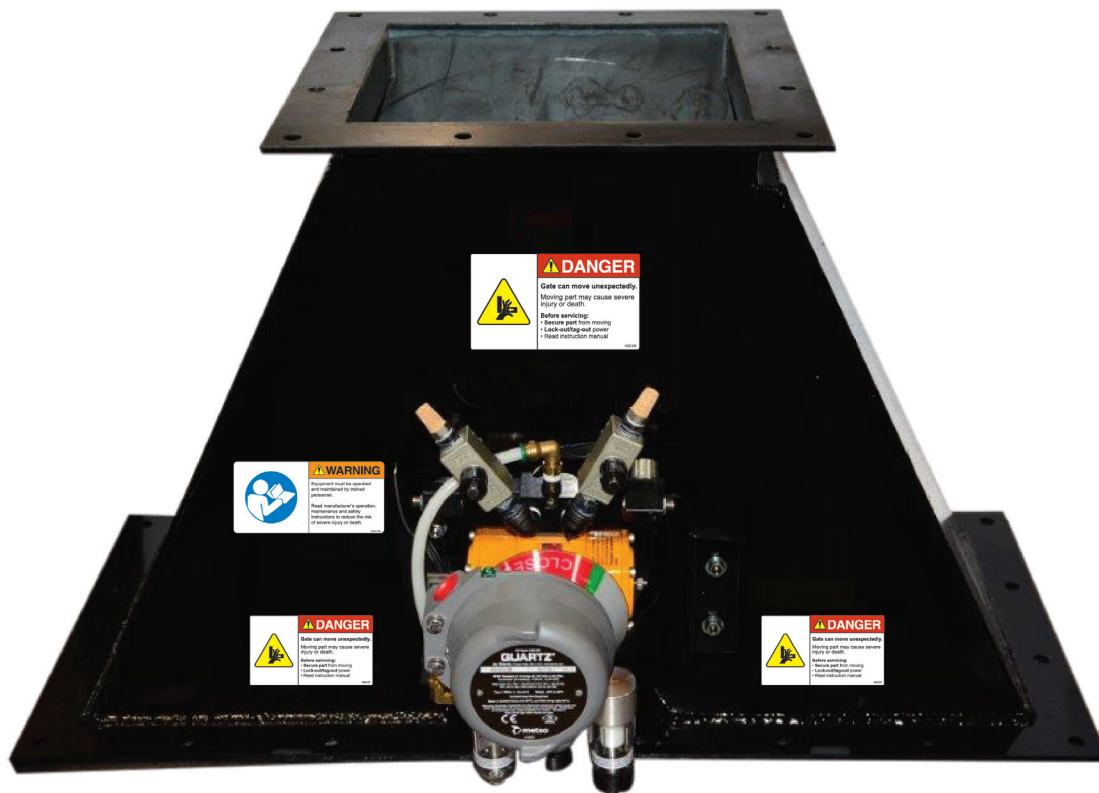


Gravity Diverter

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
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SECTION I SAFETY PRECAUTIONS

TO THE OWNER, AND INSTALLATION, OPERATION AND MAINTENANCE PERSONNEL

The safety of the operator and those people that may come into contact with the Gravity Diverter 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 Instructions. Failure to do so could result in serious injury or death.

Equipment owner responsibilities

Equipment owners are responsible for understanding the contents of this document and compliance with applicable government laws and regulations and appropriate industry standards. In addition, owners must create a control of hazardous energy procedure for the complete system that incorporates this Gravity Diverter and ensure that workers are properly trained to follow it. (See information regarding the vented isolation valve for air operated units on page 5.) Appropriate plant safety and equipment training is the responsibility of the plant owner. The installation, operation and maintenance of this equipment should be restricted based on the following:

- Installation and maintenance of equipment must be performed by qualified mechanics/millwrights/maintenance personnel that are familiar with the relevant contents of this manual.
- Installation of any electrical equipment must be completed by qualified electricians, in compliance with applicable codes and ordinances.

Because Meyer 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 Gravity Diverter Valve (Gravity Diverter, valve, gate) is critical. The owner/operator is responsible for any hazards related to the material that is being processed through the equipment. If you have any safety or operational questions pertaining to the design or application of the Gravity Diverter we encourage you to contact the factory at (800)-963-4458.

Consult the factory for the availability of manuals in other languages.

SIGNAL WORD DEFINITIONS



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates information that is important, which if not followed, may cause damage to the equipment.

IMPORTANT SAFETY INFORMATION



WARNING

To reduce the risk of serious injury or death:

- Be qualified.
 - Operation of this equipment must be limited to those that are properly trained in its use.
 - Servicing or maintaining this equipment must be performed by trained maintenance personnel only.
- Read all safety information.
 - Read and understand all the safety related information contained in this manual prior to attempting to perform any work on or with this equipment.
 - Obey all the safety labels on the equipment. Do not remove any safety labels. If the equipment is missing any labels (see “SAFETY LABELING” section), contact the factory immediately, before putting the equipment into service.
 - For add on equipment; motor, switches, etc. refer to the appropriate manufacturer’s safety information.
- Heavy – handle safely. The weight of this equipment and its component parts could cause serious injury if dropped or mishandled during installation, service, or maintenance. Always use safe handling and rigging methods.
- Guard and avoid dangerous internal parts. The internals of this equipment contains moving part(s) that will crush and cut any body parts they come in contact with, resulting in serious injury or death.
 - Equipment can be actuated remotely, without warning, if energized.
 - Inlet and outlet flanges must always be permanently fastened to mating system components or permanently guarded. Components and guards must be designed such that no access to the interior of the equipment is allowed during operation. See “HAZARD IDENTIFICATION” for process integration and installation details.
 - Never open access covers/door or reach inside the equipment for any reason if the slide plate can move. Lockout/Tagout all sources of energy and secure the diverter plate from moving.
- Lockout/Tagout all sources of energy and relieve pressure in accordance with the owner’s/ employer’s procedure for the control of hazardous energy before installing, servicing, or maintaining this equipment. This includes but is not limited to: motors, switches, actuators, and solenoids. Also consider:

- o Equipment may start remotely, without warning, if energized.
- o Even if all sources of energy are locked out, the air operated units may have residual air pressure in the actuator that must be relieved with further pressurizing blocked with the lockable in-line vented isolation valve.
- o Secure part from moving.
- o If electrical devices are part of the equipment, hazardous voltage exists and presents the risk of electrical shock.
- o Equipment may be under pressure – pressurized gas and material could cause serious injury or death.
- o Equipment surfaces may be hot; allow them to cool before performing any work.
- Always ensure that any electrical devices present are properly grounded in accordance with OSHA, the National Electric Code (NEC), and local codes. Failure to do so could expose personnel to hazardous voltage which could lead to serious injury or death.

HAZARD IDENTIFICATION

Principle of operation

Gravity Diverters are components which are used to switch the flow of material to different legs of a given system. By their nature, Gravity Diverters are of no use by themselves; they derive their utility only when added as a component to a material handling system as part of a larger process.

Amputation hazard

Gravity Diverters have a plate that is moved across an opening, usually by powerful actuators. If left unguarded, a moving plate presents a serious personal injury hazard, including but not limited to amputation. Any part of the human body in the way of a plate and the housing will be injured and potentially cut off.

Guarding discharge

Due to the vast number of potential applications in which Gravity Diverters can be used, it is neither feasible nor practical for Meyer to supply discharge guards which will be effective in every possible application or process. It is imperative that the Gravity Diverter should not be operated without the discharge openings fully guarded such that no contact can be made with the moving part(s) inside of the equipment. It is the owner/operator's responsibility to ensure that the Gravity Diverter is safely integrated for the particular process and application for which it was purchased and that the discharge openings remain guarded at all times during operation.

Guarding inlet

In most applications, the Gravity Diverter will be integrated into a process, system or application where the inlet opening of the Gate will be guarded by virtue of being attached to another piece of equipment (bin, hopper, etc.). However, there may be instances or situations where the inlet of the Gravity Diverter becomes accessible (i.e. through a clean out door or access hatch on the attached equipment) to a user. As noted above, due to the vast number of potential applications in which a Gravity Diverter may be used, it is neither feasible nor practical for Meyer to design or supply an inlet flange guard that will work for a customer's specific application or process. It is the owner/operator's responsibility to ensure that the Gravity Diverter is safely integrated for the particular process and application for which it was purchased and that the inlet opening remains guarded at all times during operation.

Isolating Energy

Even if all sources of energy are locked out, the air operated units may have residual air pressure in the actuator. This air pressure must be relieved and further pressurizing of the actuator must be blocked in order for the Gravity Diverter to be considered at “Zero Energy State” and comply with Lockout/Tagout. The lockable in-line vented isolation valve included with the controls, must be closed and locked for this equipment to be deemed safe to service or maintain. To do this: close the valve, slide the locking tab into position, and then secure the tab with the proper Lockout/Tagout device.

Training

The owner also bears the responsibility to ensure that personnel who may be working around a Gravity Diverter are properly trained. Personnel must be aware that: (1) anything coming into contact with the moving plate will be injured and possibly cut off/amputated; (2) Gravity Diverter plates can move without warning; (3) before working on, cleaning, repairing or maintaining a Gravity Diverter, Lockout/Tagout procedures must be strictly followed; and (4) gates must not be operated without guarding in place. Before working around a Gravity Diverter, personnel must read the Operator’s Manual.

SAFETY LABELING

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 Supplements and labels are available at no additional charge for the system installer’s or plant owner’s discretionary use/placement to help ensure this Equipment is installed, operated and maintained in the safest possible manner.

The following recommendations are offered to assist in the placement of additional safety labels, if needed. The objective is for anyone who approaches the Gravity Diverter sees the labels alerting him or her how to avoid the hazard.

- Place labels in locations that all personnel operating and maintaining the Gravity Diverter or any other people that may have access to the equipment will readily see as they are preparing to work on the equipment and/or as they approach it.
- Due to the location of the Gravity Diverter, labels may have to be located near it, for example; on nearby structural steel or adjacent equipment. This location needs to be the point of access where the label can be easily seen and the hazard is clearly associated with the Gravity Diverter.



If you have received a unit without labels, the labels fall off, or are damaged, contact Meyer immediately (800-963-4458) to obtain replacements at no charge, prior to installation, use or maintenance.

INFORMATION FOR SAFETY AND SERVICE

A description of every Meyer Gravity Diverter 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 Gravity Diverter 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 _____



SECTION II APPLICATION

A Gravity Diverter is used to switch the flow of material to different legs of a given system. Meyer Gravity Diverters are available with manual operators and rotary actuators.

The air actuated models are available with position switches to indicate the position of the diverter plate, upon request.

Temperature

Gravity Diverters can operate up to 250°F (Standard) and up to 450°F with high temperature parts.

Materials of Construction

Gravity Diverters are available in Mild Steel and Stainless Steel Construction.

Accessories

Air Operated Gravity Diverters require regulated, clean, dry, lubricated air for operation. An air set including a filter, regulator, and lubricator is normally provided for this purpose. A solenoid valve is used to open and close the Gravity Diverter by controlling the air to the actuator. The solenoid valve may be of various NEMA ratings and air return, spring return, or dual coil (fail last state) depending on the particular requirements of the application.



SECTION III RECEIVING, INSPECTION & STORAGE

RECEIVING AND INSPECTION

Upon receipt of equipment and material from Wm. W. Meyer & Sons, Inc., the following basic steps should be taken. The equipment is heavy and proper handling procedures should be used (See the "Heavy – handle safely" information in the "IMPORTANT SAFETY INFORMATION" section):

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 the contact information at the end of this section.

2. Check for damage. Damage in transit is the responsibility of the carrier. Title to your equipment 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 carrier 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 unit 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. Photographic records of the damage are helpful to communicate the extent and type of damage as well as provide a clear record.
 - e. In addition to inspecting damaged equipment you should also check the condition of the safety labels to they have not been damaged or come off. If they have, contact the factory for replacements prior to installation.
 - 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.
1700 Franklin Blvd
Libertyville, IL 60048

800-963-4458 or 847-918-0111
sales@wmwmeyer.com

STORAGE

1. If moved to storage, the equipment should be located in a dry area, preferably inside. Outside storage will require adequate protection from the weather.
2. The inlet and outlet of this equipment 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 actuator and electrical components data for storage recommendations for these items.
3. After prolonged storage and prior to start-up, the Gravity Diverter and its actuator should be inspected by qualified personnel. Contact Wm. W. Meyer & Sons, Inc. if any assistance is required.
4. Long Term Storage procedures are available by contacting the factory.



SECTION IV INSTALLATION

See the “HAZARD IDENTIFICATION” section before proceeding.

⚠ DANGER The internals of this equipment has parts that can crush and cut. Before installing the equipment follow the Lockout/Tagout information in the “IMPORTANT SAFETY INFORMATION” section. Failure to do so will lead to serious injury or death if a body part contacts a moving internal part. In addition the equipment and parts are heavy, see “Heavy – handle safely” information in the “IMPORTANT SAFETY INFORMATION” section.

1. We recommend that inlet and outlet flanges remain covered until the gate is ready to be attached to the mating equipment.
2. This equipment must be installed with the inlet and outlet flanges parallel to the mating system flanges. This equipment is not designed to serve as structural support for companion system components. It must be adequately supported to prevent distortion when connected to other components.
3. Be sure the Gravity Diverter is mounted with the single inlet above the dual outlet legs.
4. The mating flange above the gate must be the same size or smaller as the inlet flange. If larger, material can quickly wear it out.
5. The air filter (air actuated models) must be mounted vertically so that it can be drained of moisture when necessary. It also must be installed ahead of the regulator and lubricator.
6. The air supplied to the regulator (air actuated models) should be clean dry plant air at a minimum of 80 psig and a maximum of 120 psig. Maximum pressure on components is 120 psig.
7. Ensure that the inlet and outlet flanges are permanently fastened to mating components or are permanently guarded.
8. Verify that the openings are properly guarded and that the labels will be visible.

If electrical connections are made as part of the installation, they must be done by a qualified electrician, in accordance with applicable codes and ordinances.

9. If a solenoid valve is part of the installation it will need to be wired to the electrical control source: SPST switch, push button, PLC, etc. Limit switches, if supplied, will need to be wired to some sort of electrical indicator such as a light or PLC. Always refer to the manufacturer’s instructions or wiring schematics.



SECTION V START-UP PROCEDURE

⚠ WARNING Prior to use, the operator must read and understand all the safety related information including all warnings and guarding instructions. Verify that all guarding is in place and area is clear of all non-essential personnel. Failure to do so could lead to serious injury or death.

1. The general appearance of the Gravity Diverter and surrounding area should be visually inspected to determine if it can be operated safely and without causing any type of damage.
2. If the valve is air actuated open the air supply valve and set the regulator to 80 psig.
3. Actuate the unit, noting any unusual noise or vibration. Use the manual override on the solenoid to test the movement of the diverter plate. If noise is evident, shut down the unit and after following Lockout/Tagout procedures, inspect it for any foreign materials that may be interfering with the proper operation. If no obstruction is found, contact Meyer before further operation.
4. On air actuated models adjust the flow controls to control the speed of the gate at this time.

Gravity Diverter Speed Adjustment Procedure

The speed at which the Gravity Diverter opens and closes is controlled by the flow control valve mounted on the solenoid.

- Opening the valve, knob is turned counter-clockwise, allows more air to flow out of the actuator and increases the speed at which the diverter plate moves.
 - Turning the knob clockwise restricts the air flow and slows the diverter plate down.
 - Change the position of the diverter plate several times using the manual override on the solenoid valve, to determine the speed at which the plate moves.
 - Adjust the flow control until the plate shifts position as rapidly as possible. Once the diverter plate reaches just past halfway, it will “fall” towards the other side. When it “lands” it will make a banging sound. This is normal. The loudness of the “bang” will be determined by how fast the plate moves toward the halfway point and how large the plate is. Adjusting the flow control can change how fast the plate moves and will mitigate some of the noise but not eliminate it entirely. It will take some fine tuning of the valve to get the desired result.
5. When shutting down the Gravity Diverter, shut off air and electricity according to plant operating procedures.



SECTION VI OPERATING PROCEDURE

⚠ WARNING Prior to use, the operator must read and understand all the safety related information including all warnings and guarding instructions. Verify that all guarding is in place and area is clear of all non-essential personnel. Failure to do so could lead to serious injury or death.

1. Stop the rotary valve or other device above the Gravity Diverter so that the flow through the diverter is interrupted.
2. The Gravity Diverter can now be actuated by operating the switch or controls that shift the plate.
3. Restart the rotary valve or other device above the gate so that the flow resumes through the diverter and into the alternate leg.

Check the Gravity Diverter during each shift for the next couple of days after start up. Observe the equipment for any unusual vibration, heat, or noise. Check the fasteners for tightness and the flanges for leaks. Any utility service piping and associated valves and gauges should also be checked. Make sure all accessories are operating properly.



SECTION VII SERVICE AND MAINTENANCE

⚠ DANGER Before servicing and maintenance follow the Lockout/Tagout information in the "IMPORTANT SAFETY INFORMATION" section and follow the owner's/employer's procedure for the control of hazardous energy. Failure to do so will lead to serious injury or death.

Lubrication

The solenoid and air actuator require lubrication which is supplied by a lubricator. If an air set is supplied with the Gravity Diverter this will be included. An adjustment dial on the lubricator controls the flow of lubricant to the downstream components and must be kept filled with adequate lubricant.

The flange bearings should be greased every 6-12 months, depending on use, with a good quality NLGI #2 grease.

Condensation

The air supplied to power the air actuated Gravity Diverters needs to be clean dry air. Compressed air systems need to have a dryer to control the moisture content in the air supply. An air filter is part of the air set to protect the solenoid and actuator from water contamination. The discharge of water from this device should be monitored to ensure proper operation. The discharge of water can be controlled with the adjustment knob at the bottom of the air filter bowl. Water can be manually discharged from this bowl if necessary.



SAFETY SUPPLEMENT

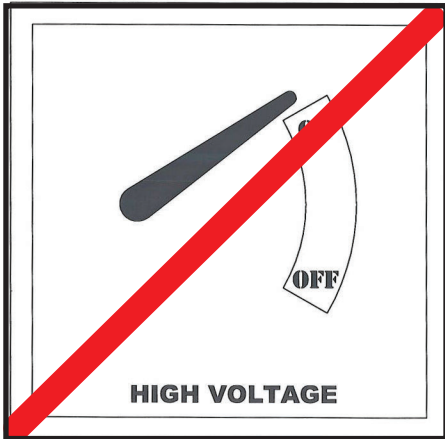
ATTENTION INSTALLERS/OPERATORS FOR YOUR PROTECTION:

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 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.
6. ***Always follow LOCKOUT-TAGOUT procedure*** before performing any work.
7. 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.
8. Never remove any access doors (inspection port covers) above, below, or on the valve itself without first locking out power.
9. 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.

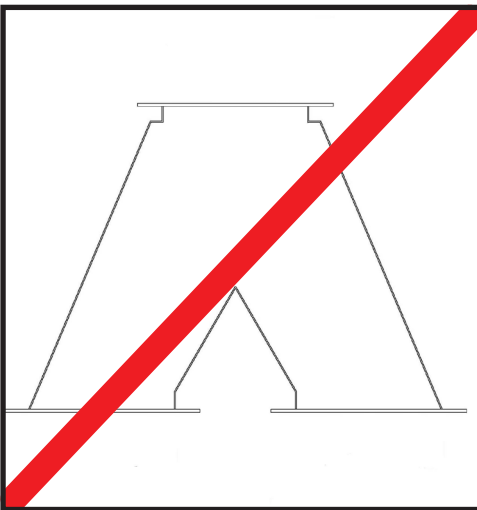
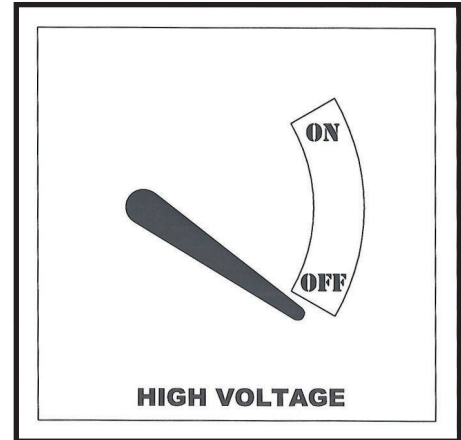
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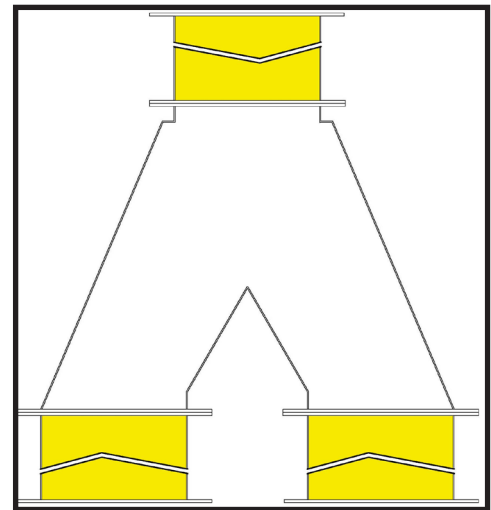
GRAVITY DIVERTER VALVE SAFETY PRECAUTIONS



ALWAYS SECURE PART FROM MOVING WHEN WORKING ON THE VALVE. FOLLOW **LOCKOUT-TAGOUT** PROCEDURE.



NEVER OPERATE VALVE WITH EXPOSED INLET / OUTLET FLANGES



SAFETY LABELS

Locate all of the safety labels on your equipment and know their meaning before operating your Gravity Diverter Valve.



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