

SafetyFlow Grating

Installation, Operation, and Maintenance Manual



THE
Young®

INDUSTRIES, INC.
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MUNCY, PA 17756

FOREWORD

This manual contains instructions for installation, operation and maintenance of Young Industries SafetyFlow Grating. The care taken during receiving, storage, installation and continued maintenance will add to the reliable operation and long service life of this equipment.

This manual should be read and understood in its entirety by the operator and the director of plant safety before performing any work on or operation of the SafetyFlow equipment. Contact Young Industries for additional copies of this manual which may be required to ensure the SafetyFlow equipment is being operated safely and according to the recommended procedures included in this manual.

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SAFETY

READ AND FULLY UNDERSTAND THIS MANUAL BEFORE OPERATING OR PERFORMING ANY WORK ON YOUNG INDUSTRIES SAFETYFLOW EQUIPMENT

If you have previously received delivery of Young Safetyflow equipment and are just now receiving this manual, please read this manual completely. Insist that both the Safetyflow equipment operator and the director of plant safety read and fully understand this manual before continued use of and/or performing any maintenance on the Safetyflow equipment.

Notify Young Industries if your Safetyflow equipment does not include any 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 have sold, leased, rented or given any Young Safetyflow equipment to another user. Your assistance will allow Young Industries to contact the new user with updated safety and/or operational recommendations.

Safety is a fundamental factor that must be considered at all times. Use of proper tools and methods can prevent serious accidents that may result in injury to you and your fellow workers.

A number of safety precautions are listed throughout this manual. Study them carefully and follow them; insist that those working with you do the same. Remember: someone's carelessness or negligence can easily cause an accident.

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 with which we are familiar. We urge you to review your particular Safetyflow equipment installation to determine whether there are potential hazards beyond the warnings of this manual.

If you have any safety or operational questions pertaining to the design or application of the Young Safetyflow equipment as it relates to your particular installation, please contact the Engineering Manager at (570) 546-3165.

Failure to observe and follow the safety precautions may result in serious personal injury or property damage.

Young Industries looks to our customers to achieve a cooperative effort for the purpose of making each hopper installation as safe for the operator as is reasonably possible and to insure proper maintenance and operating procedures are followed. Many times we do not have access to the installation; therefore, your participation in the safe installation, operation and maintenance of Safetyflow equipment is critical.

INSTALLATION

A. RECEIVING AND INSPECTION

1. Upon receipt of 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 then 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 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 THE TRANSFLOW EQUIPMENT.

5. 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 FOR ASSISTANCE IN RECTIFYING ANY SHORTAGE OR DAMAGE AS IT RELATES TO SAFE AND PROPER OPERATION OF YOUNG INDUSTRIES EQUIPMENT.

2. Moving the Safetyflow equipment

a. Trained, experienced personnel, using safe and accepted rigging practices should always perform moving and installation.

CAUTION:

WHEN MOVING SAFETYFLOW EQUIPMENT OR COMPONENT PARTS, BE SURE THAT MOVING PRACTICES USED 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 SAFETYFLOW EQUIPMENT.

3. Storing Safetyflow equipment

a. If moved to storage, the equipment must be located in a dry area, preferably indoors. Outside storage will require adequate protection from the weather.

b. The Safetyflow equipment has been shipped with temporary guards or covers. Do not remove these covers while the Safetyflow equipment is in storage.

c. After prolonged storage and before startup, the Safetyflow equipment must be inspected by a qualified person. Contact Young Industries Engineering Manager at (570) 546-3165 for assistance.

CAUTION:

USE CAUTION TO PROTECT AGAINST OBJECTS OR DEBRIS FROM ENTERING OR DAMAGING THE SAFETYFLOW EQUIPMENT.

B. SUPPORTS

1. Young Industries' Safetyflow equipment is designed to be supported a variety of ways, see the installation drawing for details. In the case of a SafetyFlow Grate designed to be welded to a larger vessel, the support is provided by the vessel. Care must be used to adequately support the grate and to protect the Transflow membrane during the welding process.

C. ASSEMBLY

1. Safetyflow equipment is supplied fully assembled except for the air piping. The grate must be bolted to a mating flange or welded directly to the inlet or outlet being grated, whichever is appropriate. Transflow material must be protected during the welding process to prevent damage to the fluidizing membrane from weld spatter. 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 then given to the carrier. Check for damage.

D. ELECTRICAL INSTALLATION

1. Safetyflow equipment supplied on some jobs will have electrical devices. A qualified professional electrician should connect electrical power to those devices. All wiring must be done per applicable electrical codes and inspected before operation.

DANGER:
DISCONNECT AND LOCK OUT POWER BEFORE OPENING TERMINAL BOX OR SERVICING ANY ELECTRICAL DEVICE.

E. COMPRESSED GAS INSTALLATION

1. Connect the plant compressed air or gas supply to the Safetyflow equipment pressure regulator. Supply pressure must not exceed 120 PSIG

a. The air/gas supply must be clean, oil-free and dry with a minimum pressure of 60 PSIG at the inlet of the regulator on the Safetyflow equipment. The supply line should be at least the same size as the regulator. All supply air piping must be blown clean of cutting, thread sealant debris, dirt, etc. prior to assembly to equipment.

WARNING:
COMPRESSED GAS: SHUT OFF, LOCK OUT AND BLEED SYSTEM TO ZERO PRESSURE BEFORE SERVICING.

DO NOT EXCEED MAXIMUM ALLOWABLE REGULAR INLET PRESSURE RATING OF 120 PSIG

F. PRECOMMISSIONING

1. Before operating or test running the Safetyflow equipment, with the power and compressed gas shut off, check internally for cleanliness using caution to avoid physical harm to personnel and equipment.

DANGER:
ALWAYS FOLLOW CONFINED SPACE ENTRY PROCEDURES WHEN ENTERING ENCLOSED SPACES. SERIOUS INJURY OR DEATH ARE POSSIBLE IF CONFINED SPACE SAFETY PROCEDURES ARE NOT FOLLOWED.

2. Inspect the installation to assure the Safetyflow equipment is installed properly and mounted securely.

3. Determine that the compressed gas supply is properly installed and that the supply pressure to the regulator on the Safetyflow equipment does not exceed 120 PSIG and has been cleared of all dirt and debris.

4. Determine that all electrical devices and wiring are properly installed and operative and that they meet code requirements for the electrical hazard location of the area.

5. Inspect the Safetyflow equipment and associated equipment to assure that all guards, covers and safety equipment are in place and working properly.

6. 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 the Safetyflow equipment installation before operation for safety.

OPERATION

A. STARTUP

1. Before actual operation, the operator must understand the method of starting and stopping the Safetyflow equipment and the status of the supporting utilities.
2. The general appearance of the Safetyflow equipment and surrounding area should be visually inspected to determine that the Safetyflow equipment could be operated safely and without damage.
3. Guards, covers and safety equipment must be in place whenever the Safetyflow equipment is in service.
4. If you recognize an unsafe condition unforeseen by Young Industries and beyond typical operating conditions, CEASE FURTHER OPERATION of the Safetyflow equipment 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 Safetyflow equipment to a recommended operating condition.
5. Without material on the grate and without gas supply to the transflow-lined bars, set the pressure regulator to 15 PSIG.
6. Verify that the flow control valves are set at two full turns open from the fully closed position as factory set before shipment.
7. Verify the vessel above the Safetyflow equipment has sufficient ventilation or dust control to allow the gas from the Safetyflow equipment to escape. This gas can pressurize a closed vessel.
8. Turn on the gas supply to the grate bars. Besides the noise the gas makes, you should observe a pressure drop on the gauge of the regulator. Verify that the fluidizing gas is not pressurizing the vessel.

9. If there are not any problems during the startup, continue with section B, operation with material.

10. If there are any problems or inconsistencies during the above process, CEASE FURTHER OPERATION of the Safetyflow equipment 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 Safetyflow equipment to its recommended operating condition.

B. OPERATION WITH MATERIAL FOR THE FIRST TIME

1. Complete Section A above and then fill the vessel with material.

CAUTION:

ANY NEWLY-INSTALLED SYSTEM WILL CONTAIN DIRT AND CONSTRUCTION DEBRIS. REMOVE ALL DIRT AND CONSTRUCTION DEBRIS PRIOR USING THE GRATING.

2. With the gate valve, or rotary valve below the Safetyflow equipment still closed/stopped and the compressed air/gas supply off:

- a. Turn on the Safetyflow gas supply and open or start the material discharge valve.
- b. Check the flow rate through the grate. The material should discharge through the grate at a consistent rate.

If the flow is poor or sluggish, first adjust the flow control valves to increase the gas flow rate. Adjust the flow control valve in one turn increments.

If the flow is too fast, proceed the same as above except adjust the flow control valve in half-turn increments to reduce the gas flow rate.

If the proper flow cannot be achieved with the flow control valve, the regular set pressure may be adjusted. **IF INCREASING THE SET PRESSURE, MAKE SURE THE REGULATOR PRESSURE GAUGE READING WITH THE GAS FLOW ON (BACK PRESSURE) DOES NOT EXCEED 10 PSIG. SET PRESSURE WITH THE GAS FLOW OFF SHOULD NOT EXCEED 30 PSIG.**

3. If there are any problems or inconsistencies during the above process, CEASE FURTHER OPERATION of the Safetyflow equipment 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 Safetyflow equipment to its recommended operating condition.

C. OPERATION WARNINGS

1. If there is a noticeable decrease in the conveying and discharging ability even after cleaning, please notify your maintenance personnel or call Young Industries for assistance or additional guidance in defining these conditions at 570-546-3165.

2. The Safetyflow equipment must be used only for the purpose for which it is designed. Refer to Young Industries quotation to determine the application for which this Safetyflow equipment was intended. Contact the Sales Manager at Young Industries, 16 Painter Street, Muncy, Pa 17756, if you need assistance in determining the proper application of this Young Industries Safetyflow equipment.

D. SHUTDOWN, SERVICE, CLEANING

WARNING:

DISCONNECT AND LOCK OUT POWER, SHUT OFF AND LOCK OUT COMPRESSED AIR OR GAS SUPPLY AND BLEED SYSTEM TO ZERO PRESSURE B

DUST HAZARD-USE RESPIRATOR, GLOVES AND EYE PROTECTION WHEN CLEANING.EFORE SERVICING.

DO NOT EXCEED MAXIMUM ALLOWABLE SET PRESSURE RATING OF 30 PSIG OR THE MAXIMUM ALLOWABLE BACK PRESSURE RATING OF 10 PSIG.

WHEN CLEANING, WET SURFACES CAN BE SLIPPERY

ALWAYS OBSERVE SAFE CONFINED SPACE ENTRY PROCEDURES

1. When shutting down Safetyflow equipment, shut off supporting utilities in accordance with plant operating procedures.

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

3. When washing the Safetyflow material, the compressed gas and electrical supplies must not be locked-out because the Transflow aeration must be turned on. All other possible precautions must be implemented to ensure operator safety.

At a minimum, the operator should wear safety goggles, gloves, and a respirator during cleaning. Also, any other safety gear or safety measures required by local plant regulations should be utilized.

WARNING:

IF NITROGEN IS USED DURING THE WASHING PROCESS, THE VESSEL MUST BE VENTED AWAY FROM ALL PERSONNEL. ENTRY TO THE VESSEL CANNOT BE ALLOWED.

During the cleaning of Safetyflow equipment, flow of clean and dry gas through the fluidizing membrane must be maintained at all times. Never exceed the 30 PSIG maximum set pressure rating or the maximum back pressure rating of 10 PSIG of the Safetyflow equipment and fluidizing membrane. Gas flow will help the cleaning of the Transflow membrane surfaces and will help prevent blinding of the porous Transflow material.

WARNING:

ALWAYS OBSERVE ALL CONFINED SPACE ENTRY SAFETY PROCEDURES. A SELF-CONTAINED BREATHING APPARATUS WITH ITS OWN AIR SUPPLY MUST ALWAYS BE USED BY PERSONNEL ENTERING ANY VESSEL EQUIPPED WITH A SAFETYFLOW FLUIDIZING GRATE EVEN IF THE FLUIDIZING GAS IS AIR. BREATHING OF AIRBORNE DUST CAN CAUSE SERIOUS HEALTH PROBLEMS AND CAN LEAD TO DEATH.

Breathing of nitrogen gas will quickly cause suffocation and death. Breathing of air which has passed through an air compressor may cause serious health

problems and must be avoided.

We recommend using water only or a water and detergent mixture followed by a clean water rinse. The water should be delivered by either spray halls or a moderate pressure hand wand to remove material from the surface of the cone. If a hand wand is used, the spray must be directed parallel to the surface rather than perpendicular to the surface.

CAUTION:

STOP THE CLEANING OPERATION IF YOU DO NOT SEE GAS BUBBLING UP THROUGH THE TRANSFLOW MEDIA. PRODUCTOR WATER MUST NOT BE FORCED INTO THE PORES OF THE YOUNG INDUSTRIES TRANSFLOW FLUIDIZING MEDIA.

The air or gas flow through the Transflow material will cause turbulence on the surface which will assist in the cleaning process. The surfaces are easily dried upon completion of the washing by allowing the air or gas flow to continue for a few minutes. If water continues to drain from above the cone during the drying it will take longer.

MAINTENANCE

A. LUBRICATION

1. **No lubrication** of any kind is required for the Safetyflow equipment. **DO NOT USE LUBRICATED AIR.**

B. GENERAL INSPECTION

1. Observe the air connections and check for leaks.
2. Check pipe connections for tightness and leaks.
3. Inspect all safety equipment, guards, covers and labels to assure the Safetyflow equipment and auxiliary equipment can be

operated safely. If an unsafe condition is observed, cease further operation of the Safetyflow equipment and immediately notify both your safety committee and the Engineering Manager at Young Industries, telephone (570) 546- 3165.

C. TROUBLESHOOTING

1. When properly installed, operated and maintained your Young Industries Safetyflow equipment will give years of service. Table One, "Troubleshooting", gives symptoms, causes and remedies for most problems that may be encountered.

TABLE 1 – TROUBLESHOOTING SAFETYFLOW EQUIPMENT

<u>SYMPTOM</u>	<u>CAUSE</u>	<u>REMEDY</u>
Insufficient material flow.	Poor gas flow.	Adjust the flow control valve or the pressure regulator to a higher setting. Do not exceed 30 PSIG maximum set pressure or 10 PSIG maximum back pressure. Clean Transflow material. Check diaphragm valves for proper operation.
Material buildup on the Transflow material.	Low gas supply pressure. Moisture in material.	Adjust the flow control valves or the pressure regulator to a higher setting. Do not exceed 30 PSIG maximum set pressure or 10 PSIG maximum back pressure. Clean Transflow material and remove moisture source.

SPARE PARTS

A nameplate is furnished with all Safetyflow equipment. The necessary information for ordering spare parts is found on this nameplate. When ordering, please provide (a) SHOP NUMBER and (b) SERIAL NUMBER. Contact the Parts Department Manager at Young Industries, telephone 570-546-3165, for assistance. Recommended spare parts list is provided with final drawings.

WARNING:

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


DUST HAZARD- USE RESPIRATOR, GLOVES AND EYE PROTECTION WHEN CLEANING.

WHEN CLEANING, WET SURFACES CAN BE SLIPPERY.

DO NOT EXCEED MAXIMUM ALLOWABLE SET PRESSURE RATING OR BACK PRESSURE RATING.

AVOID ASPHYXIATION WHEN USING NITROGEN.

ALWAYS FOLLOW CONFINED SPACE ENTRY PROCEDURE

	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.

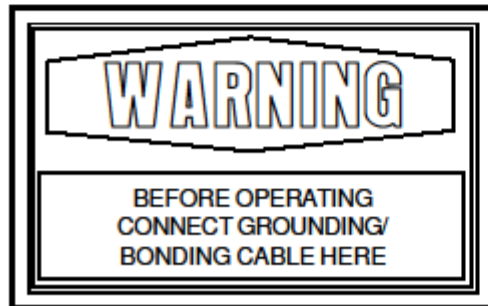
Before operating the equipment described by this manual or any other equipment in the same processing system, grounding and bonding must be completed in accordance with the National Electrical Code (NFPA 70) published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, Mass. 02269-9101, 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.

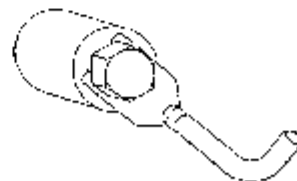
Sections of pipe, duct and gravity spout must be bonded to adjacent sections and must have a conductive path to electrical ground.

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



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