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# KLEAN-IN-PLACE II Series Rotary Airlock Feeders

## INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS



**Your Source for Bulk Handling/Air Process Equipment**

**Wm. W. Meyer & Sons, Inc.**

1700 Franklin Blvd • Libertyville, Illinois 60048-4407 • 800-963-4458 • 847-918-0111 • Fax: 847-918-8183

e-mail: [sales@wmwmeier.com](mailto:sales@wmwmeier.com) • website: <http://www.wmwmeier.com>

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### SECTION I SAFETY PRECAUTIONS



WARNING: TO THE OWNER, AND INSTALLATION, OPERATION AND MAINTENANCE PERSONNEL

The safety of the operator and those people that may come into contact with the Rotary Airlock Feeder Valve is of great importance to Wm. W. Meyer & Sons, Inc (“Meyer”). The decals, shields, guards and other protective features designed, furnished or recommended for this machine are there for your protection. BEFORE attempting to install, operate or perform maintenance on this Equipment READ carefully and UNDERSTAND all safety instructions contained in this **Installation, Operation, and Maintenance Manual** in addition to all applicable government safety/health laws, regulations and generally recognized industrial standards. The operation and maintenance of this Rotary Airlock Feeder should be restricted to only those personnel trained in its use. Consult Factory for the availability of manuals in other languages.

Operation, Installation and Maintenance personnel should READ carefully and UNDERSTAND the sections of this **Installation, Operation and Maintenance Manual** relevant to the work they are performing.

The various precautions and recommendations detailed within this manual are not necessarily all inclusive. These instructions are intended to provide general safety and operational guidance relating to typical installations with which Meyer is familiar.

Additional information may be provided that pertain to your specific installation upon request. Equipment owners are responsible for understanding the contents of this document and compliance with applicable government laws and regulations and appropriate industrial standards. Appropriate plant safety and Equipment training is the responsibility of the plant owner. This Manual is intended to assist the owner in the training process. The operation, installation and maintenance of this Equipment should be restricted to only those personnel properly trained:

- Installation and maintenance of equipment must be performed by qualified mechanics/millwrights/maintenance personnel.
- Installation of any electrical equipment must be completed by qualified electricians, in compliance with applicable codes and ordinances.

Because Wm. W. Meyer & Sons is not always aware of the application and does not always have access to the installation, your participation in the safe installation, operation and maintenance of your Rotary Airlock Feeder is critical. If you have any safety or operational questions pertaining to the design or applications of the Rotary Airlock Feeder we encourage you to contact the factory at (800) 963-4458.



**Always CONTROL / DE-ENERGIZE potentially hazardous energy sources when installing and maintaining the Rotary Airlock Feeder, as follows:**

1. The Rotary Airlock Feeder product family uses a common mechanical principle which creates an *internal* pinch point in order to function properly: a metal rotor with blades rotates around an axis within a metal housing.
  - a. The Rotary Airlock Feeder should **never be maintained or operated in a manner which could expose personnel to the internal moving parts**; either via the inlet/discharge port, an access door of any kind or via ancillary equipment affixed to the Rotary Airlock Feeder. **To do so will expose personnel to the potential risk of serious injury.**
  - b. Avoid serious injury by **always** keeping hands, fingers, feet or any parts of your body, loose clothing, and foreign objects away from inlet and discharge openings, drive components, auxiliary components, and associated equipment.
2. **Always de-energize all electrical equipment by Locking Out/Tagging Out power** before working on this Rotary Airlock Feeder, including motors, switches, solenoids and other ancillary electrically powered or controlled Equipment. If the electrical components are not properly de-energized, this will expose personnel to the potential risk of serious injury.
 

**WARNING!** The Rotary Airlock Feeder may stop and start automatically, and may also operate very quietly. Equipment in an idle mode does not mean it is off-line.
3. Inlet and Outlet flanges must **always** be permanently fastened to mating system components. Such components must be designed so that under normal operation personnel are neither allowed access to the inlet or outlet flange nor able reach the internal moving parts. If requested, Meyer can design, build and supply custom ductwork, transition pieces, piping or special guards to protect against the risk of injury.
4. Rotary Airlock Feeders, their drive components, accessory components, and any auxiliary or companion equipment, should be installed and operated only with protective guarding correctly and securely fastened in place.
5. Never open access covers/doors to inspect the Equipment when the overall plant system is under process pressure. Wait for process pressures to be relieved (i.e. ambient pressure is confirmed).
6. If working on the Rotary Airlock Feeder when the surface is hot, always wear appropriate protective clothing (e.g. gloves and other protective outer clothing), or if hot surfaces could

burn skin, wait for surfaces to cool before performing work which could put someone in a hazardous situation.

7. The weight of a Rotary Airlock Feeder or its components parts, such as the rotor, head plates, etc., can cause serious injury or damage if accidentally dropped or mishandled during installation. Use safe and acceptable methods when handling this equipment. Contact the factory for recommended safe handling and rigging techniques.
8. Refer also to appropriate supporting vendor safety information, MSDS sheets or any other applicable safety information in addition to these Instructions.

## SAFETY LABELING

Your unit is shipped with an attached discharge flange guard. **DO NOT** operate equipment with unguarded inlet or outlet. **DO NOT** remove flange guard. The safety labels shown are affixed to your Equipment. A Safety Supplement Data sheet is packed with your equipment at the time of shipment. Additional Safety Supplement label packs are available at no additional charge for the system installer's or plant owner's discretionary use/placement to ensure this Equipment is installed, operated and maintained in the safest possible manner.



**CAUTION:** If you have received a unit without affixed labels or if labels fall off or are damaged, contact Wm. W. Meyer & Sons immediately (800-963-4458) to obtain replacements at no charge prior to installation, use or maintenance.



Meyer ships the equipment with affixed safety labels which are located on the Rotary Airlock Feeder housing and other surfaces, the drive guards and drive bases (when included). However, as the orientation of the Equipment varies, the OWNER is responsible for requesting, at no charge, any supplementary labels to allow safety label visibility to be maximized. The following recommendations are offered to assist placement of safety labels:

- Place labels in locations that all personnel operating and maintaining the Rotary Airlock Feeder or any other people that may have access to the Equipment will readily see as they are either working on the Equipment and/or as they approach the Equipment. The safety objective is for anyone who could come in contact with a hazard sees the label alerting him or her to such a hazard and the means to avoid the hazard.
- In some cases, labels may be located near the Rotary Airlock Feeder (e.g. on nearby structural steel, adjacent equipment), if this is the point of access where it can be easily seen and the hazard is clearly associated with the label's location and how it relates to the Rotary Airlock Feeder.
- Consult Factory when the equipment is operated at temperatures over 350°F.

## INFORMATION FOR SAFETY AND SERVICE

Because of the wide variety of material handling systems for which a Rotary Airlock Feeder must be tailored, many considerations determine the proper size, design, materials of construction, operating speed, type of driver, etc. A description of every Meyer Rotary Airlock Feeder is kept on file with the factory. These specifications can be referenced by supplying the serial number to your local Meyer Representative. If you have any safety or Equipment-related questions we encourage you to contact the Meyer factory based on the cover contact information.

NOTE: The serial number is located on a metal identification label permanently affixed to every Rotary Airlock Feeder feeder before it leaves the factory. To aid us in providing you with a special service, application assistance and help with spare part requirements, please record the following:

Type/Size \_\_\_\_\_  
Serial Number \_\_\_\_\_  
Date of Installation \_\_\_\_\_



### A. Application

Meyer Rotary Airlock Feeders (also called Rotary Valves) are used in pneumatic conveying systems, dust control equipment, and as volumetric feed-controls to maintain an even flow of material through processing systems.

The basic use of the Rotary Valve is as an airlock transition point, sealing pressurized systems against loss of air or gas while maintaining a flow of material between components with different pressure. Rotary Valves are also widely used as volumetric feeders for metering materials at precise flow rates from bins, hoppers or silos into conveying or processing systems.

Rotary Valves have wide application in industry wherever dry free-flowing powders, granules, crystals, or pellets are used. Typical materials include: cement, sugar, minerals, grains, plastics, dust, fly ash, flour, gypsum, lime, coffee, cereals, pharmaceuticals, etc.

### B. Operational Specifications

CFR = Cubic Feet per Revolution. Displacements are based on 8 Vane open end rotor and 100% fill factor.

Size	KIP II
	CFR
6"	0.095
8"	0.23
10"	0.48
12"	0.9
14"	1.54



## SECTION III INSTALLATION

### A. RECEIVING AND INSPECTION

Upon receipt of equipment and material from Wm. W. Meyer & Sons, Inc., the following basic steps should be taken:

1. Use the packing list to determine that all the items shipped have been received. Your equipment was carefully crated for safe shipment when given to the carrier. If items are missing, contact Wm. W. Meyer & Sons, Inc., per contact information at the end of this section.
2. Check for damage. Damage in transit is the responsibility of the carrier. Title to your machine and all other items in the shipment were transferred to you as soon as the shipment left our dock, thus it is your responsibility to handle any claim. In the event damage has occurred:
  - a. Be sure to have the driver sign a copy of the freight bill with a notation about any damage and contact their office before the driver leaves your premises.
  - b. Contact the truck line to arrange for an independent inspector to come out to inspect the damage and to prepare the inspection report. *It is imperative that this inspection is done before you start to unpack or use any of the equipment.*
  - c. If there are any visible problems with your machine or any other items in the shipment, you or the driver must note in detail the damage on all copies of the freight bill before signing for the shipment. Then immediately call Wm. W. Meyer & Sons, Inc.

- d. If helpful, photographic records of the damage may be used to communicate the extent and type of damage as well as provide a clear record.
- e. If a shipment was sent to you by parcel post, have the postmaster complete a damage claim report.
- f. Concealed Damage: If Equipment or goods are discovered to be damaged in shipment at a later date, contact the carrier and Wm. W. Meyer & Sons, Inc., immediately.
- g. In all cases of damage in transit, contact Wm. W. Meyer & Sons, Inc., for assistance in determining whether or not this damage may in any way affect safety or proper operation. Please contact us so that we can assist you with replacement parts or with any questions about the claim process, using the following contact information:

Wm. W. Meyer & Sons, Inc.	800-963-4458 or 847-918-0111
1700 Franklin Blvd	sales@wmwmeyer.com
Libertyville, IL 60048	

## **B. STORING THE ROTARY VALVE**

1. Short Term Storage (Up to 4 weeks)
  - a. If moved to storage, the equipment should be located in a dry area, preferably inside. Outside storage will require adequate protection from the weather.
  - b. The inlet and outlet of the Rotary Valve should be securely covered to protect the interior while in storage. For prolonged storage an anti-rust compound should be applied to all interior surfaces. See motor and reducer data for storage rules.
  - c. After storage and prior to start-up, the Rotary Valve and its drive train should be inspected by qualified personnel.
2. Long Term Storage
  - a. Spray the interior of the rotary valve with anti-rust preservative oil.
  - b. Provide and install metal covers for inlet and outlet flanges with at least four cap crews in each flange. Keep covers on unit until ready for service.
  - c. Read and follow motor, speed reducer, and other equipment manufacturer's instructions for long term storage.
  - d. Plug all conduit box openings on motors and switches.
  - e. Store off the floor in a dry, adequately ventilated, indoor area not subject to extreme temperature changes. These requirements are minimum.
  - f. If stored for more than 6 months, turn the rotor 20 revolutions every month. Leave the rotor in a different angular position after turning.
3. Placing In Service After Long Term Storage
  - a. Drain and re-fill gear speed reducer per manufacturer's recommendation.
  - b. Follow motor manufacturer's instructions for removing motor from storage.

- c. Clean preservative oil from interior of rotary valve.

### C. MOUNTING

1. Prior to installing the rotary valve and with the power disconnected, check to assure no foreign objects have been left inside or have accidentally fallen into the rotary valve.
2. We recommend that inlet and outlet flanges remain covered until the rotary valve is ready to be attached to the mating equipment.
3. Rotary Valves must be installed with the top and bottom flanges parallel to the mating system flanges and adequately supported to prevent distortion.



**CAUTION** - Never operate the Rotary Valve with unguarded inlet/outlet. Contact Wm. W. Meyer & Sons, Inc. for flange guards at no additional charge.

### D. ELECTRICAL CONNECTION

Check for correct rotation by “bumping” motor. Unless specified otherwise, Meyer Rotary Valves operate in the clockwise direction as viewed from the drive end.



**DANGER** - Disconnect power before servicing Rotary Valve, motor or drive components to prevent serious personal injury.



## SECTION IV START-UP PROCEDURE

1. Prior to actual operation, the operator must be familiar with the method of starting and stopping the Rotary Valve.
2. The general appearance of the Rotary Valve and surrounding area should be visually inspected to determine that the valve can be operated safely and without causing any type of damage.
3. Verify that speed reducer lubricant is at the proper level.
4. “Bump” the unit with the motor starter to check for correct rotation. Change the phase sequence to the motor if rotation is wrong. Always assure the unit is properly grounded in accordance with OSHA, the NEC and local codes.
5. Start the unit again, noting any unusual noise or vibration. If noise is evident it is recommended that the equipment be shut down and the factory contacted immediately.
6. All chain and flange guards must be in place and closed securely whenever the Rotary Valve is in service.
7. After the initial operating period, we recommend that your plant engineering and maintenance personnel continue to monitor the operation of the valve on a regular schedule. Particular attention should be paid to the following items:

**a. Speed Reducer**

Monitor gearbox during startup for excessive heat, vibration or unusual noise which may indicate a problem with the speed reducer.

**b. Bearings**

The condition of Rotary Valve bearings should be checked routinely. Excessive heat, vibration, or unusual noise indicates a potential problem.

**c. Seals**

The type of seal depends on the model and options of your Meyer Rotary Valve. Maintenance is limited to replacement of the packing when the wear and leakage becomes excessive.

**d. Drive**

The drive should run smoothly with minimal vibration. If a problem exists consult Meyer for an application review.

**GENERAL INSPECTION**

1. Observe equipment for any unusual vibration, noise or operating temperatures in excess of the maximum specified for your installation.
2. Check valve flange and purge connections, and all nuts/cap screws for tightness.
3. Be alert to oil leaks on machinery and around the surrounding area.
4. Inspect inlet and outlet fittings, flanges and ducts for leaks. Check utility service piping and associated valves and gauges attached to the Rotary Valve.
5. Check all accessories for proper operation.



**SECTION V  
PROPER CARE AND HANDLING**

The Meyer Rotary Valve has been manufactured from the finest materials available and to exacting standards of workmanship. Very close and precise tolerances assure the best possible fit and seal between all components. As with any quality product, it should be given proper handling and care, as outlined below:

1. Never switch a rotor from within one housing into another without contacting the Meyer factory. Due to temperature and application considerations not all parts are interchangeable. Some housings and rotors are “mated”.
2. Use special care and handling to avoid damaging (i.e., nicking, scoring, gouging, galling, etc.) any internal surface, edge or contour of the housing, rotor or end plate. Any degradation of these machined surfaces may upset the internal clearances, cause the rotary valve to bind and cause extensive damage.

3. Rotary Valves of cast iron construction without any special purpose surface coating (such as electroless nickel) are subject to rust and corrosion when exposed to moisture. If water is used as a cleansing agent, be sure valve is completely dry and rotor is free to turn before returning to service.
4. Sealed and pre-lubricated bearings are normally supplied with the Rotary Valve. If the components are to be submerged in a cleaning tank or similar type of bath, the bearings must first be removed from the head plate.
5. Always clean and inspect one valve at a time and reassemble immediately to avoid mismatching parts.



## SECTION VI MAINTENANCE



**DANGER** – Before beginning any work on the Rotary Valve, make sure that the incoming power to the gearbox / motor is LOCKED OUT. Follow your company's LOCKOUT-TAGOUT procedures.

### A. LUBRICATION

#### 1. Speed Reducer

Lubrication instructions are published by the particular reducer manufacturer.

#### 2. Bearings

Rotary Valves manufactured with ball bearings utilize pre-lubricated, sealed, anti-friction ball bearings that do not require regreasing.

#### 3. Seals/Packing Gland

Standard KIP II Feeders are supplied with Teflon Chevron packing within the packing gland housing. Optional packing includes; Teflon U-Cup and Braided Teflon. Maintenance is limited to replacement of the packing rings in each head plate when wear and leakage becomes excessive. Simply loosen the packing gland retainer wing nuts and slide the packing gland nut away from the housing.

Gas Purge seals are available as an option on KIP II Feeders. When gas (most commonly air) purge is selected, a lantern ring is supplied. Compressed gas is introduced to the lantern ring through a drilled hole in the head plate. Optional filter- regulator- lubricator and/or solenoid valve is available to control the gas pressure and flow into the airlock. The gas should be turned on before the valve is started and turned off after the valve is stopped to insure that dust does not enter the lantern ring. Gas pressure should be 15 psi above the valve operating pressure.



# SAFETY SUPPLEMENT

## ATTENTION INSTALLERS/OPERATORS FOR YOUR PROTECTION:

1. Read and understand the Operating Manual accompanying this equipment before performing any work.
2. Additional safety label kits available from Meyer upon request at no charge. This is part of our effort to ensure this equipment is installed, operated and maintained in the safest possible manner. Affix these labels in locations to achieve maximum visibility and thereby alert any personnel that may ever be on-site that a potential for injury could occur.
3. Under no circumstances should this equipment be installed or operated in a manner that permits access to the interior of the valve.
4. Inlet and Outlet Flanges must always be permanently fastened to mating system components.
5. In the event that the inlet or outlet is ever exposed, proper guarding to prevent access to the valve interior must be installed immediately and prior to start-up. Every unit is shipped with an attached discharge flange guard. **DO NOT OPERATE** equipment with unguarded inlet or outlet. **DO NOT REMOVE FLANGE GUARD.**
6. Never operate the valve with the drive chain guard or drive coupling guard removed or loose.
7. ***Always follow LOCKOUT-TAGOUT procedure*** before performing any work.
8. Always keep loose clothing, hands, feet or any parts of your body, tools and/or any foreign objects away from all moving equipment and away from any potential pinch point.
9. Never remove any access doors (inspection port covers) above, below, or on the valve itself without first locking out power.
10. Consult your plant safety director, system designer, installation manager or the Meyer factory if you have any questions regarding the proper installation, operation and maintenance of this equipment.

Wm. W. Meyer & Sons, Inc.

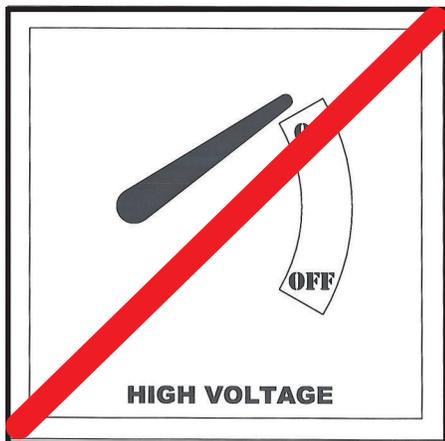
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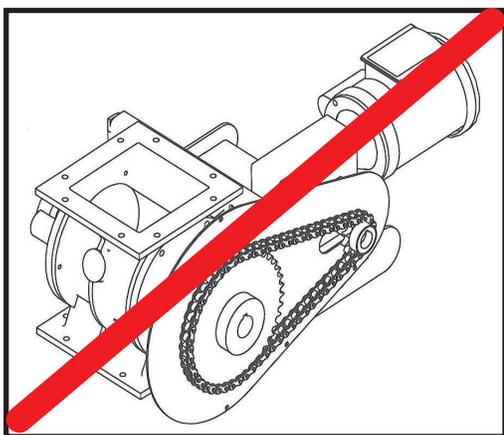
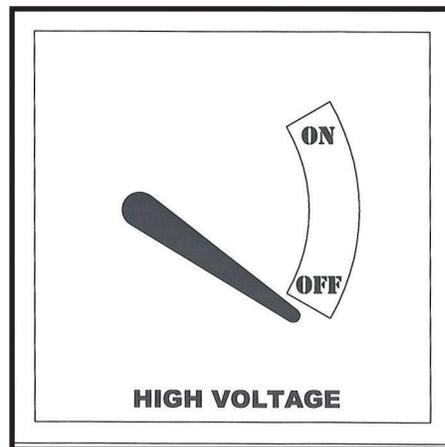
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# ROTARY AIRLOCK FEEDER/VALVE SAFETY PRECAUTIONS

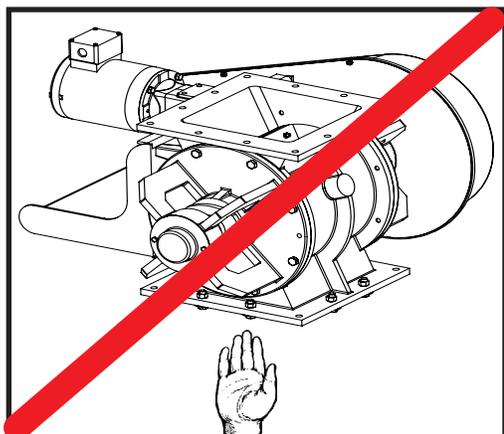
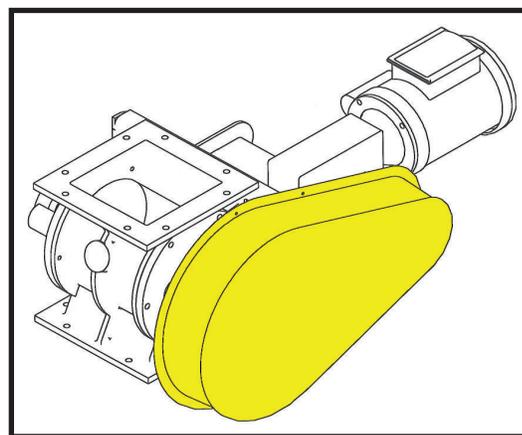
TYPICAL ROTARY AIRLOCK FEEDER, IMAGES FOR REFERENCE ONLY.



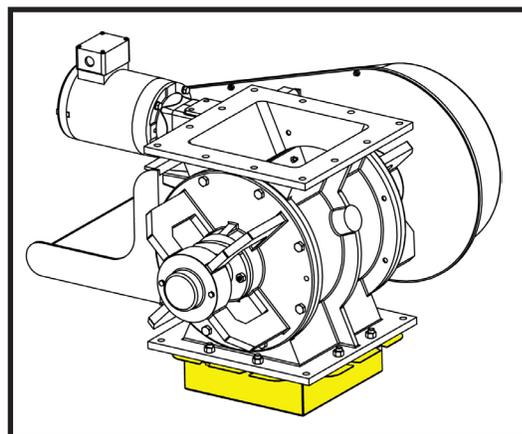
ALWAYS DISCONNECT POWER WHEN WORKING ON THE VALVE. FOLLOW **LOCKOUT-TAGOUT** PROCEDURE.



NEVER OPERATE VALVE WITH THE DRIVE CHAIN GUARD REMOVED



**DO NOT OPERATE VALVE WITH UNGUARDED INLET OR OUTLET. A FLANGE GUARD IS SHIPPED WITH THE VALVE. DO NOT REMOVE FLANGE GUARD.**



## SAFETY LABELS

Locate all of the safety labels on your equipment and know their meaning before operating you Rotary Airlock Feeder.



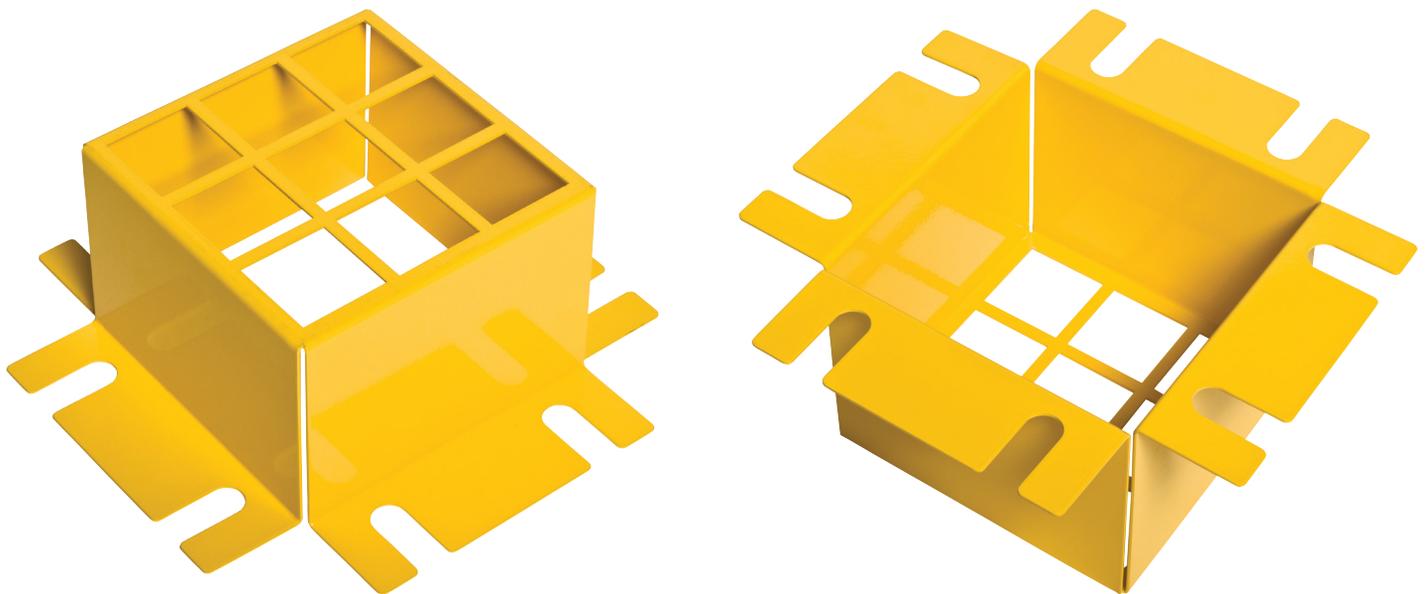
NOTE: Contact Wm. W. Meyer & Sons, Inc. at 800-963-4458 for free replacement safety label kit.

**DANGER**

**STOP**

**DANGER**

**NEVER OPERATE EQUIPMENT WITH  
UNGUARDED INLET OR OUTLET**



**FLANGE GUARD**

**WM. W. MEYER & SONS, INC., LIBERTYVILLE, IL**

**800-963-4458**

**WWW.WMMEYER.COM**