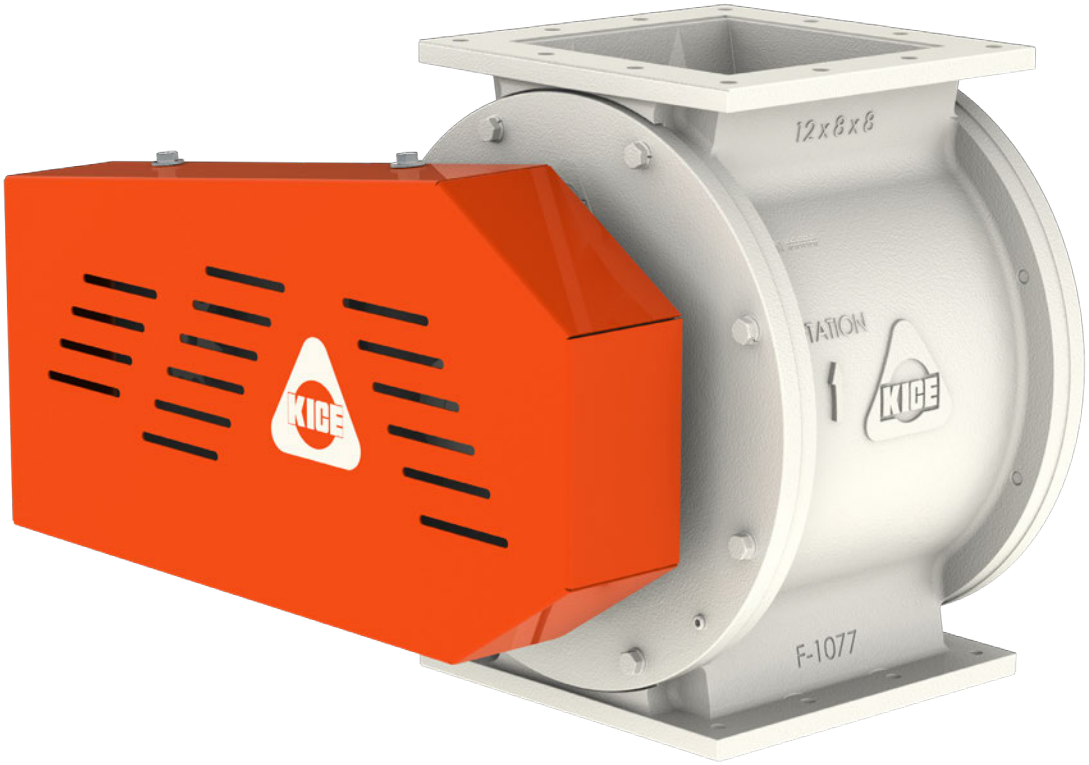
KICE INDUSTRIES, INC.

Skilled Air for Industry



VJ Rotary Airlock

Operators Manual

051921 RAV-M00-0005

1. Introduction

When you purchased your new Kice Airlock, you bought a dependable and quality-built product. The ten basic series of airlocks manufactured by Kice, and the range of options and materials, 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 over the last 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
Kice Industries, Inc.

Warranty

The company 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 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 extend 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.

Table of Contents

Important

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, you should contact the factory. 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 and the date of delivery or installations 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 _____ / _____ / _____

This manual applies to Kice Airlock Models VB, VD and VJ

B & J series are drop-thru.

D series is an injector.

1. General Information

To the New Owner

The purpose of this manual is to assist owners and operators in maintaining and operating the Kice airlock and attachments. Please read it carefully; information and instructions furnished can help you achieve years of dependable performance. A separate drive motor and speed reducer manual should be included with your owner's packet. They contain additional information that may not be repeated in this manual. You are urged to read it before attempting any operation or repair of the motor or speed reducer. If these manuals are not included in your owner's packet, contact our customer service department.

Using This Manual

General operation, adjustment and maintenance guidelines are outlined for owners and operators of Kice airlocks. Operating conditions vary considerably and cannot be addressed individually. Through experience, however, operators should have no difficulty in developing good operating, safety and monitoring skills.

The term "**disconnect and lockout**" or "**lockout/tagout**" as used in this manual means that power to the airlock has been disconnected through the use of a padlockable, manual, power cutoff, or power lockout switch. (per 29 CFR 1910.147)

Photographs and illustrations were current at the time of printing, but subsequent production changes may cause your airlock to vary slightly in detail. Kice Industries, Inc., reserves the right to redesign and change the airlock as deemed necessary, without notification. If a change has been made to your airlock that is not reflected in this owner's manual or the Illustrated Parts Lists, write or call Kice Industries, Inc., for current information and parts.

Model and Serial Number

The airlock model and serial number can be found at two locations:

Stamped on the metal identification plate located on the airlock end plate opposite the drive mechanism (see Figure 1).

Figure 1

Stamped on the left side of the airlock body below the inlet (see Figure 2).

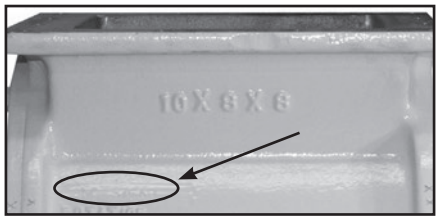


Figure 2

On all airlocks that have been rebuilt, you will find a letter "R" stamped on the housing following the serial number. Each time the airlock is rebuilt, an additional "R" is added. The bodies of Kice airlocks are deliberately built thick enough to allow several rebuilds.

FOR AIRLOCK PARTS AND SERVICE

Use original Kice 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 given in the Illustrated Parts Lists section of this manual.
2. Correct model number.
3. Correct serial number.

For assistance in service or ordering parts, contact the customer service department at:

Kice Industries, Inc.
5500 Mill Heights Drive
Wichita, KS 67219-2358
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 type of airlock is designed 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.

FOR MOTOR AND SPEED REDUCER PARTS AND SERVICE

The motor and speed reducer are covered by the manufacturer's warranty. If there is a problem, check with the local supplier or service representative.

2. Safety Precautions

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

Hazard Levels

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.

WARNING: All owners and operators should read this manual, or be instructed in safe operating and maintenance procedures, before attempting to uncrate, install, operate, adjust, or service this equipment.

Safety Decals

The airlock safety decals should not be removed, covered over, painted, or otherwise become illegible. If this occurs, they should be replaced immediately. Contact our customer service department for replacements.

The following safety decals will be located on the airlock body, chain guard or motor. Look for them!

Safety Precautions Continued

- Do not attempt to install, connect power to, operate, or service an airlock without proper instruction and until you have been thoroughly trained in its use by your employer.
- Do not attempt to open, work on, clean, service, or remove any protective cover, guard, grate, or maintenance panel from the Airlock until the POWER has been turned off and LOCKED OUT, and the airlock has come to a complete stop. Please ensure all the local, state and OSHA laws are followed.
- Do not manually override or electrically by-pass any protective device.
- Do not connect power to or operate an airlock unless all moving parts are covered and all covers, guards, grates, and maintenance panels are in place and securely fastened.
- Do not abuse, overload, mistreat, or misuse an airlock or attempt to operate the equipment if it is in need of service, lubrication, maintenance, or repair. Do not attempt to start an airlock when loaded.
- Never place any part of your body under or near rotating members, or moving parts of an airlock.
- The airlock may have factory supplied drives, rotating members, and moving parts which must be completely enclosed before connecting power and before operation.
- If an airlock is not equipped with a factory supplied chain guard, rotating members and moving parts must be completely enclosed before connecting power and before operation.
- Free outlet of the product must be guaranteed at all times. Otherwise, blockage and severe damage may result, or a dangerous situation may occur.
- If an airlock is equipped with a maintenance panel incorporating any Protective Interlocking Limit Switch (PLS), the PLS must be interlocked with all electrical controls so that all motors or powered devices on the unit will be de-energized if any protected cover, guard, grate, or maintenance panel is open or removed. Never attempt to manually override or electrically bypass the PLS safety device. Interlock function of the PLS must be tested and logged daily by supervisory personnel.
- Many airlocks are installed and wired to start automatically or be controlled from remote locations. Keep clear of all moving parts on industrial equipment at all times.
- An airlock must be equipped with a properly functioning Protective Interlocking Electrical Control Switch (PCS), a Padlockable Manual Power Lockout Switch, and with the other basic safety equipment listed above. On-off, interlock and padlock functions of the PCS must be tested and logged daily by supervisory personnel.
- It is the owner's and the employer's responsibility to adequately train the employee-operator in the proper and safe use of airlocks. Written safety programs and formal instruction are essential. All new employees must be made aware of company policies and operating rules, especially the established safety and health procedures. Refresher training of experienced employees in the potential hazards of the job is important. Up-to-date training records must be maintained at the job site.
- Special attention must be devoted to outside contractors engaged to enter and perform work on an airlock or in the workplace. Special care must be exercised to insure all such personnel are fully informed of the potential hazards and follow plant rules – with special emphasis on explosion proof electrical tools and cutting or welding in unsafe environments.
- Keep the workplace clean up and free of dirt and dust at all times. Do not attempt to work on slippery or unsafe ladders or work platforms when maintenance or repair work is being performed on an airlock.
- The operator must ensure that adequate lighting conditions are provided at the location of equipment operation.
- Do not climb on ladders or work on platforms unless maximum load rating is posted. Do not exceed maximum load ratings when installing or servicing an airlock.
- Never allow any kind of metal or other foreign objects to enter an airlock. Examined raw materials should be used through the machine to ensure proper and consistent operation.
- The rotor of the airlock is built into a housing which has connection flanges for product inlet and product outlet. All airlock inlet and discharge openings must be completely enclosed, or closed to an adequate length, to prevent human access to the rotor when the airlock is operating. They must remain enclosed until POWER IS TURNED OFF AND LOCKED OUT. Keep away from an airlock when it is running.
- Operate safely at all times. Use personal protective equipment when and where appropriate, such as hard hats, helmets, gloves, earplugs, dust masks, and eye protection devices. Keep personal protective equipment in good repair and convenient to the operator.
- Drive components must be inspected and adjusted after transportation and periodically as required by operating conditions. Check sprocket and coupling alignment and spacing, chain tension, setscrews, keys and other fasteners, bearings, shafts, gear reducers, and motors as appropriate to job conditions.
- Operator must ensure that all piping and connections are laid away from equipment access routes and steps.
- High voltage and rotating parts can cause serious or fatal injury. Only qualified, trained, and experienced personnel should perform installation, operation, and maintenance of electrical machinery. Make sure that the motor and the frame of each airlock is effectively grounded in accordance with OSHA safety and health standards, the National Electrical Code, local codes, and EN ISO 60204-1 as required for the classified area.
- Never stand under any kind of hoist or lifting mechanism, whether or not it is loaded or in operation. Never stand under or near an airlock or component when it is being lifted.
- All airlock lifting devices must be carefully inspected by qualified personnel before each use. Never use a lifting device to transport an airlock. Never use a lifting device that is damaged, deteriorated, or in any way in need of repair.
- All protective covers, guards, grates, maintenance panels, switches and warning decals must be kept in place and in good repair. Any airlock with a damaged, malfunctioning, defective, or missing protective device must be taken out of service until the protective device can be repaired or replaced.
- Any device powered by air or hydraulic pressure must be equipped with a properly functioning Padlockable Manual Pressure Lockout and Internal Pressure Relief Valve (PLV).
- Any airlock that is used in the processing of explosive materials in hazardous environments requires an evaluation on the part of the user and operator of proper and adequate airlock monitoring equipment, dust control, explosion relief venting, and electrical equipment enclosures. Do not use your airlock in hazardous environments unless it has been properly equipped for the hazard.
- It is ultimately the operator's responsibility to implement the above listed precautions and insure proper airlock use, maintenance, and lubrication. Keep these instructions and list of warnings with your machine at all times.
- It cannot be assumed that every acceptable safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require future or additional procedures.
- Do not attempt to work on, clean or service an airlock, or open or remove any protective cover, guard, grate, or maintenance panel until the POWER has been turned off and LOCKED OUT, and the airlock has come to a complete stop. Please ensure all the local, state, and OSHA laws are followed.
- All electrical or electronic maintenance and service should be performed only by trained and authorized technicians.
- Assume at all times that power is "on". Treat all conditions as live. This practice ensures a cautious approach that may prevent an accident or injury.
- Before applying power to any equipment, make certain that all personnel are clear of the machine.
- Compliance with the lockout/tagout standard (29 CFR 1910.147): This standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or startup of the machines or equipment, or release of stored energy could cause injury to employees. This standard establishes minimum performance requirements for the control of such hazardous energy.

WORK SAFELY AT ALL TIMES

3. Preinstallation Preparation

Inspection and Uncrating After Delivery

1. Inspect the airlock shaft while the airlock is still secure to the shipping pallet.
    a. To inspect the airlock shaft:
        1. If damaged, remove the shaft cover located on the non-drive end of the shaft and the chain guard (see Figure 3).
        2. Check both ends of the shaft to see if they have been bent or damaged. If this is the case, file a claim with the freight company for damages and contact our customer service department.
        3. Replace the shaft cover and the chain guard.
        4. Be sure that the cover is firmly in place.

CAUTION: The shaft cover must be in place at all times. If the cover is lost in shipment or lost during airlock operation, contact our customer service department for a replacement.

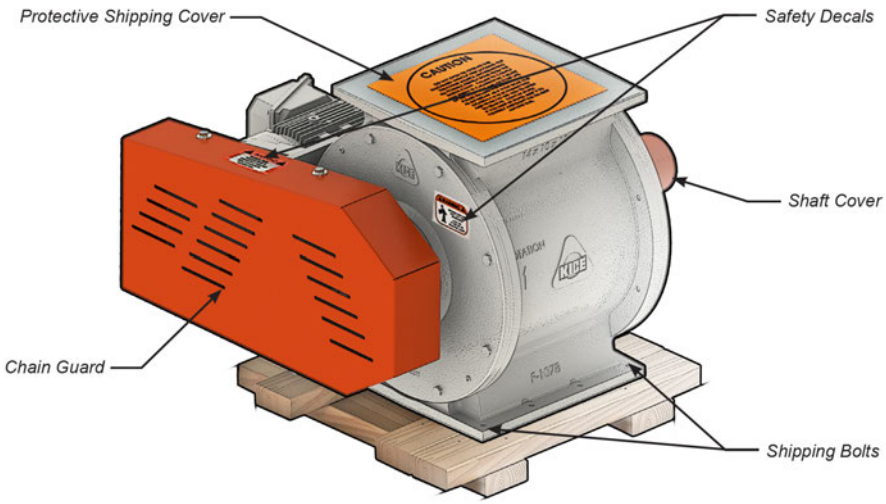


Figure 3

2. Remove the airlock from the shipping pallet
    a. Uncrate the airlock in the following manner:
        1. Remove the shipping bolts securing the airlock to the shipping pallet (see Figure 3).
        2. Lift the airlock from the pallet using a tool truck, forklift or lifting gear with sufficient lifting capacity. The airlock should be lifted carefully by the body inlet and/or outlet flange.
        3. Set the airlock on a smooth level surface.
        4. Check all the bolts to be sure they are installed securely.
3. Inspect the rotor
    a. To inspect the rotor:
        1. Locate and read all safety decals (see Figure 3).
        2. Remove the protective shipping cover (see Figure 3).

CAUTION: 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.

3. Check the rotor and the interior of the airlock for foreign material.

4. Verify that the rotor rotates freely
   a. With the airlock chain not attached, use a soft (brass or wood) probe, turn the rotor (see Figure 4). If the rotor turns freely, the inspection is complete. Refer to the maintenance section of this manual if chain needs disconnected.
   b. If the rotor does not turn freely or the rotor turns but squeals, refer to the Maintenance and Service section of this manual for proper procedures.

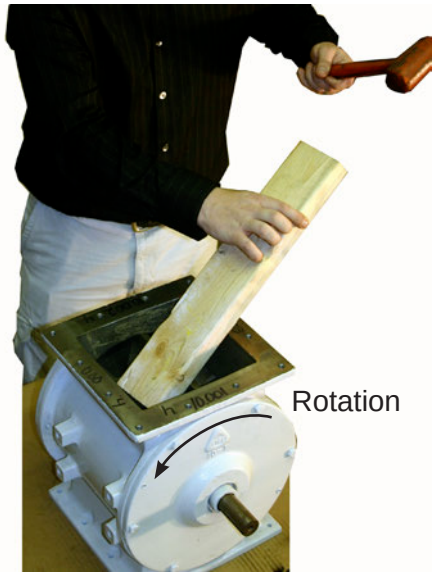


Figure 4

CAUTION: 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.

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

5. Inspect the motor
   a. Inspect the motor in the following manner:
      1. Read all the materials supplied with the airlock concerning the motor.
      2. Be sure that the motor is securely mounted to the airlock.
   b. Inspect the speed reducer in the following manner:
      1. Read all the materials supplied with the airlock concerning the speed reducer.
      2. Determine whether the speed reducer is grease lubricated (Kice standard) or oil lubricated.
      3. If the reducer is grease lubricated, do nothing. It has been filled with grease at the factory and is ready for use.
      4. If the reducer is oil lubricated, add the appropriate oil as specified by the manufacturer.

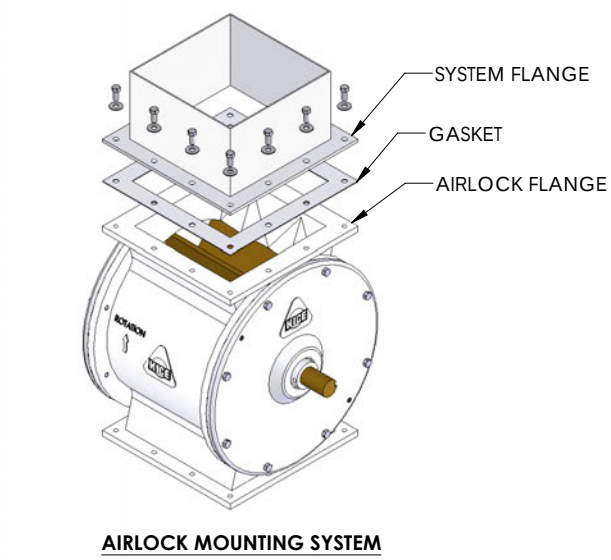
4. Installation

CAUTION: Use proper equipment when lifting or moving the airlock. Make sure all persons and obstructions are clear from path and installation area.

Installation of the Rotary Airlock Valve (which may include the motor), is completed by the operator. When installing the equipment, please make sure that the moving parts inside the equipment are not accessible. This also fulfils EN ISO 13857-1 where required.

After uncrating and inspection has been completed, install the airlock in the following manner:

1. Move the airlock to the installation area using proper equipment. The airlock should be lifted carefully by the body inlet and/or outlet flange.
2. Check the mounting surfaces of the airlock and any adjoining system components. They should be free of foreign materials.
3. Mount the airlock in place.
   a. If the airlock is a floor-mounted model, secure to the floor using lag bolts or approved anchors and then attach the airlock mounting flange(s) to the system flange(s) using fasteners and the supplied gasket(s) (see Figure 6). Be certain that a gasket is installed between the airlock flange(s) and the system flange(s).



AIRLOCK MOUNTING SYSTEM

Figure 6

   b. If the airlock is mounted into a system, but is not floor mounted, attach the airlock flange(s) to the system flange(s) using fasteners and the supplied gasket(s) (see Figure 6). The airlock should be attached to the sturdiest element first. Be certain that a gasket is installed between the airlock flange(s) and the system flange(s).

NOTE: Airlocks with cast bodies require only bolts and washers for mounting, since the mounting holes have been tapped. Airlocks with fabricated bodies require bolts, washers, and nuts.

4. Tighten all mounting fasteners securely.

WARNING: High voltage and rotating parts can cause serious or fatal injury. Only qualified, trained, and experienced personnel should perform installation, operation and maintenance of electrical machinery. Make sure that the motor and the frame of the airlock is effectively grounded in accordance with OSHA safety and health standards, the National Electrical Code, and local codes.

5. Connect the power source to the airlock motor.

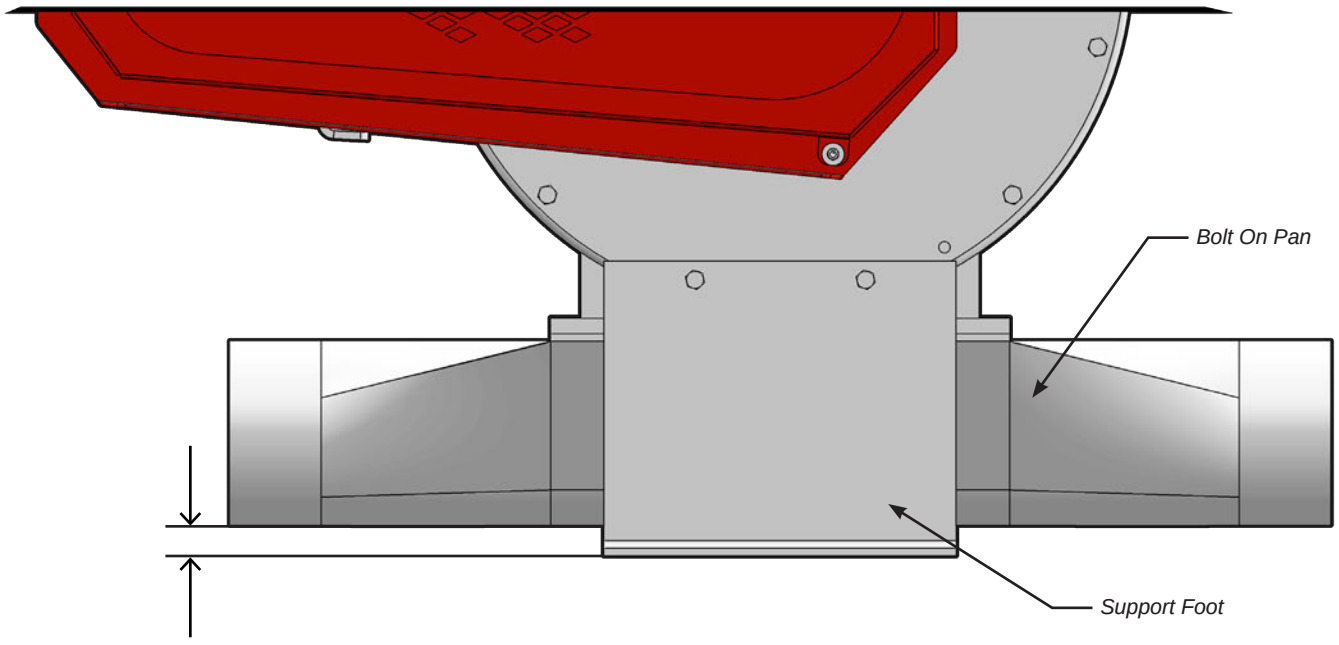
6. Test run the airlock. If any unusual noises occur, disconnect and lockout the power source, and check the wiring hook-ups to the motor. If the airlock rotor was turning in the wrong direction, reverse the wiring hook-ups to the motor, and retest.

7. After approximately 48 hours of operation, the drive chain tension will need to be checked. Refer to the Maintenance and Service section of this manual for proper procedures. Repeat this step again in two to three weeks.

CAUTION: The airlock drive chain is a special self-lubricated chain. Do not oil or otherwise lubricate.

SUPPORT FEET

Support feet are provided on airlock valves with bolt on pans. This allows the airlock to be floor mounted while maintaining clearance between the bolt on pan and the floor. The standard minimum clearance between the bottom of the bolt on pan and the floor is 1.0” as shown below, unless otherwise specified. Support feet also provide a stable base for the shipping and handling of airlocks when bolt on pans are attached. If the airlock will be installed and supported by another piece of equipment the support feet may be removed after installation.



5. Maintenance and Service

The key to long and trouble-free airlock operation is good maintenance practices. Periodically inspect the rotor for damage caused by foreign material and for proper placement within the airlock body. Inspect the bearings and the drive chain for excessive wear. Finally, service the motor and the speed reducer as specified by the manufacturer.

The majority of operating problems that occur with an airlock can be traced to improper adjustments and delayed, or neglected maintenance. A consistently applied maintenance program will prevent many problems.

A thorough understanding of the system is required if the operating problems are to be corrected satisfactorily. A good rule to follow when troubleshooting a problem is to never make more than one adjustment at a time, thereby isolating the problem by a process of elimination. The cause of a problem is usually simple and is easy to pinpoint if you systematically check each system and function.

DANGER: Never place hands or fingers in an airlock, unless it has been disconnected and locked out, and a wooden block has been placed in the airlock to prevent the rotor from turning.

WARNING: When performing maintenance, all energy sources associated with the airlock must be locked and tagged out in compliance with 29 CFR 1910.147, local enforcement authorities, OSHA, and facility safety practices, before removing any protective cover, guard, grate or maintenance gate. Removal of transitions which expose hazards such as nip points of an airlock rotor also require lockout and tagout precautions be employed.

WARNING: Review all Safety Precautions noted in the manual before performing maintenance on equipment.

Motor and Speed Reducer Service

To obtain parts or service for the airlock motor or speed reducer, contact the local dealer or service representative for the particular make of motor or speed reducer used on the airlock. Not all airlocks use the same make.

1. **Motor**: The motor manufacturer has supplied you with safety, service, and repair information. If you have difficulty obtaining service or repair parts, contact our customer service department.
2. **Speed Reducer**: The speed reducer manufacturer has supplied you with safety, service, and repair information. If you have difficulty obtaining service or repair parts, contact our customer service department.

Rotor

If the rotor becomes blocked, does not turn freely, or begins to squeal:

First

1. Disconnect and lockout power.
2. Gain access to the rotor.
3. Place a block in the airlock to prevent the rotor from turning (see Figure 7).

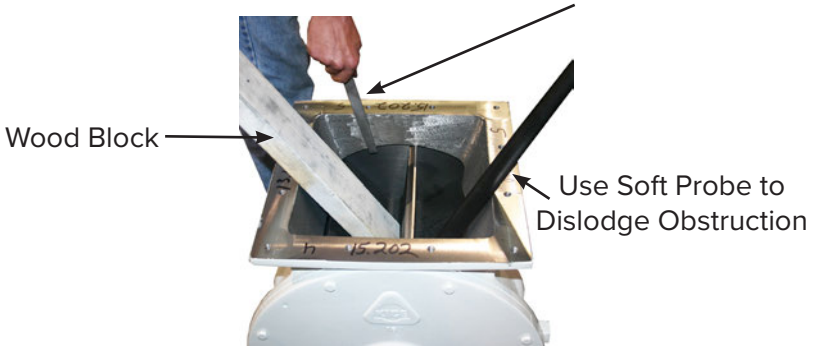


Figure 7

Then, for blockage in rotor

4. Using a probe, dislodge the obstruction from the rotor and discard (See Figure 7).
5. Remove the block and, using the probe, turn the rotor to inspect for additional foreign material.

For rotor damage – rotor does not turn freely

6. Locate the rotor damage, such as burrs or dents in the rotor vanes.
7. Remove any burrs or dents using a file (see Figure 7).

CAUTION: When removing burrs or dents, remove only the damage. Proper clearance (.004" ± .001" in smaller airlocks and .005" ± .001" in larger airlocks) must be maintained between the rotor vanes and the airlock body.

Airlock Valves with Inboard Bearings

For rotor adjustment – rotor squeals during operation

8. Using a feeler gauge, check the clearance between the rotor and the airlock end plates (see Figure 8). There should be a minimum of .003" to .004" standard clearance.
9. If adjustment is needed, remove the chain guard, shaft cover, drive chain, sprockets and bushing, chain guard backplate, and both lock collars (see Figure 9).
10. Using a soft hammer and feeler gauge, set the proper clearance between the rotor and the end plate on either end by tapping on the shaft. Set the lock collar on this end of the rotor.
11. Now check the clearance at the other end of the rotor. It should have a minimum of .003" to .004" clearance. Extra clearance is acceptable.
12. Set the remaining lock collar. Be sure to set the collar opposite the collar on the other end of the rotor shaft.
13. Turn the rotor with the probe to see that it turns freely and quietly.
14. Reinstall the chain guard backplate along with the sprocket and bushing on the airlock shaft and the sprocket on the motor shaft. Align the sprocket on the motor shaft with the sprocket on the airlock shaft and reinstall the drive chain.
15. Reinstall the chain guard and the shaft cover.
16. Reconnect power.

Use Feeler Gauge to Check Clearance Between Rotor and Endplate

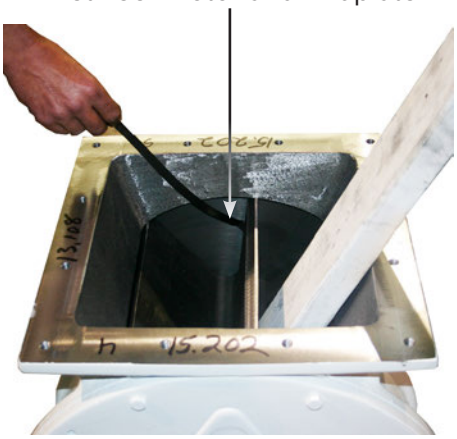


Figure 8

To remove the rotor:

1. Disconnect and lock out power.
2. Remove the chain guard and shaft cover.
3. Remove the drive chain.
4. Remove the sprockets and bushing and the chain guard backplate.
5. Remove both lock collars and dress the shaft using a file and emery cloth (see Figure 9).

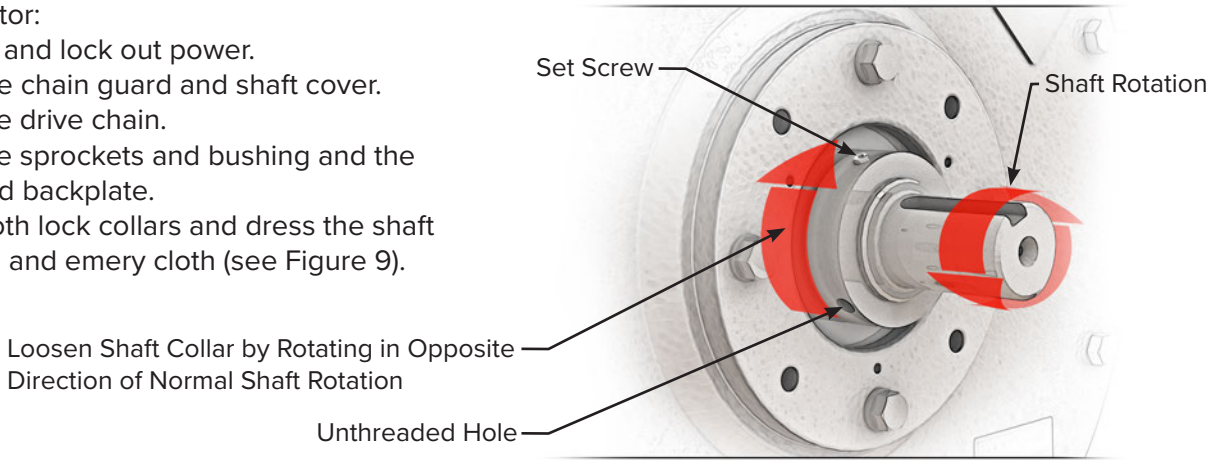


Figure 9

CAUTION: Burrs or dents must be removed from the rotor shaft before attempting bearing removal to prevent scoring of inner race.

6. Remove the bolts on one end plate (see Figure 11).
7. Tap on the rotor shaft using a soft hammer (see Figure 11).
8. Remove the end plate (see Figure 10). Socket head set screws are provided to assist in end plate removal.
9. Remove the rotor by pulling it out of the airlock body.
10. To replace or reinstall the rotor, follow the above steps in reverse order.

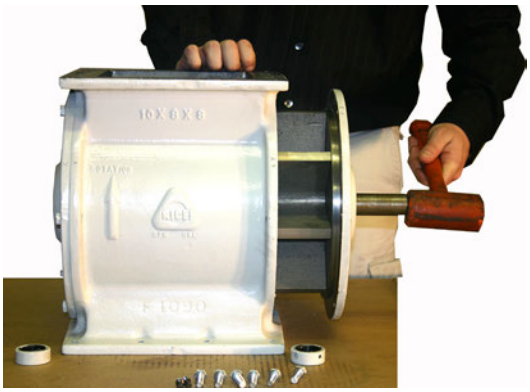


Figure 10

BEARINGS

When performing bearing replacement, use Kice replacement parts only. Other bearings may fit, but will not function properly. If the bearings are removed from the airlock for any reason, they must be replaced, not reinstalled.

CAUTION: Bearings not purchased from Kice are standard high-speed bearings. Special low-speed, close tolerance bearings are used in all Kice airlocks.

To remove inboard bearings:

1. Remove the end plate as stated above. If both end plates are removed, they should be marked so that each end plate can be reinstalled on the same end of the airlock body from which it was removed.
2. Place the end plate on wooden blocks with the machined surface down.
3. Tap the bearing and shaft seal through the end plate using a brass rod and discard both the bearing and the shaft seal (see Figure 11).

Figure 11

4. Turn the end plate over and install a new bearing using a brass driver (see Figure 12).

Figure 12

5. Pack the bearing void and shaft seal using Keystone Nevastane HT/AW-2 grease (see Figure 13).

Figure 13

6. Seat the seal by lightly tapping with a soft hammer (see Figure 14).
7. Reinstall the end plate.

Figure 14

Chain Maintenance

Chain service life will be maximized when installed and maintained properly. Most chains require regular lubrication. However, the chain supplied by Kice is factory lubricated and further lubrication is not needed except in extreme applications. Follow the recommend chain maintenance guidelines below.

1. Turn off airlock and remove all potential energy sources following SOPs and lockout/tagout procedures before removing chain guard cover.
2. Confirm the sprockets are in good condition and teeth are not excessively worn.
3. Confirm the chain is free of grit and debris and is in good condition. Pins and bushings should not have flat surfaces and should release smoothly from each sprocket while in motion.
4. Verify all three sprockets are aligned in the same plane. The idler sprocket will determine the axial alignment plane.

5. Adjust chain tension to allow chain deflection equal to 2% to 3% of shaft center distance.

Example: Shaft center distance=7 inches →Chain deflection ~ .175 inches

a. Loosen nut on idler sprocket.
b. Push idler sprocket up along the slide path to tighten chain (Figure 15).
c. Secure idler sprocket position by tightening the idler sprocket nut.

NOTICE: The chain tension should be checked after 48 hours of operation. Check it again after two to three weeks of operation.

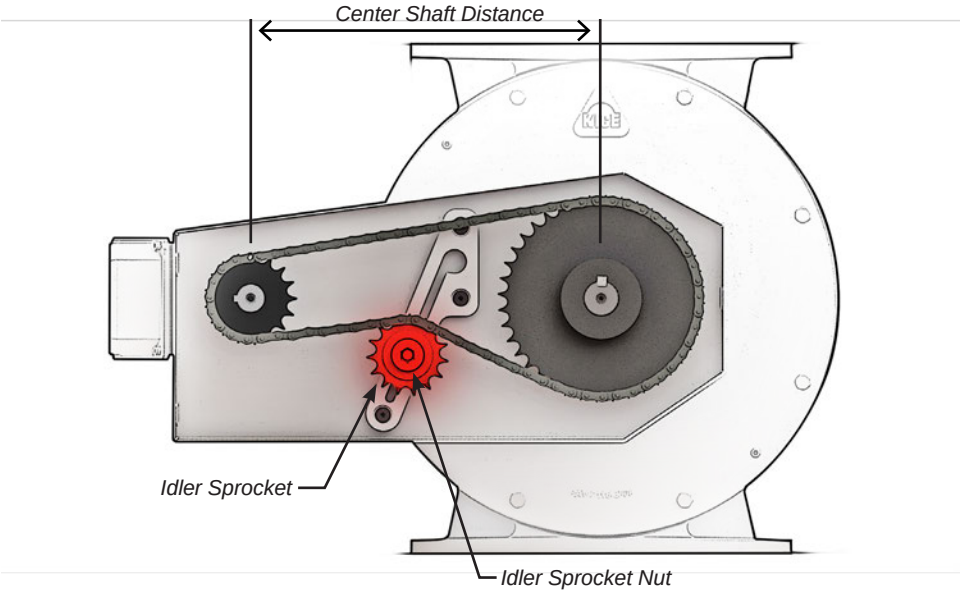


Figure 15

DIRECT DRIVE

The motor and coupling manufacturer has supplied you with safety, installation, service, and repair information. If you have difficulty with service, obtaining service or repair parts, contact our customer service department.

When installing, servicing or maintaining a direct drive Rotary Airlock Valve, it is necessary to ensure the exact alignment of the motor and coupling shafts.

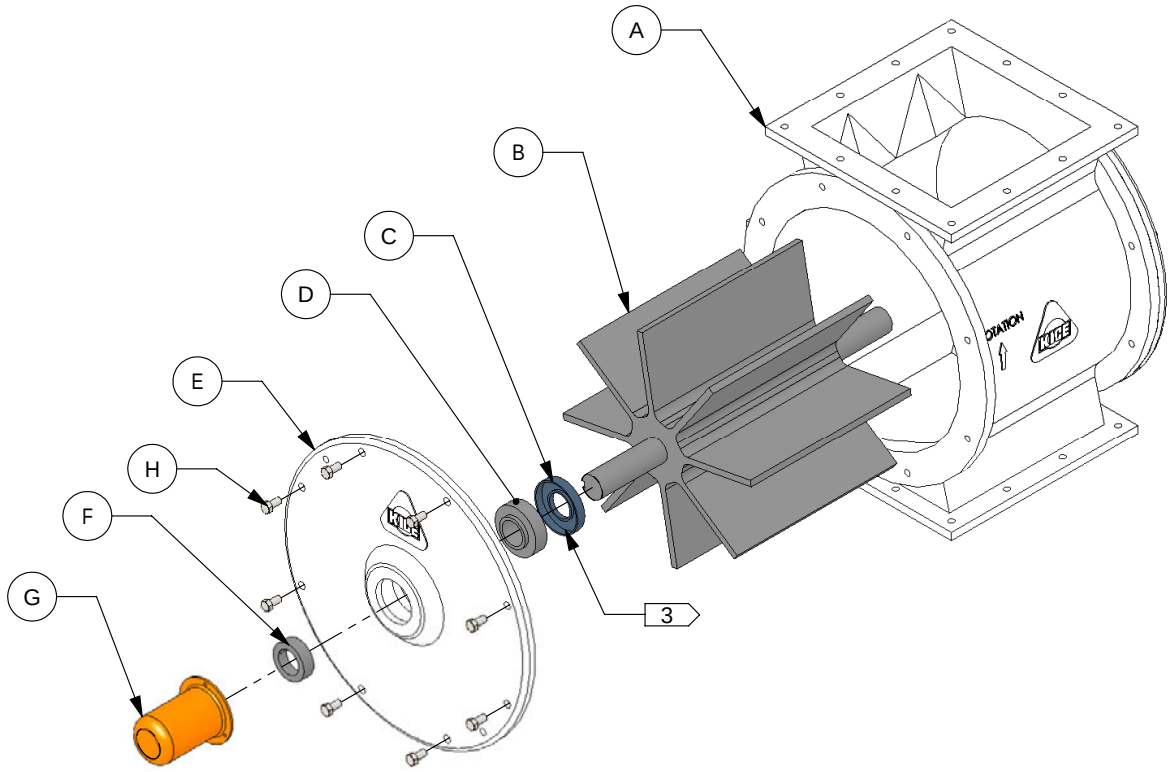
6. Torque Values for Maintenance and Installation

Recommended U.S. BOLT TORQUE* *Coarse thread only*							
		SAE Grade 5	SAE Grade 5	SAE Grade 8	SAE Grade 8	Socket head cap screw	Socket head cap screw
Bolt Dia.	Thread Size	lb – ft	N – m	lb – ft	N – m	lb – ft	N – m
1/4	20	8.4	11	12	16	11	15
5/16	18	17	24	25	33	23	31
3/8	16	31	42	44	59	41	55
7/16	14	49	67	70	95	65	59
1/2	13	74	100	110	140	100	140
9/16	12	100	140	150	210	140	200
5/8	11	140	190	210	290	200	270
3/4	10	240	330	380	510	350	480
7/8	9	390	520	610	820	570	770
1	8	570	780	910	1100	850	1200
1-1/8	7	790	1100	1300	1700		
1-1/4	7	1100	1500	1800	2500		
1-3/8	6	1500	2000	2400	3200		
1-1/2	6	1900	2600	3200	4300		
1-5/8	5.5	2400	3300	4300	5900		
1-3/4	5	3000	4100	5000	6800		
2	4.5	4500	6100	7500	10000		

*Values above are approximations; consult with the manufacturer for torque data.
Significant variation may exist within the same grade and size between manufacturers.

7. Illustrated Parts List - VB, VD, and VJ

BILL OF MATERIAL				
ITEM	DESCRIPTION	MODEL	PART NO.	QTY.
A	BODY	-	-	1
B	ROTOR	-	-	1
C	NTI, DOUBLE LIP SEALS	6x6 THRU 12x8	NTI1154-3	2
		14x10 THRU 16x12	NTI1154-2	
		18x12 THRU 24x15	NTI1154-1	
D	LINK BELT BEARINGS	6x6 THRU 12x8	WB 219	2
		14x10 THRU 16x12	WB 223	
		18x12 THRU 24x15	WB 231	
E	END PLATE	-	-	2
F	LOCK COLLAR (SUPPLIED w/ BEARING)	-	-	2
G	SHAFT COVER	-	-	1
H	HHCS, 3/8"-16 x 1" LG.	6x6	-	8
		8x6 THRU 10x8		12
		12x8 THRU 16x12		16
		18x12 THRU 20x15		24
		24x15		32



GEN. NOTES.

1. STANDARD CLEARANCES ROTOR, ENDPLATE, & BODY
   - .004 ± .001 (6x6 THRU 14x10)
   - .005 ± .001 (16 x12 THRU 24X15)
2. SHAFT COVER USED ON NON-DRIVE END ONLY.

3 SHAFT SEAL VOID IS PACKED w/ "KEYSTONE" NEVASTANE (FOOD GRADE) LUBRICANT.

REV.	CHANGE	DATE	BY
1	UPDATED ITEM D PART #'S	01-08-10	JPG

VB, VD, & VJ AIRLOCK
DESCRIPTION:

KICE INDUSTRIES, INC.
5500 MILL HEIGHTS DR. WICHITA, KANSAS 67219
PH: (316) 744-7151 FAX: (316) 744- 7355

DWN:	DATE:	DWG. NO.
EJS	2/19/07	RAV-5000R01

KICE INDUSTRIES, INC.
5500 N. Mill Heights Dr.
Wichita, KS 67219-2358
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