
6. Inspect all safety equipment, guards, covers and labels to assure the product pump and auxiliary equipment can be operated safely. If an unsafe condition is observed, cease further operation of the product pump and immediately notify your safety committee and the Engineering Manager at Young Industries, telephone (570)546-3165.

WARNING:
SERIOUS PERMANENT DISABLING INJURY
OR DEATH IS POSSIBLE.

Safe “Lock out/Tag out” procedures must be followed before servicing any machine.

Disconnect, lock out and tag the power source of the drive motor of the equipment to be serviced

and of other equipment which may cause a safety hazard if operated during maintenance of the equipment to be serviced.

If the equipment to be serviced is equipped with control voltage powered devices such as limit switches, solenoids, solenoid-operated control valves, motion switches or other devices, tile source of power to these devices must be disconnected and locked out as well.

Equipment purged by compressed gas or having cylinders or actuators powered by compressed gas or a hydraulic system must have the source of pressure shut off or valved out and locked out and be safely bled to zero pressure before servicing is begun.

The process in which the equipment to be serviced is installed must be shut down or safely isolated from the equipment to be serviced. The individuals performing the maintenance work must be protected from toxic or suffocating process gases or vapors and other hazardous process materials which may be present during servicing.

C. TROUBLESHOOTING

1. When properly installed, operated and maintained, your Young Industries Multi-Phase Product Pump will give you years of service. Table ONE, “Trouble Shooting Multi-Phase Product Pumps” gives symptoms, causes, and remedies for most problems that may be encountered.

D. SPARE PARTS

1. When ordering spare parts for a Multi-Phase Product Pump, please provide the Young Industries job number, serial number, or the purchase order number. Contact the Spare Parts Department Manager at Young Industries, telephone (570) 546-3165 for assistance.

CAUTION:

DO NOT OPERATE WITH GUARDS OR COVERS REMOVED. DO NOT OPERATE BUTTERFLY VALVES WHEN DISCS ARE ACCESSIBLE TO HANDS OR FINGERS.

DANGER:

DISCONNECT POWER AND LOCK OUT BEFORE SERVICING.

CAUTION:

DO COMPRESSED GAS, SHUT OFF, BLEED SYSTEM, AND LOCK OUT BEFORE SERVICING.

TABLE 1 – TROUBLE SHOOTING MULTI-PHASE PRODUCT PUMPS

<u>SYMPTOM</u>	<u>CAUSE</u>	<u>REMEDY</u>
LOW SYSTEM CAPACITY	<p>Low air pressure or improper setting of cycle cylinders</p> <p>Only one compressed air valve working</p> <p>Low feed rate into product pump</p>	<p>Adjust system (Reference Operation, “D”)</p> <p>Repair or replace valve</p> <p>Check feeding device & auxiliary equipment for proper operation</p>
DUSTING FROM PRODUCT INLET VALVE	<p>Improper setting of sequence timers</p> <p>Product inlet valve not seating or a worn valve seat</p> <p>Worn convey line check valve</p>	<p>Adjust timers (Reference operation “D”)</p> <p>Check actuator alignment properly and operation. Replace worn valve seat (ref. valve and actuator IOM manual)</p> <p>Replace worn ball check and valve seat.</p>
EXCESSIVE BLOW BACK THRU VENT	<p>Improper setting of sequence timers</p> <p>Worn convey line check valve</p>	<p>Adjust timers (Reference operation “D”)</p> <p>Replace worn ball check and valve seat.</p>
VENT VALVE DUSTING WHEN CONVEYING PRODUCT	<p>Vent valve not seating properly or a worn valve seat</p>	<p>Check actuator alignment and operation. Replace worn seat (ref. valve and actuator IOM manual)</p>
SEQUENCE TIMER WILL NOT OPERATE	<p>High pressure limit switch (Optional feature) is tripped</p>	<p>Refer to instructions in Appendix</p>
TIMER DOES NOT SEQUENCE PROPERLY	<p>Improper setting of sequence timers</p>	<p>Adjust timers (Ref. Operation “D”)</p>

PLC Timer Adjustment Instructions

1. From normal display mode, press “OK” button.
2. Move cursor down twice (press bottom edge of large central round keypad button twice) to “PARAMETER” line on the display screen. “PARAMETER” will be blinking.
3. Press “OK” button once. T1 will be displayed.
4. Move cursor left (press left edge of central button) to time setting.
5. Align the cursor under the digit to be changed using left and right cursor movement as required.
6. Move cursor up or down to change the value of the digit.
7. After all digits are adjusted on the timer, press “OK” to validate the change and return to timer selection.
8. Move the cursor up or down to select timers T2 through T5.
9. Repeat steps 4 through 8 until all of the timers are adjusted.
10. With the cursor under any of the timers T1 through T5, press “ESC” twice to return to the normal display mode.



If more information is required, refer to the PLC instruction manual.

Optional High Pressure Switch

Some Product Pumps are equipped with an optional high pressure limit switch. This switch will stop the Product Pump from venting its internal pressure if the conveying line becomes plugged or blocked. It will also stop the normal operating sequence of the Product Pump until the controls are reset. This optional feature should be included if the vent line from the Product Pump vents into an open hopper or into a hopper which cannot contain the vented pressure from the pump.

If a high pressure situation occurs which trips the high pressure limit switch, it will be indicated by the lighting of an amber indicator light on the Product Pump control panel. **If this occurs, do not turn the Product Pump off.** Turning the Product Pump off will open the vent valve and allow the high pressure in the pump to vent. In the event of a high pressure indication, the pressure in the Product Pump and conveying pipeline must be bled off before turning the Product Pump off. Bleeding can be accomplished by reducing the pressure setting of the conveying gas pressure regulator to zero. Refer to the drawings provided with the Product Pump to determine the location of the conveying gas pressure regulator.

MADE BY	KFH	DATE	7/24/93	ORDER NO.		ISSUE	
CHKD	PFEIFFER		7/26/93				
APPR	PFEIFFER		7/26/93	SHEET	1	OF	1
CUST.	-						
TITLE	GROUNDING/BONDING WARNING						

WARNING – ELECTRICAL GROUNDING AND BONDING ARE REQUIRED

Ungrounded machinery presents a potential hazard of fatal electrical shock from electrical power sources. Static electricity may also accumulate on ungrounded/unbonded equipment. Static electricity discharge from ungrounded equipment or between unbonded pieces of equipment may cause explosion or fire if flammable vapor or dust is present.

Electrical equipment must be installed by a certified professional electrician.

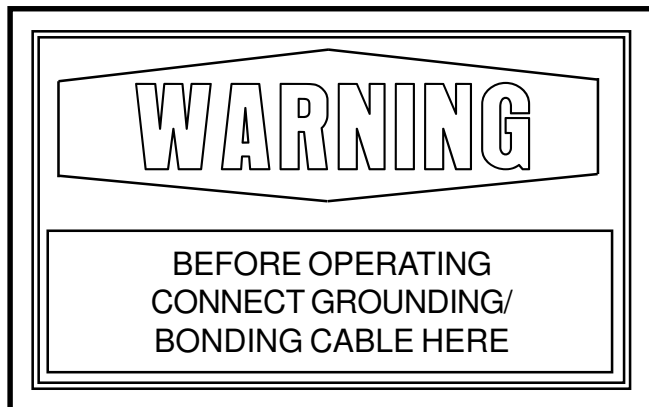
Before operating the equipment described by this manual or any other equipment in the same processing system, grounding and bonding must be completed in accordance with the National Electrical Code (NFPA 70) published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, Mass. 02269-9101, and any other applicable National, State or Municipal codes. Codes for safe control of static electricity must also be observed, including the National Fire Code “Recommended Practice on Static Electricity” (NFPA 77) and any other applicable National, State or Municipal codes.

To avoid hazardous static discharge, mobile, movable or portable equipment which may attach to or come near to other equipment and which is not prohibited by codes from being connected to ground must be safely grounded and bonded before close approach or contact is made. This warning also applies to movable containers such as drums, totes, boxes and bags.

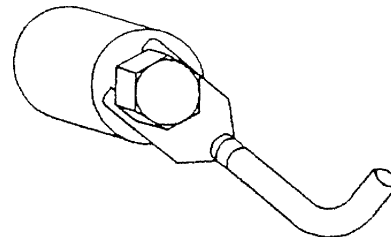
Sections of pipe, duct and gravity spout must be bonded to adjacent sections and must have a conductive path to electrical ground.

Regular periodic safety inspections of electrical systems and grounding/bonding systems are required.

LOOK FOR THESE TAGS AND TERMINAL CONNECTING POINTS



CABLES AND TERMINATIONS MUST BE SUPPLIED BY INSTALLER



1-1413-00.01