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# Kwik-Klean® Series

## INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS



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

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

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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 equipment 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 set of **Instructions** in addition to all applicable government safety/health laws and regulations and generally recognized industry standards. The operation and maintenance of this equipment should be restricted to only those personnel trained in its use. Consult Factory for the availability of manuals in other languages.

Installation, Operation and Maintenance personnel should READ carefully and UNDERSTAND the sections of this **Instruction 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 uses with which Meyer is familiar. Additional information may be provided that pertains to your specific piece of equipment upon request.

#### **SAFETY FIRST!**

**DANGER** Indicates the presence of a hazardous situation that, if not avoided, WILL result in death or serious injury.

**WARNING** Indicates the presence of a hazardous situation that, if not avoided, COULD result in death or serious injury.

**CAUTION** Indicates the presence of a hazardous situation that, if not avoided, COULD result in minor or moderate injury.

**NOTICE** Indicates information that is important, but is not related to a particular hazard.

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 industry 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.

 **DANGER** 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.

 **DANGER** 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.

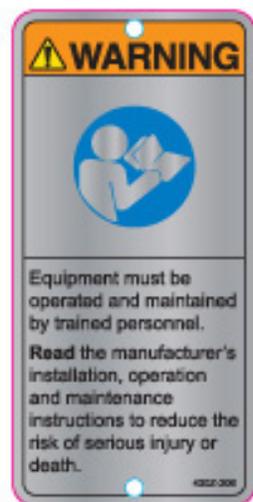
3. Inlet and Outlet flanges must **always** be permanently fastened to mating system components. Such components must be designed so that under normal operation personnel are neither allowed access to the inlet or outlet flange nor able reach the internal moving parts. If requested, Meyer can design, 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.

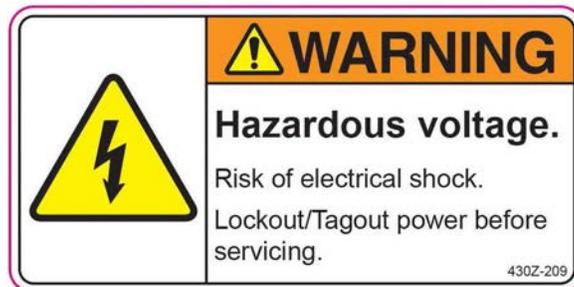
5. Never open access covers/doors to inspect the Equipment when the overall plant system is under process pressure. Wait for process pressures to be relieved (i.e. ambient pressure is confirmed).
6. If working on the Rotary Airlock Feeder when the surface is hot, always wear appropriate protective clothing (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.

**NOTICE** 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 \_\_\_\_\_



## SECTION II APPLICATION

The Kwik-Klean® Series functions and operates like any other Meyer Rotary Airlock Feeder, but it is a special purpose valve often furnished in stainless steel construction and designed for fast disassembly without the use of tools. As a result, the feeder can be thoroughly cleaned, sanitized and inspected in a minimal amount of time and with a minimal amount of effort. This feature enables maintenance personnel to quickly remove one end plate from the valve body, which permits easy removal of the rotor and fully exposes the valve interior. The close operating tolerances between the rotor and housing are quickly re-established during each reassembly procedure through the use of a spline type coupling.

All Kwik-Klean® Series Rotary Airlock Feeders require special care and handling. Please refer to the appropriate section(s) on maintenance procedures and precautions.



## 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. Check for damage.
2. 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.
3. If a shipment was sent to you by parcel post, have the postmaster complete a damage claim report.
4. 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.
5. 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 valve operation.

### B. STORING THE ROTARY AIRLOCK FEEDER

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 the Rotary Airlock Feeder 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.
3. After prolonged storage and prior to start-up, the Rotary Airlock Feeder and its drive train should be inspected by qualified personnel. Contact Wm. W. Meyer & Sons, Inc. if any assistance is required.

### C. MOUNTING

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



**DANGER**

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

### D. ELECTRICAL CONNECTION

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



**WARNING**

Disconnect power before servicing motor or drive components.



## SECTION IV START-UP/OPERATION

1. Prior to actual operation, the operator must familiarize himself with the method of starting and stopping the Rotary Airlock Feeder, and the status of supporting utilities.
2. The general appearance of the Rotary Airlock Feeder and surrounding area should be visually inspected to determine that the valve can be operated safely and without causing any type of damage.
3. Assure the gear reducer has been filled to the correct level with the appropriate lubricant as recommended by the manufacturer. Lubrication instructions are included with the Rotary Airlock Feeder.
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 reinspected for foreign materials. If no obstruction appears you should contact Meyer and Sons before any further operation. Assure motor amperage does not exceed name-plated value.

6. Guards and valve inspection doors should be in place and closed tightly whenever the rotor is turning.
7. When shutting down the Rotary Airlock Feeder, shut off supporting utilities in accordance with plant operating procedures.
8. When cleaning or servicing is required of the valve, proper lock out of electrical, compressed gas and any auxiliary equipment should be completed before the work is started.
9. 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. Gear Reducer**

Check for proper lubrication, excessive heat, vibration or unusual noise which may indicate a problem with the speed reducer. Kwik-Klean® models utilize parallel shaft helical gear type. Lubricant instructions published by the particular reducer manufacturer are included with the Rotary Airlock Feeder.

**b. Bearings**

The condition of Rotary Airlock Feeder bearings should be checked routinely. Excessive heat, vibration, or unusual noise indicates a potential problem. Kwik-Klean Rotary Airlock Feeders are manufactured with pre-lubricated, sealed, anti-friction ball bearings that do not require regreasing.

**c. Seals**

Dependent upon the style and level designation of your Kwik-Klean® Series Rotary Airlock Feeder, your unit will be supplied with either graphite impregnated aramid fiber packing or Teflon U-Cup shaft seals as standard within the packing gland housing. Maintenance is limited to replacement of the packing rings in each head plate when wear and leakage becomes excessive.

**E. 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/bolts 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 Airlock Feeder.

The Kwik-Klean® Series Meyer Rotary Airlock Feeder has been manufactured from the finest materials available 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, they should be given proper handling and care, as outlined below.



## SECTION V PROPER CARE AND HANDLING

1. Do not use any type of tool to disassemble this valve. If the components do not easily come apart or go back together, do not attempt to force them into place.
2. Do not attempt to switch the rotor from one housing into that of another. Housings and rotors are “mated”. They are not interchangeable.
3. Use special care and handling to avoid spoiling (i.e., nicking, scoring, gouging, gauling, etc.) any internal surface, edge or contour of the housing, rotor or endplate. Any degradation of these machined surfaces may upset the internal clearances, cause the valve to bind and cause extensive damage.
4. Never tighten the headplate fasteners and gland nuts beyond a reasonable “hand tight fit”. Over-tightening does not increase the valve’s ability to seal and does not aid its performance in any way.
5. Kwik-Klean® Valves of cast iron construction without any special purpose surface coating (such as electro-less 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.
6. Sealed and pre-lubricated bearings are normally supplied with the Kwik-Klean® Series Valve. If the Rotary Airlock Feeder components are to be submerged in a cleaning tank or similar type of bath, the bearings must first be removed from the headplate. Care should also be taken to remove the bearing shims at the same time. **DO NOT DISCARD OR DAMAGE SHIMS.**
7. Always clean and inspect one valve at a time and reassemble immediately to avoid mismatching parts.



## SECTION VI DISASSEMBLY PROCEDURE

(See exploded view of feeder on page 15 to identify item numbers shown in parenthesis)



**DANGER**

Before beginning any work on the Rotary Airlock Feeder, **LOCKOUT/TAG OUT** the incoming power to the gearhead motor..

## DISASSEMBLY

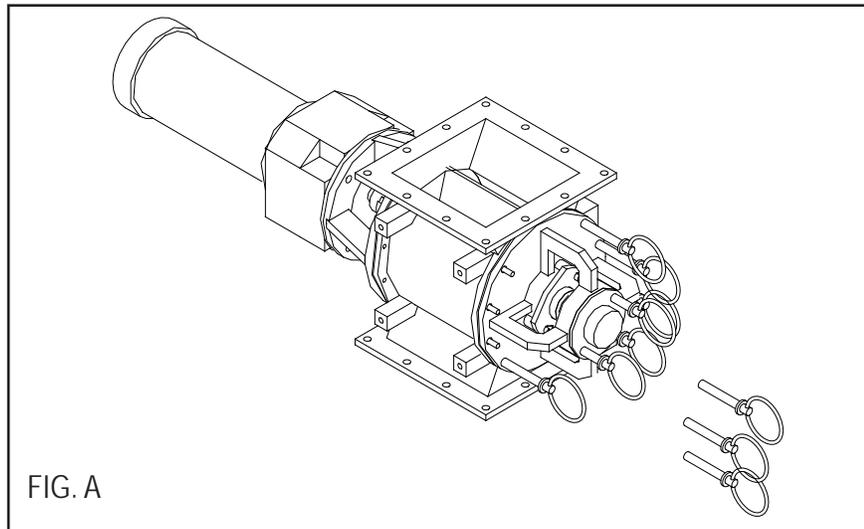
To remove the rotor (2) from the valve housing (1), follow these steps:

(Refer to Fig. A)

1. Unscrew (counter-clockwise) the headplate release handles (4) and remove.
2. Loosen (but do not remove) the gland nut wing nuts (8) on each headplate (3) and (13).

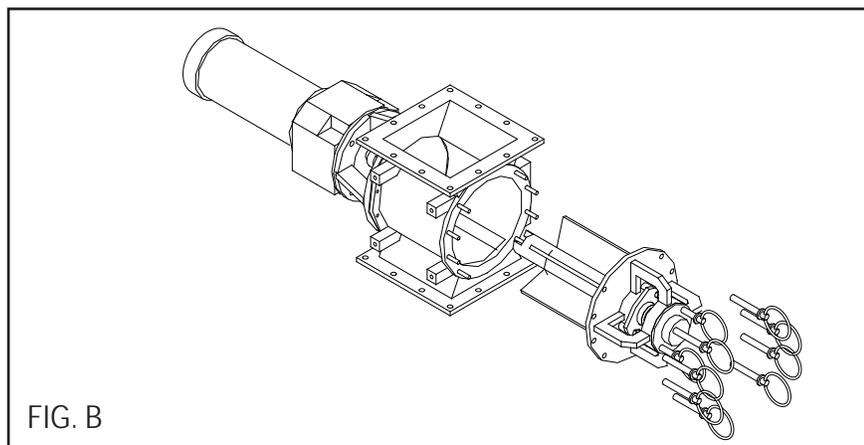
### Option A - Removal of rotor and headplate as a single unit

**⚠ CAUTION** On large valves option A may not be possible due to the combined weight of rotor and headplate exceeding available handling means. Be sure to consult the component weight list for your valve and verify that the parts can be handled by a safe means.



(Refer to Fig. B)

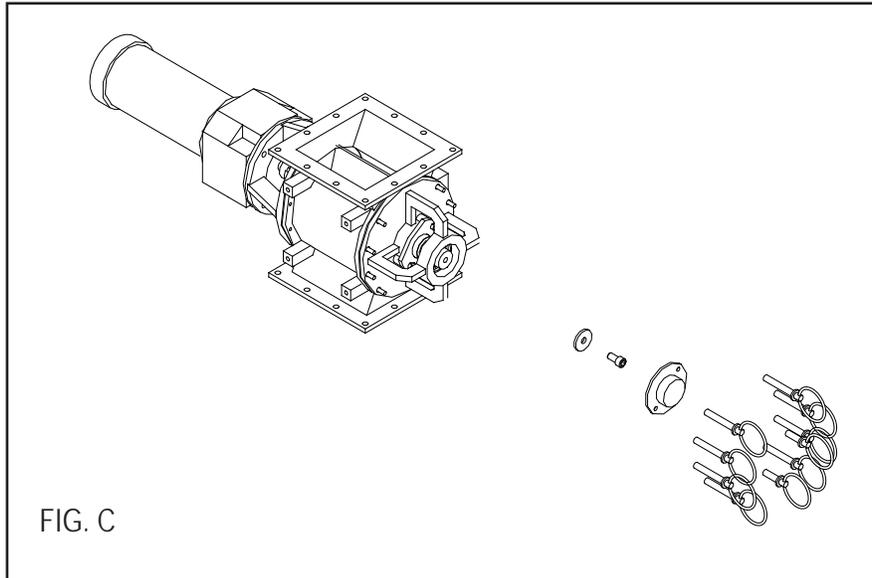
- 3A. Using the bearing carrier spokes as handles, slowly pull the blind end headplate (3) straight away from the housing (1). Avoid pulling the headplate off in an uneven "side to side" manner. Mishandling can cause damage to the drive end seal. The rotor will slide out as a unit with the headplate. Slowly and evenly pull the rotor straight out from the housing and off the gearhead drive shaft. Be careful to avoid striking the housing bore with any edge of the rotor or dropping the rotor. Be prepared to support the weight of rotor and headplate as it is removed from the housing. The rotor and housing can now be inspected and cleaned.



**Option B - Removal of rotor and headplate separately**

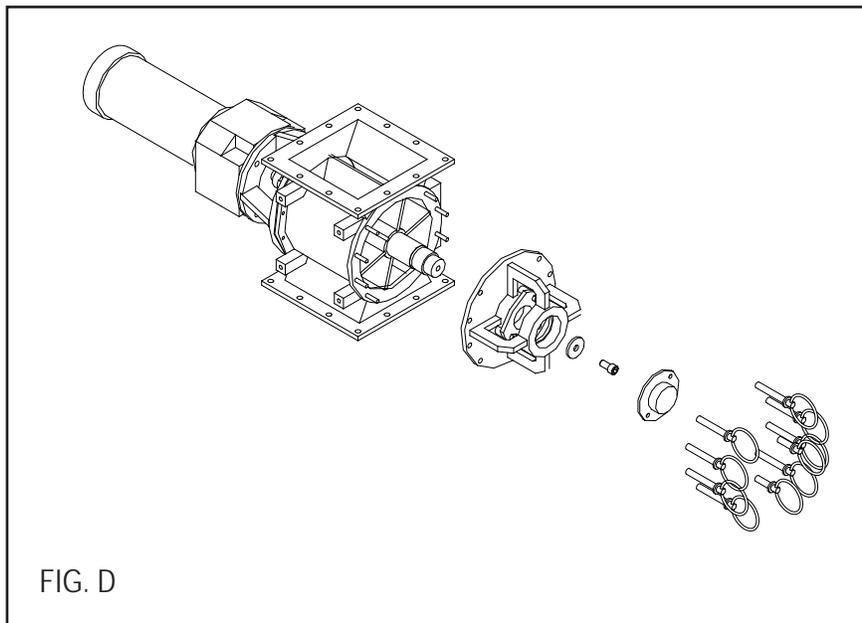
**(Refer to Fig. C)**

- 3B. Unscrew (counter-clockwise) the bearing cap release handles (7) and remove.
4. Remove the bearing cap (6) and gasket (16). Be careful not to damage the gasket.
5. Utilizing the hex key on the end of a bearing cap release handle (7), unscrew (counter-clockwise) the socket head capscrew (15) and remove along with the bearing retainer (11) and lockwasher.



**(Refer to Fig. D)**

6. Using the bearing carrier spokes as handles, slowly pull the blind end headplate (3) straight away from the housing (1). Avoid pulling the headplate off in an uneven "side to side" manner. Mishandling can cause damage to the blind end seal. The bearing (5) will remain in the headplate and slide off the shaft. The relationship between bearing and shaft is a clearance fit. The headplate should slide off the rotor shaft with very little resistance and with the bearing and seal still intact.
7. Remove the bearing shims (17) from the rotor shaft. **DO NOT DISCARD OR DAMAGE SHIMS.**



(Refer to Fig. E)

8. Remove the rotor (2) by gripping the non-drive end of the shaft. Slowly and evenly pull the rotor straight out from the housing and off the gearhead drive shaft. Be careful to avoid striking the housing bore with any edge of the rotor or dropping the rotor. Be prepared to support the weight of rotor as it is removed from the housing.

The rotor as well as interior of the valve is now open and exposed for cleaning and inspection.

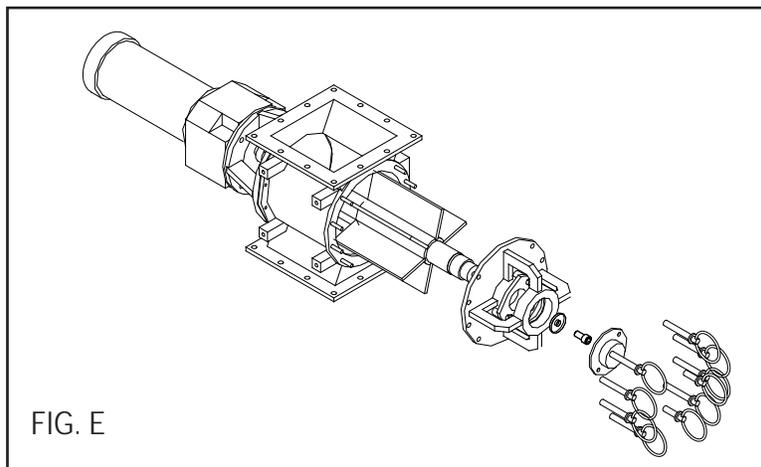
To remove the seals (10) from each headplate, follow these steps:

9. Unscrew (counter-clockwise) and remove the two gland nut wing nuts (8) on each headplate (3) and (13). Slide the gland nut (9) off the threaded studs and remove.

10. The Kwik-Klean will usually have teflon u-cup packing ring seals (10) seated in the packing gland housing. This packing is clearance fit and is removed by reaching into the gland housing with a probe and working the packing rings straight out one at a time. Cast iron Kwik-Klean feeders are typically supplied with aramid fiber packing rings.

To remove the bearing (5) from the blind end headplate (3), follow these step:

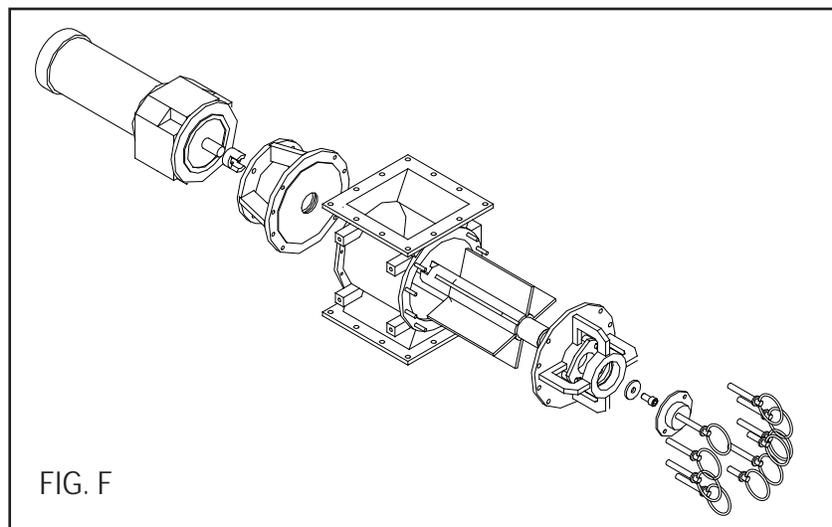
11. The bearing is tap fit in its housing. Press the bearing out of the headplate in the direction of the bearing cap (6).



(Refer to Fig. F)

12. The valve is now ready for inspection and cleaning. The gear reducer, coupling, and drive headplate may be removed as shown in Fig F.

**Note:** On sanitary units the drive headplate is integral with the housing and cannot be removed.





## SECTION VII REASSEMBLY PROCEDURE

(See exploded view of feeder on page 15 to identify item numbers shown in parenthesis)

1. Rest the blind headplate (3) “face down” on a clean surface so that the bearing housing is pointed up. Inspect the bearing housing to insure it is clean and smooth.
2. Inspect the bearing to assure it is clean, turns freely and does not drag or bind at any point.
3. Do not install the bearing (5) into its housing at this time.
4. With the headplate still “face down”, inspect the seal housing to insure it is clean and smooth.
5. Fit the packing rings (10) into the seal housing. The lip of the packing ring should face down or toward the interior of the valve.
6. Install the gland nut (9) over the hold down studs and slide the shoulder into the seal housing. Evenly tighten the two wing nut fasteners (8) on either side of the gland nut until snug - then back off ½ turn.
7. Repeat this procedure for the seal replacement on the drive headplate.
8. Press the bearing (5) into the blind end headplate (3). Be careful to press on the outer race only.
9. Inspect the rotor (2) and housing (1) to assure they are clean and dry, the surfaces smooth and free of nicks, divots, or any rough spots that will interfere with the mated fit.
10. Inspect the gear reducer drive shaft and coupling to assure it is clean, dry and free of any nicks that will interfere with the mated fit between it and the rotor shaft.
11. Apply a light coat of anti-seizing compound (such as Never-Seez by Bostik Mfg. or equal) to the gear reducer drive shaft.
12. Install the drive headplate (13) on the housing (1). Note: On sanitary units the drive headplate is integral with the housing. Install coupling (12) and key on the gear reducer drive shaft and install the gear reducer (14) on the drive headplate (13). Be sure the gear reducer pilot seats in the mating surface of the drive headplate.
13. Grip the rotor drive shaft on the non-drive end. Slowly and carefully begin working the rotor into the housing. Avoid dragging the rotor vanes along the housing bore and walls. Never force the rotor into the housing. Although manufactured to very close tolerances, there is sufficient clearance to permit the rotor to slide into the housing with a minimum of effort.
14. When the rotor passes through the drive end headplate and out past the seal assembly, align it with the gearhead shaft and slide it partially onto the shaft. Turn the rotor until the coupling (12) and shaft are aligned and can be engaged. Continue to slide the rotor until completely seated in the housing.
15. Check the internal blind end headplate (3) surface and rotor shaft to assure both are clean and void of nicks, etc.
16. Install the bearing shims (17) onto the rotor shaft and up against the shaft shoulder.
17. With the seal assembly and bearings properly installed in the headplate, carefully slide the headplate (3) onto and over the rotor shaft. The bearing will slide over the end of the shaft and up against the shims. Carefully press the headplate the rest of the way over the shaft and into the housing, while avoiding contact with the threaded studs. It is critical that the machined step or

lip around the perimeter of the headplate is seated square and snug in the housing. If misaligned or not fully seated, the internal clearances will be upset and this will cause serious damage to the valve when operated.

18. Screw (clockwise) the headplate release handles (4) back onto the threaded housing studs. Hand tighten in a sequential “criss-cross” fashion until the headplate is securely and squarely fastened to the housing.
19. Install the lockwasher and bearing retainer (11) on the socket head capscrew (15). Screw (clockwise) the socket head capscrew into the shaft and tighten with the hex key on the end of a bearing cap release handle (7).
20. Install the bearing cap (6) and gasket (16). Screw (clockwise) the bearing cap release handles (7) back onto the threaded studs.
21. Finish tightening the gland nut wing nuts (8) on each headplate until snug.
22. The valve is now ready to return to service.

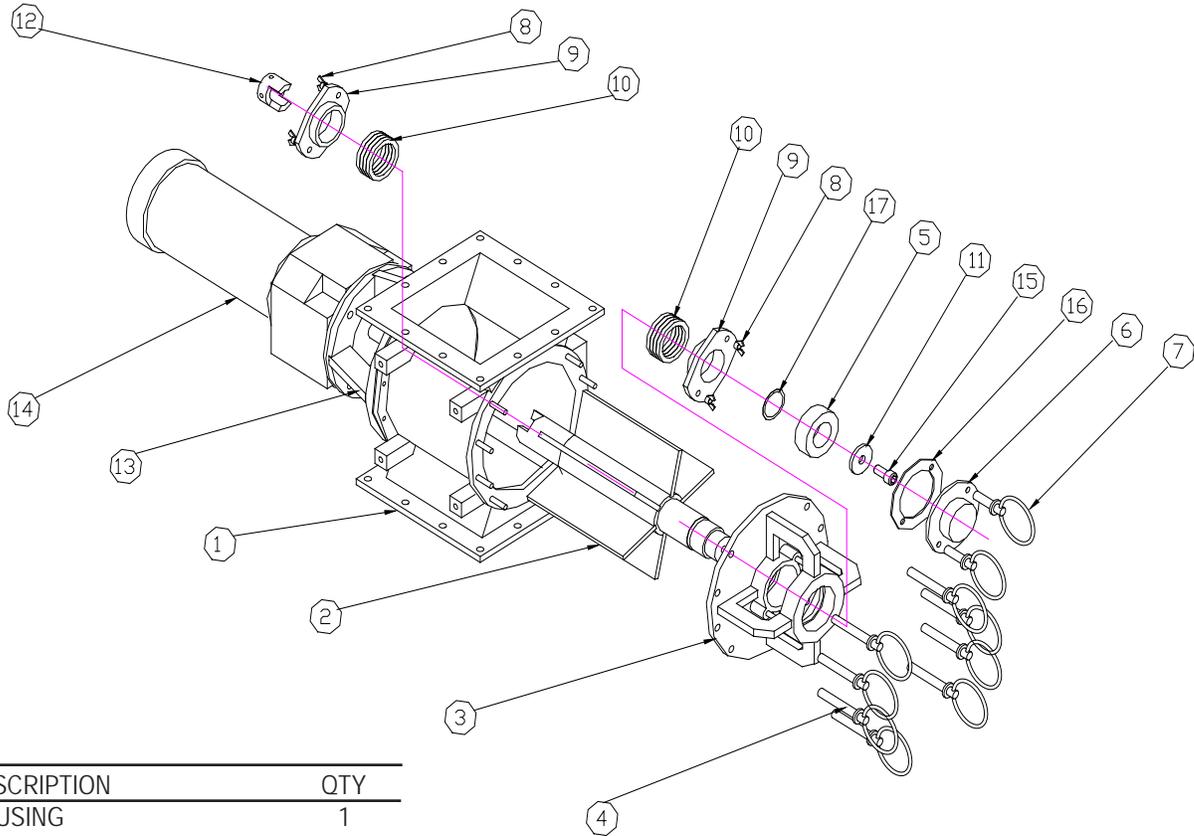


**DANGER**

Before applying power; make sure the valve interior is not exposed and any purge or signal lines are reconnected.



**SECTION VIII  
PARTS LISTS**



ITEM	DESCRIPTION	QTY
1	HOUSING	1
2	ROTOR	1
3	BLIND END HEADPLATE	1
4	HEADPLATE RELEASE HANDLES	8 SEE NOTE #2
5	BEARING	1
6	BEARING CAP	1
7	CAP FASTENERS	2
8	WING NUT FASTENERS	4
9	SEAL GLAND NUT	2
10	SHAFT SEAL (PACKING RINGS)	2
11	BEARING RETAINER	1
12	COUPLING	1
13	DRIVE END HEADPLATE	1
14	GEARMOTOR	1
15	SOC HD CAPSCREW	1
16	GASKET	1
17	SHIMS	as required
18	FLANGE GUARD	(not shown)

NOTES	
1.	ITEM #1 & #13 WELDED TOGETHER FOR SANITARY APPLICATIONS
2.	ONLY (4) OF ITEM #4 REQ. FOR 6X6 KK FEEDERS.

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