

Quick Clean Series

Rotary Airlock

Operators Manual

1. Introduction

When you purchased your new Kice Rotary Airlock, you bought a dependable and quality-built product. The range of options and materials of airlocks manufactured by Kice should satisfy nearly every conceivable industrial airlock need.

We are proud of our products and the people at Kice who build them. At Kice, we start in our own foundry and follow the design and manufacturing standards that have proven superior for more than 60 years.

This owner's manual is intended as a guide for proper installation, operation and maintenance to keep your Kice airlock operating safely and efficiently on the job. Service and factory reconditioning information is also included for your benefit.

Sincerely,

Drew Kice, President & C.E.O.

Kice Industries, Inc.

Warranty

The Company (Kice Industries, Inc.) warrants the equipment manufactured by the Company to be free of defects in material and workmanship for a period of one year from the date of shipment. Company agrees to repair or replace, at its option, any parts found to be defective in the opinion of the Company. Company is not liable for any costs in connection with the removal, shipment or reinstallation of said parts. This warranty does not apply to abrasion, corrosion, or erosion.

Purchaser agrees to look to the warranty, if any, of the manufacturer or supplier of equipment manufactured by others and supplied to the Company for any alleged defects in such equipment and for any damages or injuries caused thereby or as a result thereof.

PURCHASER SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ELECTRICAL COMPONENT MANUFACTURER'S RECOMMENDATIONS, UNDERWRITERS CODE AND ALL SAFETY PRECAUTIONS.

The only warranty extended under this agreement is the above express warranty and there are no other warranties, express or implied, including warranties of merchantability, fitness for a particular purpose or otherwise which extends beyond the face hereof. The Company and its dealers shall not in any event be liable for consequential or incidental damages and this agreement provides purchaser's sole and exclusive remedy. Any actions for breach of this agreement or warranty must be commenced within one year after the cause of action has occurred.

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2. Important Airlock Information

Write down the MODEL and SERIAL NUMBER of the Kice Rotary Airlock, along with the same information for the auxiliary equipment. (Airlock valves, fans, speed reducers, motors, and sheaves size, type and any special modifications to standard).

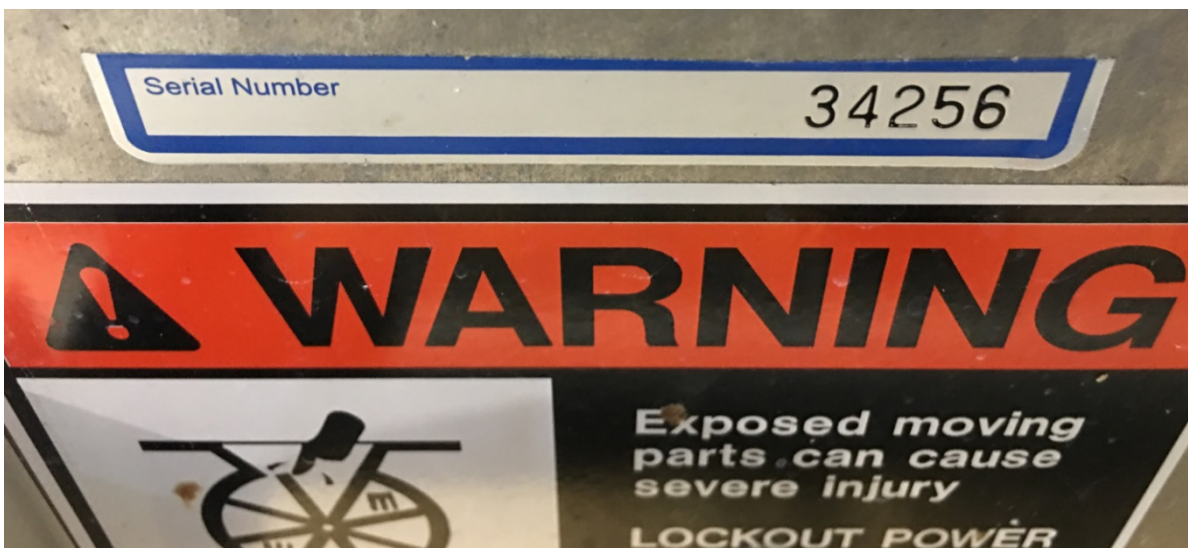
For additional information, application assistance or special service, please contact us by phone at 316-744-7151 or email at sales@kice.com. We'll need to know the MODEL and SERIAL NUMBER of your Kice Rotary Airlock. For ready reference, please record this information and the date of delivery or installation on the lines below. See the General Information section for the location of model and serial number.

Model _____ Serial Number _____ Date of Delivery or Installation ____/____/_____

Model _____ Serial Number _____ Date of Delivery or Installation ____/____/_____

Model _____ Serial Number _____ Date of Delivery or Installation ____/____/_____

Additional Notes:



3. Airlock Parts and Service

Use original Kice rotary airlock replacement parts only. These parts are available from Kice Industries, Inc. only. To obtain prompt, efficient service always provide the following information when ordering parts:

1. Correct part description and number as shown in the appropriate exploded view.
2. Correct model number
3. Correct serial number

For service or assistance ordering parts, contact the Customer Service Department or Quick Ship Department.

Kice Industries, Inc.

5500 Mill Heights Drive Park City, Kansas 67219-2358

Toll Free: (877) 289-5423

Main Phone: (316) 744-7151

Fax: (316) 744-7355

IMPORTANT: Any unauthorized modification, alteration or use of non-approved attachments or drive units voids the warranty and releases Kice Industries, Inc. from any liability arising from subsequent use of this equipment. Each airlock is configured to be used in specific situations, handling particular types of material. Using an airlock for any purpose other than that for which it was designed could result in personal injury as well as product or property damage.

NOTICE: Kice Industries, Inc. is the only authorized rebuilder of Kice rotary airlocks.

Gearmotor/Speed Reducer Parts and Service

The gearmotor or speed reducer is covered by the manufacturer's warranty. If there is a question or issue concerning the gearmotor or speed reducer please contact your local supplier or service representative.

4. Safety First

Safety Alert Symbols



This Safety alert symbol is used to call your attention to an important safety message on equipment, safety decals and in manuals, to warn you of possible danger to your personal safety. When you see this symbol, be alert; your personal safety or the safety of the other persons is involved.

THE FOLLOWING DEFINITIONS FOR IDENTIFYING HAZARD LEVELS ARE:



DANGER (RED) – Danger is used to indicate the presence of a hazard that **WILL** cause **SEVERE** personal injury, death, or substantial property damage if the warning is ignored.



WARNING (ORANGE) – Warning is used to indicate the presence of a hazard that **CAN** cause **SEVERE** personal injury, death, or substantial property damage if the warning is ignored.



CAUTION (YELLOW) – Caution is used to indicate the presence of a hazard that **WILL**, or **CAN** cause **MINOR** personal injury or property damage if the warning is ignored.

SAFETY PRECAUTIONS

Prior to starting work on the equipment, we recommend the following:

1. Always de-energize all electrical equipment by following lock out/tag out procedures. If working on a quick clean design valve, disconnect all sources of power before cleaning or performing maintenance on your quick clean valve.
2. Do not operate rotary airlock valves & feeders with the inlet or the outlet flange openings unguarded or disconnected from system components. Inlet & outlet flange guards are mandatory. These flange guards are available for purchase upon request.
3. Always allow equipment to come to a complete stop. Never attempt to artificially brake the motion of the equipment.
4. Warning labels must be located on the equipment and near access openings to remind operating personnel of the risk.
5. Block the rotor from turning if the drive chain is disconnected or the gear drive has been removed.

HAZARD WARNINGS AND SAFETY PRECAUTIONS



The safety warnings below are basic guidelines and by no means all inclusive. National and local safety codes and even common sense should be used by qualified personnel to carry out installation and maintenance of the equipment. The hazards listed below are the most likely to be encountered during installation, operation and maintenance of your equipment.

Shear Hazard

There are shear points wherever the rotor and housing meet. Contact with moving rotor blades will amputate fingers, hands, arms or legs and may result in death. Accidents can occur when operators reach through upstream or downstream equipment mounted adjacent to the valve through access openings to clean or remove blockage.



Drive Chain Hazard

There are pinch points where the chain and sprocket engage. Exposed moving parts can cause severe injury or death. Never operate the valve without the guard installed. Follow Lockout/Tagout procedure before removing guard.



Exposed Rotating Shafts

Exposed shaft locations exist at the seal access area and tail shaft. Contact with rotating shafts can crush or amputate fingers, hands or arms. Avoid touching or contact with the exposed shaft. Tail shaft guards are available as an option.

Electrical Hazard

Electrocution accidents are most likely during maintenance of the electrical system. Follow Lockout/Tagout procedures before working on the equipment.


Automatic Startup of the Valve - Quick Clean on Rail Design

Rotary airlocks are often controlled by an automated system and may start without warning. Ensure that Lockout/Tagout procedure is followed before working on the equipment. The quick clean on rail design is specifically designed for ease of cleaning by the operator without tools. There is a manufacturer supplied safety switch for protection of personnel and equipment which must be installed and operational to prevent accidental start-up of the valve.

Pressurized System

Danger from opening of equipment if the process is under pressure or from compressed air. Ensure that process pressure has been relieved prior to opening unit.

SAFETY LABELS AND GUARDS

 This piece of equipment contains several warning decals located in many different locations. It is the owner/operator's responsibility to maintain the integrity of these decals and to ensure that all operators of the equipment are aware of them and understand their meaning. Replacement decals are available free of charge by calling customer service department.

This piece of equipment may contain one or more safety guards to protect the operator(s) from injury. It is the owner/operator's responsibility to maintain and ensure that they are in place when the equipment is in operation. If you have any safety or operational questions related to the design or applications of the Rotary Airlock Feeder, we encourage you to contact customer service department.



Discharge Flange Guards

5. Delivery Inspection and Installation Preparation

The airlock has been inspected prior to shipment and should be in excellent condition upon delivery. A thorough customer inspection of the airlock should be completed upon receipt to verify its condition.

NOTICE: Delivery inspection should be completed before signing carrier's release

When a carrier signs the Kice Industries, Inc. bill of lading, the carrier accepts responsibility for any subsequent shortages or damage, evident or concealed. Therefore, any resulting claim must be made against the carrier by the purchaser. Evident shortage or damage should be noted on the carrier's delivery document before signature of acceptance. Inspection by the carrier for damage, evident or concealed, must be requested.

1. Complete a visual inspection paying attention to guards, protrusions (i.e. gearmotor or speed reducer, airlock corners, shaft, etc.) and safety decals while the airlock is still secure to the shipping pallet.
2. If damage has occurred, report to the freight company for damages and contact Kice Customer Service Department.
3. When moving the unit from the skid, install lifting eyes on the inlet flange for attaching chains or slings. Take care to position them to keep the unit horizontal when it's lifted. Prevent it from rotating due to unbalanced weight distribution.



DANGER: When the protective shipping cover is removed from the airlock, do not place hands in the airlock or attempt to turn the rotor by hand. Personal injury could occur. Ensure all personal and foreign objects are clear of the inlet before attempting to turn rotor.

4. Verify that the rotor turns freely and check to make sure each rotor pocket and the interior of the airlock is free of foreign material.
5. For airlocks without the drive motor attached, use a soft probe (wood block or brass rod) and mallet to turn the rotor (Figure 4). If the rotor turns freely, the inspection is complete.
6. For airlocks with the drive motor attached, connect the airlock motor to the power source. If the rotor turns freely, disconnect the power source, the inspection is complete.
7. If the rotor does not turn freely or the rotor turns but squeals loudly, refer to the Maintenance section of this manual.



WARNING: Always wear proper eye protection and other PPE as required.



CAUTION: If the gearmotor or speed reducer produces an unusual noise, disconnect the power and lockout. Then check rotation to be sure the motor is not wired backwards.

8. Inspect the gearmotor or speed reducer if supplied. Read all the materials supplied with the airlock concerning the gearmotor or speed reducer.
9. Be sure that the drive is securely mounted to the airlock.
10. If the speed reducer is oil lubricated, check the oil level, add the appropriate oil as specified by the manufacturer. Remove the rubber shipping seal installed on the breather plug prior to operation.



6. Storage

Short Term Storage

If the equipment is not put into immediate use it should be stored in a clean, dry location. Care should be taken to keep the equipment covered when moving from a cold location to a warm location, otherwise condensation may occur. If condensation does occur, allow it to dry thoroughly before applying power. If the unit is not going to be installed shortly after arrival, it should be stored in a warm, dry location to protect from corrosion to the machined surfaces. Flange covers should be left in place until ready to install.

Long Term Storage

1. If the equipment storage is required for longer than 90 days, additional precautions are required.
2. Storage should be indoors in a temperature-controlled facility such as a warehouse or enclosed building.
3. Leave weatherproof covering in place. Keep vented parts exposed.
4. Make certain unpainted portions are covered and retouch any scratches or flaked areas.
5. If condensate plugs or drain plugs have been used, make sure they are operative.
6. Consult vendors instruction manual for guidance on recommendations for long term storage. i.e., If motor is equipped with space heaters make sure space heaters are properly connected and operative.
7. A systematic inspection and maintenance schedule should be established. If rotating apparatus is to be stored for 6 months or longer, it should, in addition to the precautions above, be given a visual inspection every month.
8. Contact Kice for recommendations where equipment has been in storage for periods longer than 12 months



7. Installation

Inspection:

Once the protective flange cover and shipping materials are removed, check the valve and drive components. Confirm that the rotor turns freely without any binding. Don't attempt to turn the rotor assembly by hand as the rotor vane is sharp and can easily cut or pinch hands or fingers. Use a soft push bar (such as a wooden 2 x 4) to ensure that it rotates freely.

The as-built clearance is recorded on the inlet flange and can be measured with feeler gauges. If the clearance measured has changed, this is an indication that the rotor has shifted during shipment. If adjustable tips are provided, re-adjust as per instructions found in maintenance section of this manual. If airlock clearances and rotations are correct, position and anchor package.

Mounting to Inlet and Discharge:

Numerous types of bulk materials feeding devices can be connected to the inlet opening of an airlock. Bins, hoppers, mixers and screw conveyors can be adapted for attachment to the airlock by rigidly attaching to the airlock flange using silicone caulk or flexible gasket to obtain an air-tight connection. Be sure all seams in the feeding device are airtight. Moving feed devices such as sifters require special consideration to support the valve and a flexible connection.

If the airlock package is to be hung from a hopper, storage tank, etc. it may be necessary for some type of structural steel support. However, in most cases, the hopper or tank flange will have enough strength to support the weight of the airlock package. It is not good practice to use the airlock to support equipment loads either in compression on the top flange or in tension from the bottom flange. Excessive loads will cause the housing to distort, which will cause reduced clearance with the rotor. This will result in excessive noise, binding and galling. Flanges of components, which attach to the airlock must be flat and "square" with the airlock flanges. The flanges of the airlock housing should never be forced in place or attached to warped or twisted mating connections. This practice can result in broken airlock housing or loss of clearance as noted above.

If the airlock is to be installed with either the inlet or discharge exposed, a guard must be mounted to the appropriate flange to reduce the risk of personal injury to operators, maintenance personnel and others who may be near the equipment. Any object placed in the inlet area or discharge area of the airlock will be sheared off.

8. Initial Start-Up Procedure



WARNING – Prior to beginning any service or maintenance activities, ensure that “Lockout/ tagout” procedures have been completed to safeguard employees from the unexpected energization or start-up of machinery and equipment. **Disconnect all sources of power before cleaning or performing maintenance on your quick clean valve.**

Prior to Starting

1. The garmotors are shipped filled with oil. Check the oil level in the drive gearbox and top off if necessary. Oil level and drain plugs must be accessible. Remove any shipping provisions from the breather plug. Refer to the manufacturer’s instructions included with the shipment.
2. Make sure that the airlock, feed device, and conveying line are free of foreign material.
3. Verify that all electrical connections have been properly made.
4. Replace all guards and covers.

Start-Up

1. Energize the electrical service (and instrument air if applicable).
2. Jog the airlock to verify the direction of rotation is correct. Listen for sounds of unwanted mechanical contact and correct if necessary. Reverse operation can result in jamming and possible motor overload.
3. Start the airlock and operate it for a period with no load. Check for excessive noise or other indications of improper operation. Investigate and correct if necessary.
4. Start feed device or fill the hopper. As material flows into the airlock, listen for excessive noise or other indications of improper operation. Investigate and correct.
5. Verify that the current draw of the motor does not exceed its full load amp rating. Refer to motor nameplate for rating.
6. While the system is operating check for air leaks. Correct as needed.
7. Monitor the operation of the main components for heat, noise or vibration as these are indications of a potential problem.

9. Opening and Closing Quick Clean on Rails



WARNING – The Rotor is designed with a square drive extension that is precision machined to fit into the driveshaft bore with a close tolerance. Keep these parts clean and free from damage to ensure the best performance of your equipment.

NEVER SLAM THE ROTOR INTO HOUSING. WHEN INSTALLING THE ROTOR INTO POSITION, DON'T APPLY EXCESSIVE FORCE AS YOU WILL DAMAGE THE ROTOR OR DRIVE SHAFT. USE THE LOCATING KEY TO ALIGN THE ROTOR TO THE DRIVESHAFT BORE DURING RE-ASSEMBLY.

1. Prior to beginning any service or maintenance activities, ensure that “Lockout/tagout” procedures have been completed to safeguard employees from the unexpected energization or start-up of machinery and equipment.
2. Remove T-handles or release Toggle clamps. If provided, insert the T-handles into the jacking-bolt holes located top and bottom of the Tail Endplate. Turn clockwise simultaneously until endplate is clear of the housing. If equipped with air or rotor purge, the fitting connections will need to be disconnected.
3. If the slide rails are dirty, clean or wipe them down to prevent contaminating the internals of the linear bearings.
4. Applying an even force to both sides of the rails, carefully slide rotor assembly out until it's clear of Housing and clean parts as required.

REASSEMBLY

1. Check the Rotor extension and driveshaft bore is clean and free of material. If there is material on either of these items, it will affect the fit of the components.
2. Clean and apply anti-seize lubricant to rotor shaft extension and the driveshaft bore.
3. Carefully slide Rotor assembly into Housing until resistance can be felt.
4. Use the Locating Key fit into the Tail shaft and slowly turn applying light force until the square drive is aligned with the driveshaft and push into closed position with a steady, even touch.

NOTE: If you feel resistance, remove rotor and inspect the extension and bore for debris before re-alignment.

5. Once rotor/endplate is flush with housing, assemble T-handles back into tail endplate or close toggle clamps. Return Locating Key back on Holder on Linear Bearing Mount.



10. Maintenance Procedures

Regular maintenance is important to the operation and life of your airlock. Areas requiring regular inspection and maintenance are the rotor clearance, seals and drive package.

Quick-Clean on Rails Clearance and Rail Adjustment

1. KICE Quick-Clean on Rails are supplied with linear slide rails and linear bearings. They should be cleaned of dust and foreign material to prevent premature wear to the linear bearings before opening or closing the rotor assembly.
2. If the valve is getting difficult to reassemble your rotor may have come out of alignment with the housing and rails and may need to be adjusted. Using qualified experienced personnel, follow the instructions below:
3. With rotor located inside housing, check your existing clearances these are typically 0.007–0.010 for models 4" through 12" and 0.010–0.016 for 14" and 0.016–0.020 for 18" and above. **Double check the clearances against the provided drawing or check with KICE Valves as your actual clearances will vary depending on the application.**
4. On the Linear Shaft Mounts you will find four, ¼-20 hex head bolts. Using these adjustment screws adjust ¼" turn at time in desired direction and re-check clearances until target range is acquired.

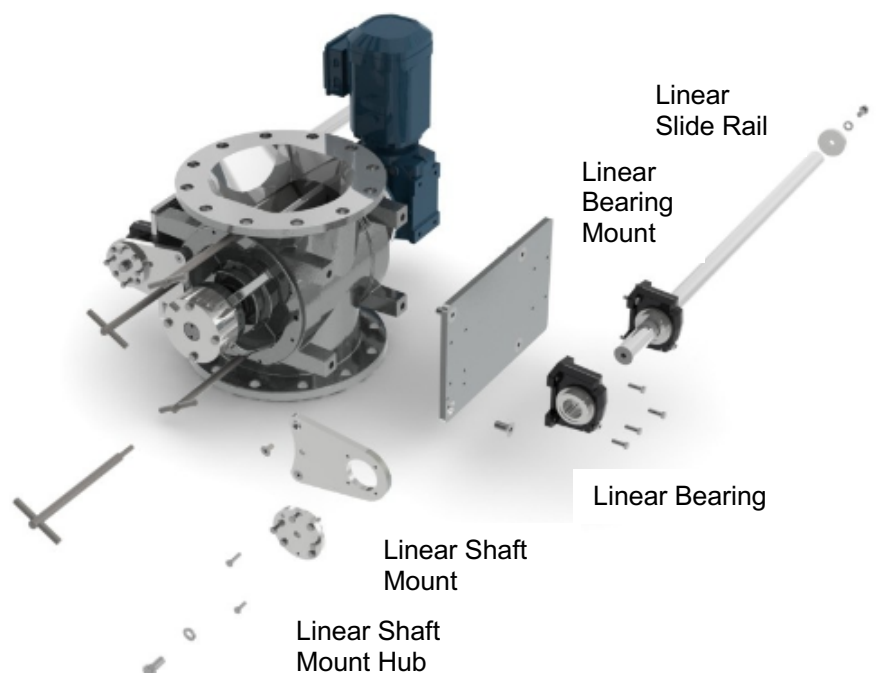
Replacing Linear Rails

1. Loosen Linear Bearing Screw set.
2. Remove Hex Bolts located on Drive End and Tail End of the Linear Shaft.
3. Slide rails out towards drive end of the valve.
4. Install new rails by reversing above directions.

Replacing Linear Bearing

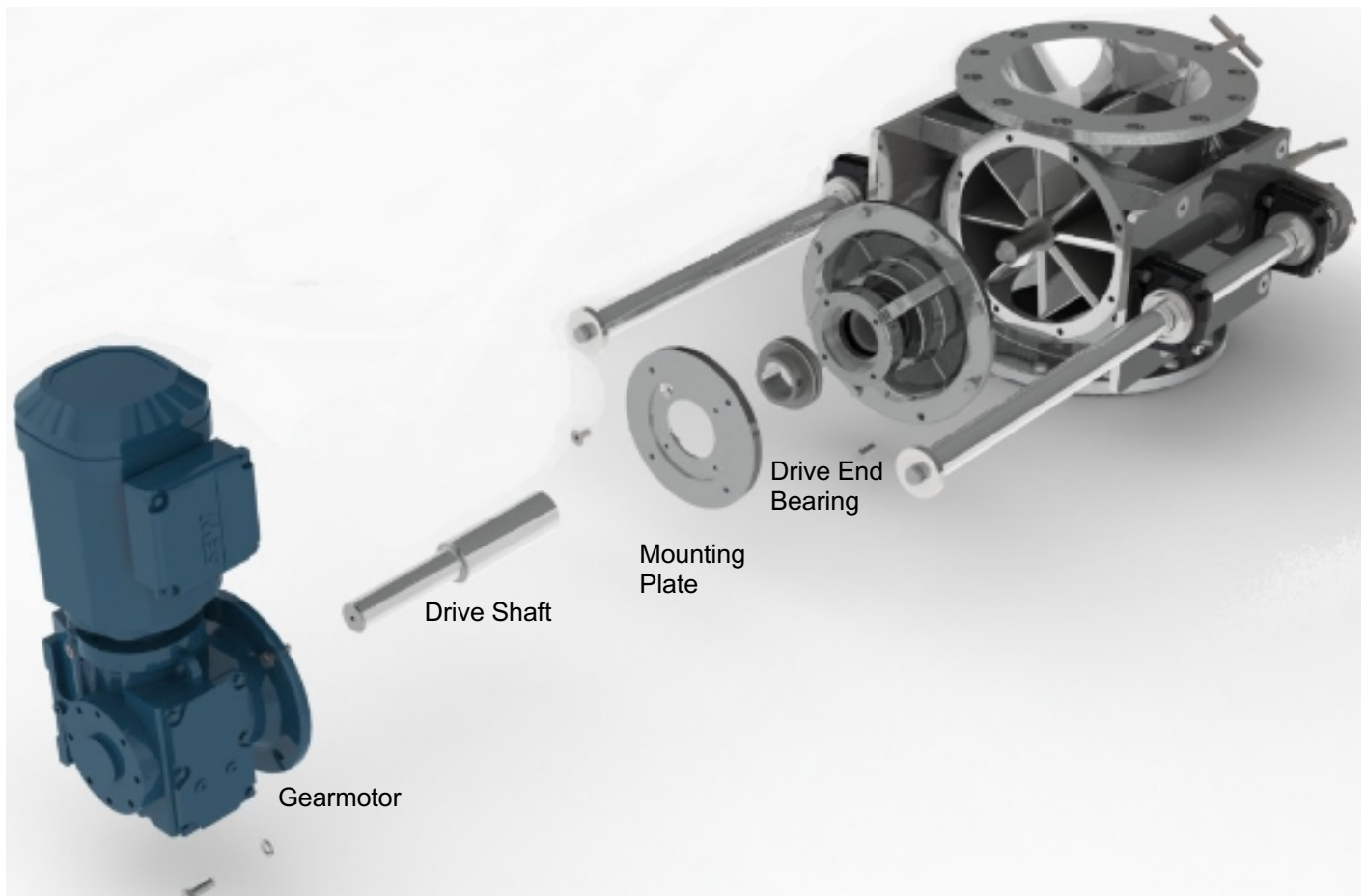
5. Remove Linear Shaft using above instructions for replacing Linear Rail.
6. Remove (4) ¼-20 Hex Head Bolts from Linear Bearing Base.
7. Install new Linear Bearing by reversing above instructions.

Quick Clean on Rails with T-Handles



Disassembly-Drive End

1. Remove the auxiliary equipment (zero speed switch, air purge piping) if supplied.
2. Remove the cover on gearmotor hollow shaft bore. If there is a retaining bolt or washer installed this must be removed.
3. Remove the (4) hex bolts located on mounting plate. Use the (2) 3/8"-16 NC threaded holes for installing jacking bolts to separate the gearmotor from the mounting plate.
4. While supporting the weight of the gearmotor, move the gearmotor away from the mounting plate and remove from driveshaft once it is clear. Watch for drive key during disassembly.
5. With the gearmotor removed, the motor mounting plate is accessible. Remove fasteners and motor mount.
6. Remove bolts that hold endplate to housing. Remove Endplate using gear puller tool. Endplate with driveshaft stub can be removed for access to seals and bearings for maintenance or replacement.



Replacing Bearings and Seals – Drive End

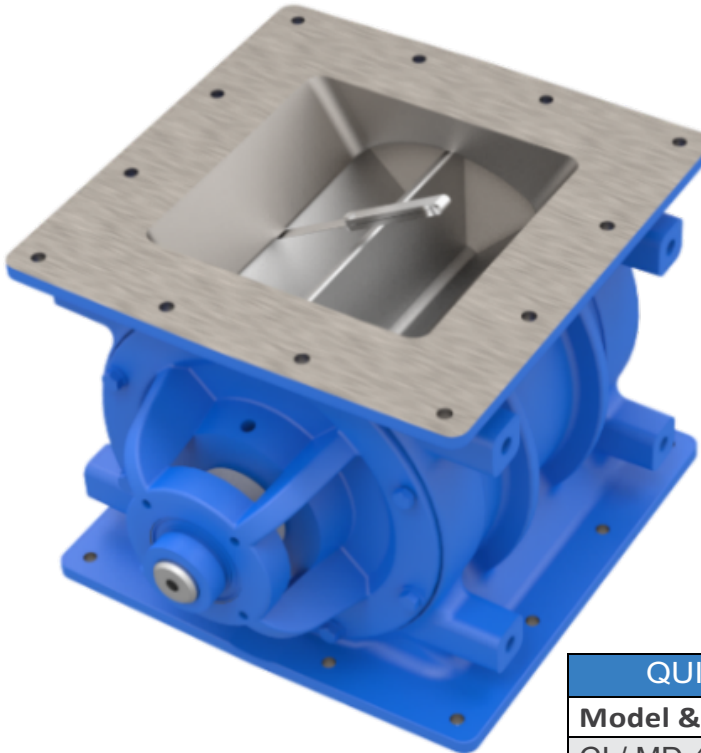
Our standard design uses sealed permanently lubricated bearings and ACST-4 seals consisting of a PTFE (teflon) sleeve and 3 quad rings with shaft collar which require replacement when worn. It's recommended to always replace the seals and bearings at the same time.

1. The bearing, split locking collar, teflon bushing and quad ring seals will come out with the endplate. Remove the locking collar and driveshaft.
2. Remove bearing by pressing away from the seal arrangement.
3. Pry the teflon seal straight up and out of the quad ring assembly. Remove quad rings by poking with a sharp object and prying out of seat. Repeat for remaining two (2) rings.
4. Install new quad rings and Teflon sleeve in end plate. Apply a small amount of lubricant to the teflon seal and gently push into the quad ring bore.
5. Install seal lock collar.
6. Install the new bearing in place.
7. Install endplate onto Housing, move into position. Install and tighten fasteners.
8. Install driveshaft, into position with driveshaft bore section end flush with endplate.
9. Slide bearing collar on shaft. Rotate the collar in the opposite direction of shaft rotation until eccentric faces of collar and inner bearing ring engage.
10. Check clearances and see that rotor turns freely in housing. If rotor does not turn freely, adjust as necessary.
11. Lock the bearing in place by rotating the collar using a drift or flat punch in the non-threaded hole and tapping the collar with a lightweight hammer in the opposite direction of rotation until snug. Tighten set screws.
12. Position teflon sleeve and shaft seal collar. Tighten seal collar.



Drive Endplate

Checking Rotor Clearance



Checking clearance of rotor with feeler gauge

Rotor clearance should be checked as part of the maintenance program as increased clearance will affect the performance. Rotor clearance should be within the allowable range as indicated in the table below (See table or if your model isn't shown contact KICE) determined by its size and design operating conditions. Increased clearances will allow more leakage through the airlock resulting in reduced performance. The allowable loss of performance will indicate when repair or replacement is required.

QUICK CLEAN ROTOR CLEARANCE - TYPICAL	
Model & Size	Standard values – consult factory
CI / MD 4 through 12	0.007" to 0.010"
CI / MD 14	0.010" to 0.014"
CI 16 through 18	0.016" to 0.020"
CI 22 through 30	Refer to Factory



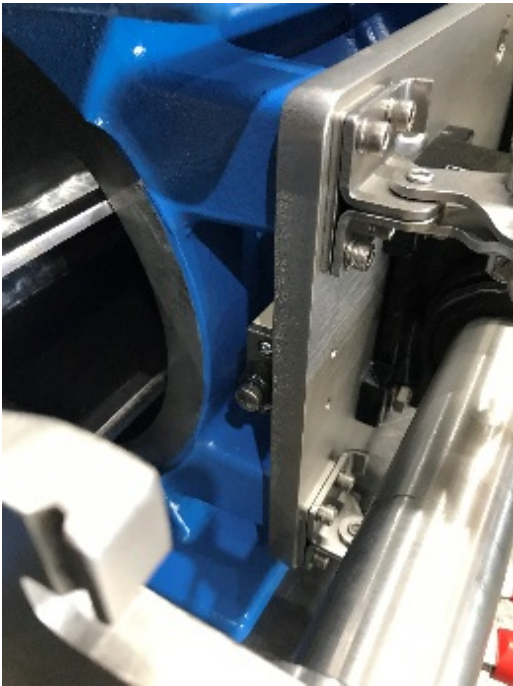
WARNING – Prior to beginning any service or maintenance activities, ensure that “Lockout/ tagout” procedures have been completed to safeguard employees from the unexpected energization or start-up of machinery and equipment. If working on a quick clean design valve, disconnect all sources of power before cleaning or performing maintenance on your quick clean valve.

If the inlet or outlet of the valve is accessible, the clearances can be measured directly through this opening using a feeler gauge to measure the gap.

1. Number each blade for ease of checking and measure the gap between the rotor blade and housing at each end of the blade and center.
2. Check the inlet and outlet. Measure the side clearance between end of the blade and the endplate.

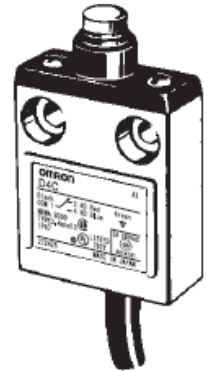
11. Accessories

Safety Switch – On Rail Design



HAZARD- Quick Cleans are supplied with a limit switch that is designed to prevent operation of the valve if the valve has been opened for cleaning. IT MUST BE FIELD WIRED TO DISCONNECT POWER TO THE DRIVE IF OPEN. DO NOT REMOVE OR MODIFY. CONTACT KICE IF THIS FEATURE IS NOT INCLUDED WITH YOUR SHIPMENT.

THE STANDARD PART NO. IS OMRON PIN PLUNGER SAFETY SWITCH PN: D4C-1631. Refer to Manufacturer's website for installation and troubleshooting assistance.



<https://www.ia.omron.com/product/item/10003/>

Safety switch prevents operation if the rotor is not in closed position

Zero Speed Switch

KICE Valves use 4B Model M100 Zero Speed Switches for most applications.

Refer to the manufacturer's instruction manual for installation details.

<https://www.go4b.com/usa/technical-support/product-manuals/whirligig/whirligig-manual.pdf>

If sensor does not detect Whirligig Target check the sensing range of the sensor being used and move sensor closer to the target.

Gear Drive and Motor

Quick Clean Valves use SEW Eurodrive gear reducers for most applications. Inspect, lubricate and service the gear drive and motor in accordance with the manufacturer's instructions.

<http://www.seweurodrive.com/>

Air Purge Pressure Adjustment

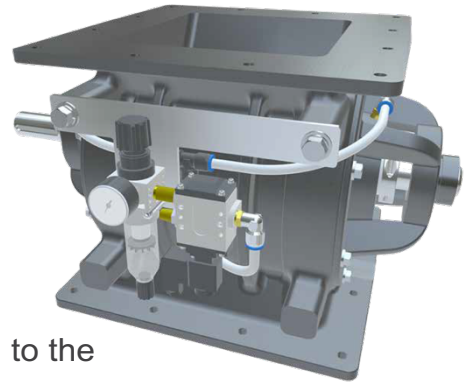
Shut off the compressed air supply and bleed off air pressure before attempting to install or service the air purge assembly. After installation is complete and while the filter/regulator is shut off completely, the air supply should be turned on.

After verifying that all connections are tight the regulator should be adjusted to provide the appropriate purge pressure to the airlock using the following guidelines.

Initial setting, prior to conveying product through the airlock or system should be 5 PSIG greater than the operating pressure of the valve.

If the airlock is either receiving product from or discharging product to a pressure system, the regulator should be set at 5 PSIG above the system conveying pressure.

If the airlock is used in a gravity flow application or is receiving or discharging only to a vacuum system, the regulator should remain set at 5 PSIG.



Purge Kit

AIR PURGE ASSEMBLY FOR AIRLOCKS WITH OPEN OR CLOSED END ROTORS		
Item	Qty	Description
1	1	Filter/Regulator with gauge and bracket
2	1	3/8" Male Branch Tee Poly fitting
3	4 ft.	3/8" O.D. Seal Tubing
4*	2	3/8" PTC to 1/8" MNPT Connector
5	1	0-30 PSI, 2" Face, 1/4" CTR Back Gauge
6**	2	3/8" Poly to 3/8" MNPT Connector
7**	2	3/8" Union Tee
8**	2	3/4" x 3/8" Hex Bushing
Air Purge Kit (includes items 1 thru 8)		

Please Note: *Fittings for purging shaft seal **Fittings for purging end plate cavity

12. Lubrication Chart

Standard bearings on CI and MD series airlocks are sealed for life bearings and do not require lubrication, but greaseable bearings are supplied according to the service conditions.

The following chart is a list of oil lubrication product suppliers including a maintenance schedule for gear reducers based upon an ambient factory atmosphere and normal factory operating conditions. This chart is only a suggested list of suppliers and maintenance schedule times, end users may select from their own list of supplier products and adjust the recommended scheduled maintenance times to suit their own facility conditions.

SEW EURODRIVE GEAR REDUCERS (Refer to Manufacturer for more Information)				
Reducer	Application	Oil or Grease Type (s)	Quantity (L)	Frequency (Hours)
SEW Eurodrive R series FAF series KAF series	Standard (-15°C to +40°C)	Shell Omala S2 G 220 Mobil Mobilgear 600 XP 220 Castrol Optigear BM 220	R series standard M6 Pos. R37(0.95), R47(1.50) R57(1.70), R67(2.00) R77(3.40), R87(6.50)	Check oil every 3,000 hrs. Replace oil every 10,000 hrs.
	High temperature (-20°C to +80°C)	Shell Omala S4 WE 220 Mobil Glygoyle 220 Castrol Optiflex A 220	FAF series standard M1 Pos. FAF37(0.95), FAF47(1.50) FAF57(2.70), FAF67(2.70) FAF77(5.90), FAF87(10.80)	Check oil every 3,000 hrs. Replace oil every 6,000 hrs.
	Low temperature (-40°C to +40°C)	Shell Omala S4 GX 150 Mobil SHC 629 Castrol Optigear Synthetic X 150	KAF series standard M1 Pos. KAF37(0.50), KAF47(0.80) KAF57(1.20), KAF67(1.10) KAF77(2.10), KAF87(3.70)	Check oil every 3,000 hrs. Replace oil every 18,000 hrs.
	Food grade (-20°C to +60°C)	Klubersynth GH 6-460		Check oil every 3,000 hrs. Replace oil every 12,000 hrs.
SEW Eurodrive S series SAF series	Standard (0°C to +40°C)	Shell Omala S2 G 680 Mobil Mobilgear 600 XP 680 Castrol Optigear BM 680	S series standard M1 Pos. S37(0.25), S47(0.35) S57(0.50), S67(1.00) S77(1.90), S87(3.30)	Check oil every 3,000 hrs. Replace oil every 10,000 hrs.
	High temperature (-20°C to +80°C)	Shell Omala S4 WE 680 Mobil Glygoyle 680 Castrol Optiflex A 680	SAF series standard M4 Pos. SAF37(0.50), SAF47(1.00) SAF57(1.50), SAF67(2.90) SAF77(5.80), SAF87(10.80)	Check oil every 3,000 hrs. Replace oil every 6,000 hrs.
	Low temperature (-40°C to +30°C)	Shell Omala S4 GX 150 Mobil SHC 629 Castrol Optigear Synthetic X 150		Check oil every 3,000 hrs. Replace oil every 18,000 hrs.
	Food grade (-20°C to +40°C)	Kluberoil 4UH1-220N		Check oil every 3,000 hrs. Replace oil every 10,000 hrs.

Lubrication Chart

The following chart is a list of grease lubrication product suppliers including a maintenance schedule for bearings based upon an ambient factory atmosphere and normal factory operating conditions. This chart is only a suggested list of suppliers and maintenance schedule times, end users may select from their own list of supplier products and adjust the recommended scheduled maintenance times to suit their own facility conditions.

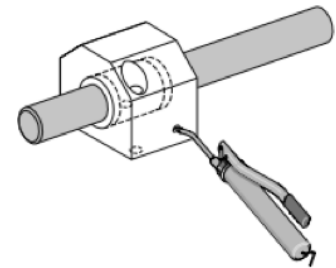
BEARINGS				
Component	Application	Oil or grease type(s)	Quantity (ml)	Frequency (hrs.)
Greaseable Insert Bearing	Standard (-30°C to +130°C)	Shell Alvania RL2 Mobil Mobilith SHC 220 Castrol Tribol 4020-220-2	ø1.000" (20), ø1.500" (30) ø1.938" (35), ø2.438" (38) ø2.500" (40), ø2.938" (45)	Grease every 3,000 hrs.
	High temperature (-20°C to +180°C)	Shell Stamina RL2 Mobil Mobiltemp SHC 100 Castrol Tribol 4747-220-2		Grease every 2,200 hrs.
	Food grade (-10°C to +100°C)	Shell Cassida Grease RLS2 Mobil Mobilith SHC 220 Castrol Molub-Alloy 823-2 FM		Grease every 2,200 hrs.
Linear Bearing sets for Quick Clean on rails Design	Standard (-20°C to 80°C)	NLGI 00 or 2, DIN 51818 or DIN 51825, KP2K-20 Lithium based High Performance grease	Lubricate on shaft until lubricant emerges	Grease every 3,000 hrs. See Note

Note:

Linear bearing sets for quick clean on rails come pre-lubricated by the manufacturer. Service lubrication intervals are dependent on the severity of the service and the environment they are installed. Monitor the lubrication condition of the Linear Bushings and Linear Sets after start-up. If necessary, adapt the lubrication intervals.

Between in-service lubrication intervals, check that:

- there is no dirt, even coolants/ cutting fluids can be critical;
- no chips can become trapped around the Linear Bushing guideway;
- there is no red-brown discoloration of the lubricant. if there is, lubricate immediately, increase the lube quantity, reduce the lubrication interval, ask for advice if in doubt;
- the seals are functioning correctly.



Clean shafts and shaft support rails as necessary.

13. Troubleshooting

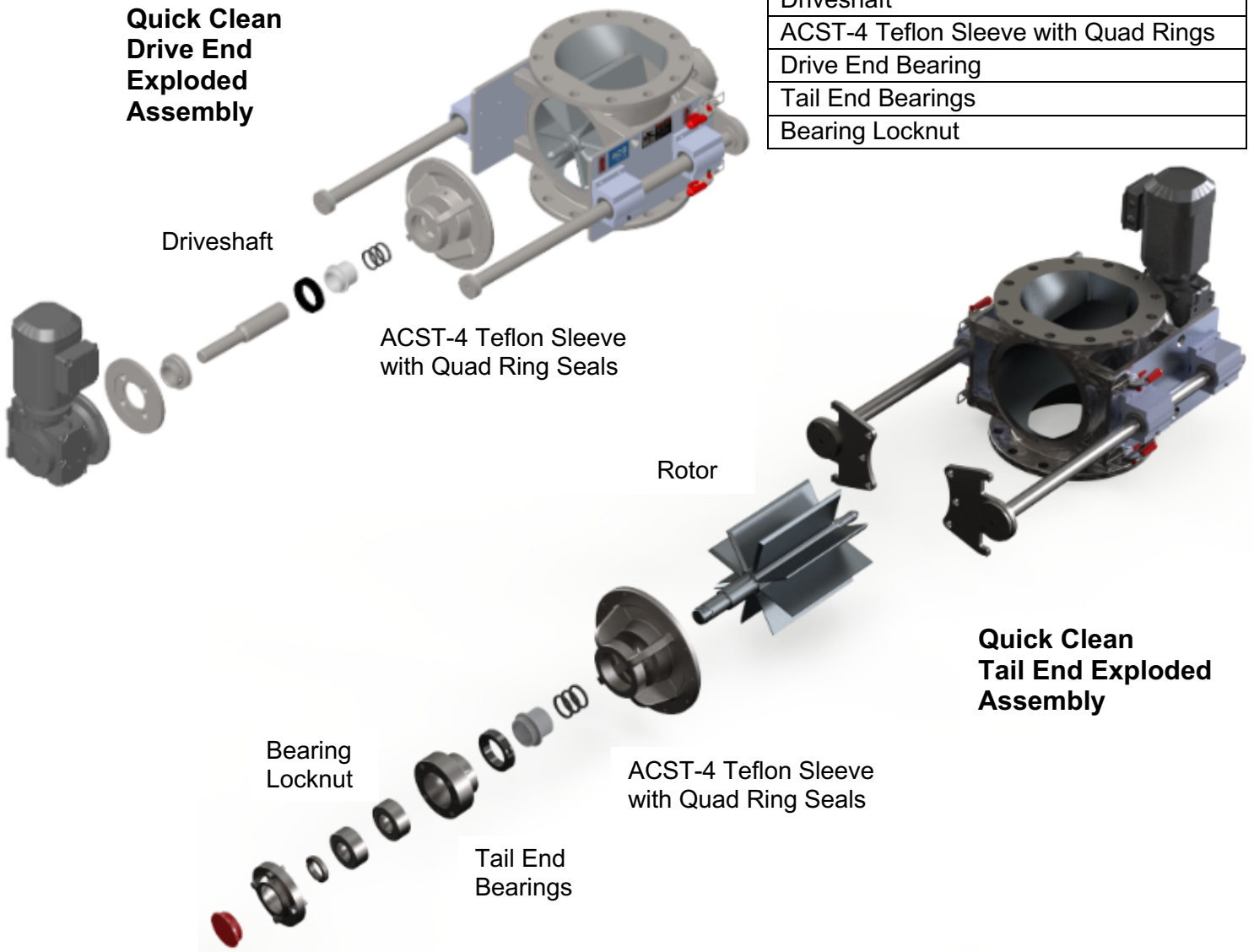
Inspection and repair procedures provide guidance for restoring the package to peak operation. In many cases, repair consists of component replacement.

1. If airlock is not operating efficiently or satisfactory, remove from system, inspect and repair in accordance with preceding information.
2. Inspect base structure and brackets for damage and deformation. Replace defective parts.
3. Check all accessory equipment to assure proper operation. Replace any components found to be defective.
4. When requesting service assistance, please have the following information at hand.
5. Serial no. and/or KICE Sales Order no. or drawing number if available.
6. Application conditions of service including such as product, temperature, ambient temperature.
7. Vacuum or pressure gauge reading above and below the valve,
8. Airlock speed.
9. Method of feeding the valve.
10. Gearmotor amperage reading
11. Blower conditions including speed, Pressure switch setting. Blower motor amperage.
12. Conveying line length. a) Horizontal run b) Vertical run c) Number of elbows.
13. Photos or video of the installation.

FAULTS, CAUSES AND REMEDIES		
Fault	Possible Cause	Possible Remedy
Excessive noise during operation	Incorrect direction of rotation.	Check markings for correct direction. Rewire motor if necessary, to correct.
	Insufficient rotor clearance due to material buildup or thermal expansion Rotor misaligned or bent	Check clearances and for signs of contact. Clean material buildup. Adjust clearance as described in manual. Contact KICE for assistance.
	Bearing failure	Remove and inspect bearings. Replace if necessary, as described in manual.
Airlock does not rotate	No power to airlock	Check motor, settings for electrical issues.
	Driveshaft and Rotor are not engaged or worn	Check rotor for signs of contact, wear. Check position of driveshaft relative to endplate
	Foreign object caught in inlet throat	Inspect and remove.
	Faulty or damaged gearbox	Check for signs of wear or damage. Replace gearbox if necessary.
Material flow problems	Supply source or feed device plugged, empty, or not operating	Check supply source.
	Conveying line piping layout, size or increased pressure	Inspect and review conveying line layout.
	Airlock turning too fast	Adjust motor speed or replace sprockets.
	Excessive rotor pocket fill	Inlet shear protector.
	Excessive moisture in Product	Clean rotor. Check flange connections for proper seal. Check process for proper product condition.
	Excessive blowby air	Check and adjust rotor clearances. Install vent or vented shear protector.
Short seal life	Conveying line piping layout	Inspect and review conveying line layout.
	Incorrect air purge pressure	Adjust air purge pressure as described in relevant section in Instruction Manual
	Seal out of position	Inspect and reposition seal.

14. Quick Clean Recommended Parts

Quick Clean Recommended Parts
Rotor
Driveshaft
ACST-4 Teflon Sleeve with Quad Rings
Drive End Bearing
Tail End Bearings
Bearing Locknut



For service or assistance ordering parts, contact the Customer Service Department or Quick Ship Department.

Kice Industries, Inc.
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Main Phone: (316) 744-7151
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