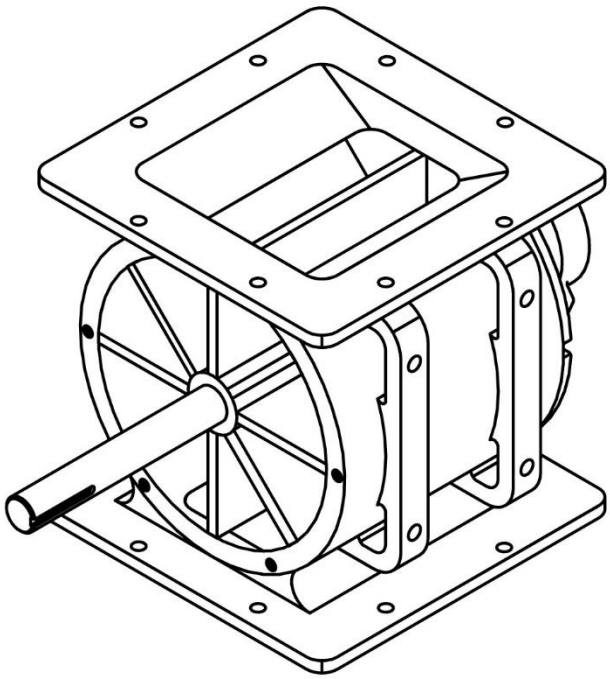
INSTALLATION/OPERATION AND MAINTENANCE MANUAL

DO NOT OPERATE THIS MACHINE WITHOUT FIRST READING THIS MANUAL COMPLETELY.

PRATER AIRLOCKS • MILLS • SEPARATORS

ROTARY FEEDERS



MODEL _____

SERIAL NO. _____

PRATER AIRLOCKS • MILLS • SEPARATORS

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SECTION 1: INTRODUCTION

1.1 Manual Overview

This manual describes the Prater Rotary Airlock Feeder and its installation, operation and maintenance. To insure the reliable operation and long service life of this equipment as well as personal safety, it is important that this manual is understood and referenced.

1.2 Safety Notices

Throughout this manual safety notices are provided to call out important safety concerns. As with all mechanical devices, basic safety considerations as well as proper tools, methods and training, should be used with the Prater Rotary Airlock Feeder.

Examples of the three types of safety notices (Warnings, Cautions, and Notes) in this manual are listed below.

WARNING: INDICATES A SITUATION IN WHICH PERSONAL INJURY MAY OCCUR.

CAUTION: INDICATES A SITUATION IN WHICH DAMAGE TO EQUIPMENT OR MATERIAL MAY OCCUR.

NOTE: Provides helpful information for proper operation of the Rotary Airlock Feeder.

1.3 Safety Precautions

The safety checklist below and warnings provide basic guidelines for operation, but the precautions listed in this manual may not be all-inclusive. Specific operations, environments, and industries may introduce special safety concerns of which it is the responsibility of those involved with this equipment to observe.

WARNING OPERATORS MUST BE INSTRUCTED NOT TO PUT HANDS, FINGERS OR OTHER FOREIGN OBJECTS IN THE MACHINE, AND NOT TO REMOVE ANY COVER, DOOR, HATCH OR OTHER PROTECTIVE DEVICE. COVERS, DOORS, HATCHES AND OTHER PROTECTIVE DEVICES ARE PLACED ON THIS MACHINE FOR THE SAFETY OF THE OPERATOR. ANY ATTEMPT TO DEFEAT THESE DEVICES COULD RESULT IN SERIOUS INJURY.

WARNING ELECTRICAL SERVICE TO THE MACHINE MUST BE LOCKED OUT WHILE ANY REPAIRS OR ADJUSTMENTS ARE BEING MADE OR WHILE ANY COVER, DOOR, HATCH OR OTHER PROTECTIVE DEVICE IS NOT IN PLACE.

1.4 SAFETY CHECKLIST

_ **ALWAYS** operate Rotary Airlock Feeder in accordance with instructions in this manual.

_ **ALWAYS** have a clear view of unit loading and unloading points and all safety devices.

_ **ALWAYS** allow unit to stop naturally. DO NOT attempt to artificially brake or slow motion of unit.

_ **KEEP** area around unit, drive and control station free of debris and obstacles.

_ **AVOID** poking or prodding into unit openings with bar or stick

_ **DO NOT** open inspection doors while unit is in motion.

_ **DO NOT** use the Rotary Airlock Feeder for processing of material other than the specific application for which it was designed.

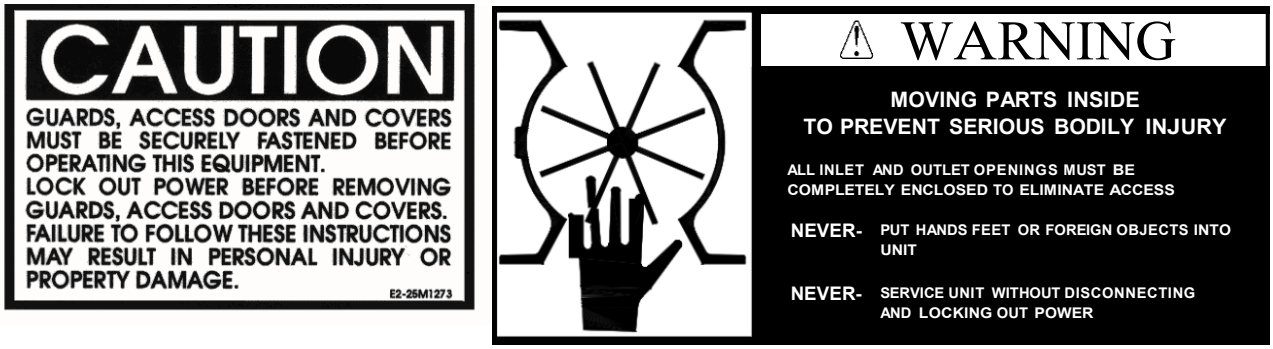
_ **NEVER** work on unit and related components unless electric power and motor drive have been locked out and tagged. The National Electrical Code requires a manually operable disconnect switch located within sight of motor, or a controller disconnecting means capable of being locked if not within sight of the motor.

_ **NEVER** operate unit without guards and all safety devices in position and functioning.

_ **NEVER** put your hand near, on, or in the inlet or outlet of the airlock while it is operating or stalled.

Illustration A-A shows safety labels installed on the Rotary Airlock Feeder. These labels should be understood by all personnel, and not removed or covered under any circumstance.

Illustration A-A



1.5 Contact Information

If any questions or uncertainties arise concerning the Rotary Airlock Feeder please contact Prater Industries customer service.

Customer Service	(800) 323-5735
	(800) 799-1902
Sales	(800) 451-6958
Airlock Sales	(877) 247-5625

Notes:

SECTION 2: AIRLOCK UNIT OVERVIEW

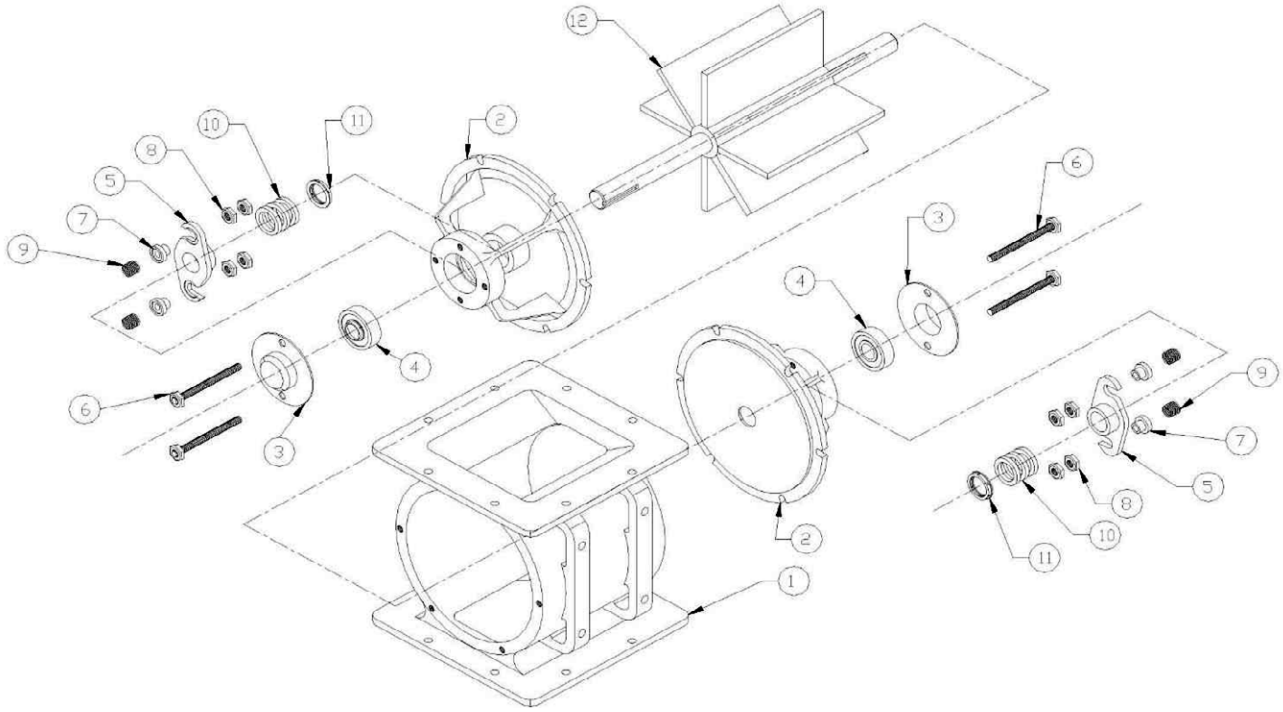
2.1 Field of Operation

Prater Rotary Airlock Feeders are primarily used to perform three basic functions:

1. Feed free flowing material from a bin or hopper.
2. Deliver fines from a collector while sealing against air loss.
3. Feed free-flowing material into or out of a pneumatic conveying system against pressure or vacuum.

2.1.1 Unit Design

Exploded View



NO.	DESCRIPTION	NO.	DESCRIPTION
1.	HOUSING	7.	SPRING RETAINER
2.	END PLATE	8.	SPRING RELEASE NUT
3.	BEARING CAP	9.	SPRINGS
4.	BEARING	10.	PACKING
5.	PACKING GLAND	11.	LANTERN RINGS (OPTIONAL)
6.	SOCKET SET SCREWS	12.	8 BLADE OPEN ROTOR

2.1.2 Materials/Coatings

Prater heavy-duty airlock housings and end plates are made of cast iron and/or 316L stainless steel. Coatings that are available for the housing & endplates are chrome, tungsten carbide, teflon, & electro nickel. Coatings that are available for the rotor are chrome, tungsten carbide, teflon, & stellite.

2.2 Rotor Overview

The eight-blade rotor is the standard on all heavy-duty airlocks. Rotors could have several options.

Beveled Rotor Blades: used for materials that have a tendency to smear or pack
Bolt-On Wear Bars: used in excessive wear applications.
Closed End Rotor: used to reduce air leakage and to contain material
Shallow Pocket Rotors: used to reduce the capacity of a rotor.

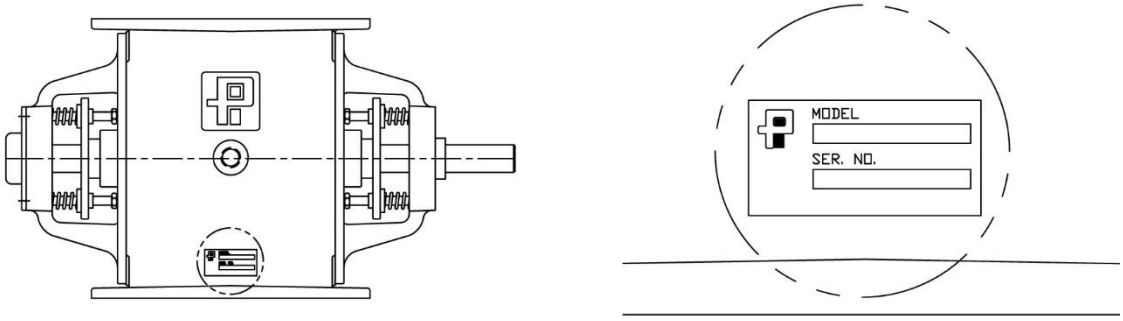
2.2.1 Rotor Speed

Rotor speeds and airlock sizes will determine the volume of material passing through an airlock. Standard design for airlocks is to run at 15 RPM. Airlocks can be set up to run between 5 and 25 RPM. Running over 25 RPM may result in the pockets not filling properly and could result in excess wear which would reduce the life expectancy of your airlock.

2.3 I.D. Tag

The I.D. tag can be found on the return side of the unit see figure B-B. The model number and serial number will be found on the I.D. tag.

Figure B-B



2.4 Operating Principle

The Prater Rotary Airlock Feeder has been manufactured with the upmost quality, materials, and workmanship, and if given reasonable care, will perform perfectly with minimum maintenance. Each part has been machined to close tolerances to assure the best fit between all components as well as interchangeability.

2.5 Specifications

2.5.1 Standards and Weights

Table C-C
Airlock Standards and Weights

PAV	6	8	10	12	14	16	1420	18	1824	2830
Rotor Speed (RPM)	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30
Motor Size (HP)	1/2	3/4	1	1-1/2	2	3	1-1/2	3	3	5
Weight (Lbs)	98	143	225	495	650	760	540	1175	1275	3450
Weight w/ Drive (Lbs)	170	250	350	560	775	1095	625	1300	1400	3825
Std. Blades Config	8	8	8	8	8	8	8	8	8	10
Other Blade Config's	6	6	6	6	10	10	10	10	10	--

2.5.2 Capacities

Table D-D
Airlock Capacity Chart (cubic feet per minute) @ 80% of Maximum

Size	RPM				
	5	10	15	20	25
PAV 6	0.60	1.20	1.80	2.40	3.00
PAV 8	1.20	2.40	3.60	4.80	6.00
PAV 10	2.10	4.20	6.30	8.40	10.50
PAV 12	3.80	7.60	11.40	15.20	19.00
PAV 14	--	11.80	17.70	23.60	29.50
PAV 16	--	18.40	27.60	36.80	46.00
PAV 1420	--	10.40	15.60	20.80	--
PAV 18	--	22.00	33.00	44.00	--
PAV 1824	--	24.00	36.00	--	--
PAV 2830	--	78.00	117.00	--	--

SECTION 3: INSTALLATION

3.1 Introduction

The installation of Prater's Rotary Airlock Feeder is critical in providing both efficient and productive operation of the unit, and longevity of the unit.

3.2 Receiving the Unit

When your shipment arrives, thoroughly inspect the Rotary Airlock Feeder and all related equipment. In the event of shipping damage, note the problem on the bill of lading or freight bill and make sure you obtain the driver's signature for possible claim against delivering carrier.

NOTE It is the receiver's obligation to file claims for shipping damage.

3.3 Before Installation

Be sure the installation crew is aware of installation requirements. If there is any question or uncertainty clarify the matter to avoid improper installation. Personnel responsible for installation should be familiar with all the procedures and information in this manual.

In preparing for installation, make sure you provide for all appropriate safety devices. Prater Industries Inc. does not install your machine, thus it is your responsibility to provide lockout switches, guards, and other safety devices and safety procedures to protect the machine operator or maintenance personnel.

3.4 Location

There are two essential considerations for the Rotary Airlock Feeder location: the foundation below the machine and the free clearance around it.

3.4.1 Foundation

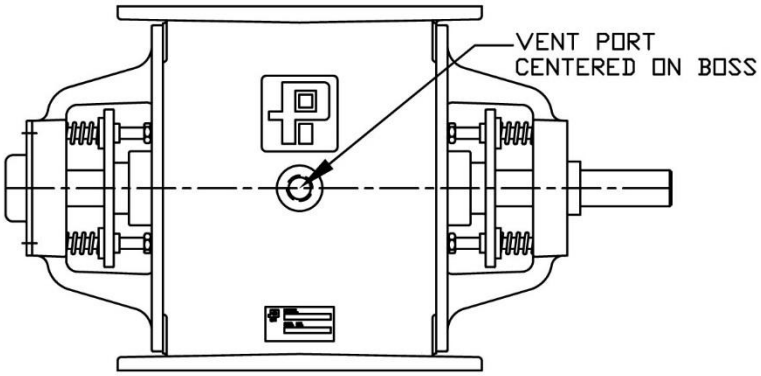
The Rotary Airlock Feeder must be supported in a strong stable vibration free location. The Rotary Airlock Feeder should never be located where it is supporting other equipment, hoppers, or other structural loading. Additional weight applied to the airlock can distort the housing causing binding of the rotor.

3.4.2 Clearance

There should be sufficient open space in all directions around the Rotary Airlock Feeder to allow access for maintenance operations.

3.5 Pneumatic Line

When used in a pressure system Rotary Airlock Feeders may need a gasket between the mounting surfaces to prevent any leakage of product or air. A pocket vent is used to relieve the pockets of any pressure on the return side of the airlock. It could be discharged to either the atmosphere or a dust collector system. We recommend running it to a dust collector system for optimal operation.



POCKET VENT AND PORT SIZES	
AIRLOCK	**PORT SIZE**
AV-6	1/2"
PAV-8	1/2"
PAV-10	3/4"
PAV-12	1-1/2"
PAV-14	1-1/2"
PAV-16	1-1/2"
PAV-1420	1-1/2"
PAV-18	1-1/2"
PAV-1824	1-1/2"
PAV-2830	2"

3.6 Leveling

The Base of the unit must be level to prevent vibrations that will accelerate wear. Before tightening the fastening bolts, check for correct unit leveling at corners of the Airlock Feeder.

To correct level:

1. Insert shims for proper alignment.
2. Re-check level at corners of Rotary Airlock Feeder.
3. Tighten all fastening bolts.

3.7 Vibration

The Prater Rotary Airlock Feeder is constructed to run without noticeable vibration. Vibration indicates a problem that must be found and corrected immediately. Left uncorrected, vibration will cause the following:

- Rotary Airlock Feeder damage
- Structural damage

There are several conditions that cause vibrations, including:

- Uneven base
- Loose motor fasteners
- Defective motor or Rotary Airlock Feeder bearings (See Section 5)
- Other equipment transferring vibration thru contact with the Rotary Airlock Feeder.
- Foreign material in the Airlock Feeder.
- Material temperature higher than specified.
- Vibration of the Airlock Feeder's motor.
- Chain to Sprocket not aligned

3.8 Drive

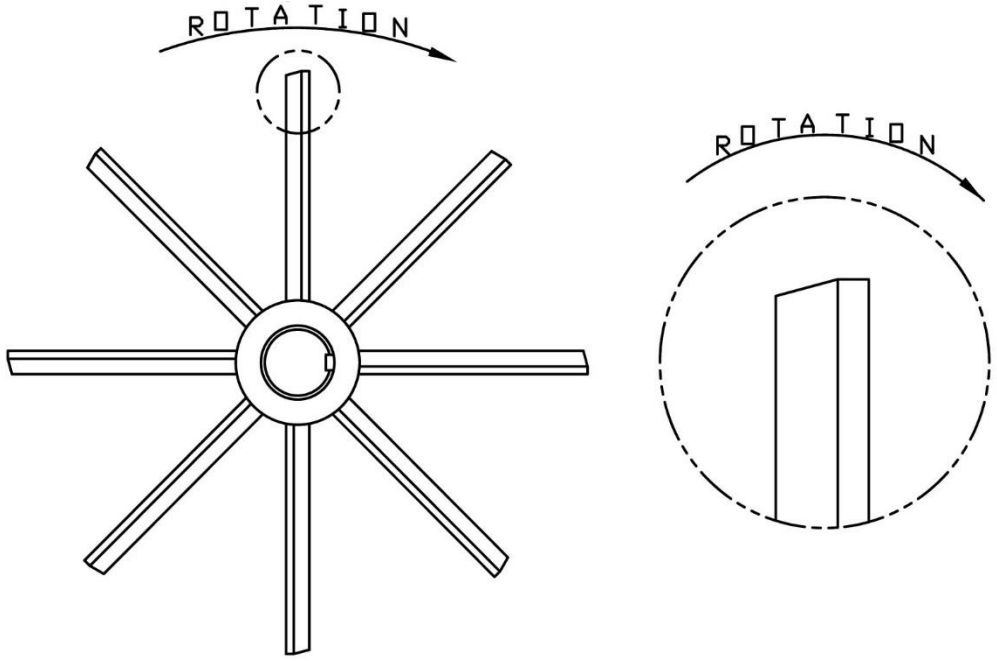
The Rotary Airlock Feeder has been supplied with the proper drive and is properly mounted. A chain guard will be provided with all Rotary Airlock Feeders, unless the customer requests, in writing, that the guard need not be provided. The guard is built to rigid specifications to our standard center distances and locations. "OSHA" requirements mandate guarding all drives, and the customer MUST supply an approved design guard if he requests Prater Companies not to supply one. Exposed chains are a HAZARDOUS condition.

3.9 Beveled Rotors

The rotary Airlock Feeder may be equipped with a rotor having the trailing edges and tips beveled. This is done to provide a relief angle to prevent material from smearing or catching between the endplate and rotor.

In this instance, it is important that the rotation of the rotor be in such a manner so that the square edge of the rotor leads and the beveled edge trails. This will result in a clockwise rotation of the rotor when viewed from the drive end of the airlock as shown in Figure G-G

Figure G-G Beveled Rotor Orientation



3.10 Air Purge Seals

Under certain operating conditions, especially when the feeder is handling abrasive dust, it may be desirable to purge the packing gland with compressed air or inert gas (Do not operate the rotary airlock feeder with optional air purge seals without pressurized clean and dry air stream or inert gas flow). This is accomplished by installing a lantern ring in place of the innermost ring of the packing, immediately adjacent to the rotor side of each end plate. The ring is so designed as to distribute the air or inert gas evenly in a thin film around the shaft. Both end plates have a 3/8" NPT for connecting a compressed air line to the seals. Purge air pressure should be 2-5 PSI or 3-5 PSI above conveying system pressure if installed in a pneumatic conveying line. The purge air loss will be about 1 SCFM. If the air pressure is set too low or is not properly connected, material will not be properly cleaned from the air purge lantern ring and will damage the ring and seals, requiring replacement.

CAUTION: DO NOT OPERATE ROTARY AIRLOCK FEEDER WITH OPTIONAL AIR PURGE SEALS WITHOUT PRESSURIZED CLEAN AND DRY AIR STREAM OR INERT GAS FLOW.

3.11 Electrical Requirements

Install connections to meet all national local electrical codes. Consult with your local power company before installation.

NOTE: The National Electrical Code requires a manually operable disconnect switch located within sight of the motor, or a controller disconnecting means capable of being locked if not within sight of the motor.

Effective October 31, 1989, OSHA requires that all energy disconnect devices be capable of accepting a lock-out/tag-out device. This requirement is mandatory for any new equipment being installed or for replacement, repair or modification of older equipment. The employer must:

- Produce a written program explaining the procedure.
- Conduct an annual inspection to verify compliance.
- Provide documented employee training in these procedures.

3.11.1 Gearmotor Electrical Connections

Check the motor nameplate to verify the phase, hertz and voltage agrees with the available power supply. Connection should conform to local codes. A connection diagram for the motor is located inside the conduit box and on the motor nameplate. The motor starter should incorporate an overload protector.

3.11.2 Electrical Interlocking & System Component Starting/Stopping Order

As a general guide, the last piece or process equipment is started first with subsequent starts working up the line to the feeder being the last item started and the first item stopped. If used as a bin discharge, it should be started first and stopped last.

3.11.3 Gearmotor Startup

All units are lubricated before shipment. The breather is plugged for shipment. Before start-up or prolonged storage remove the plastic wick from the breather. The lubricant level should be checked with the unit mounted in its correct operating position. Lubricant should be added or removed to bring it to the correct level.

3.12 Unit Check

After installation is complete, carefully inspect all work and review installation requirements of this manual before installation crew leaves.

SECTION 4: OPERATION

4.1 Introduction

Pre-run inspections and safety checks throughout this section insure that the Rotary Airlock Feeder is in proper operating condition.

4.2 Before Operation

All operating personnel must be well trained in procedures for operating and maintaining the Rotary Airlock Feeder as illustrated in this manual. Of particular importance is detailed understanding of the safety precautions described in section 1.

4.3 Safety Check-Up

Before Starting the Rotary Airlock Feeder check for:

- Foreign material, i.e., nuts, bolts, wire, rags, paper, wood, etc., which may have been left in the Rotary Airlock Feeder, or system piping.
- Properly mounted guards.
- Electrical starting equipment, meters, disconnect switches, and other control devices, to see that they are clearly visible and readily accessible.
- Air Purge compressed air supply, if unit has air purged lantern rings.

4.4 Starting and Stopping Check List

This checklist should be followed during the initial installation and after any shut down period or maintenance procedure.

1. Check inside Rotary Airlock Feeder and remove any foreign material that may have accumulated during shipment and installation.
2. Check rotor for correct direction or rotation relative to material feeding.
3. Check tension and alignment of drive chain.
4. Make sure gearbox lubrication is sufficient. (Section 5.7)
5. Set up and check compressed air supply if unit is supplied with air purged lantern rings.
6. Make sure no tension from surrounding equipment is placed on airlock feeder housing.
7. First start should be without product. Check to see if packing glands are under spring pressure for proper sealing of packing.
8. Feed material into Rotary Feeder inlet while unit is in operation.
9. Do not continue to operate when malfunctions occur or problems arise.

Notes

SECTION 5: MAINTENANCE

5.1 Introduction

The Rotary Airlock Feeder is designed to operate with minimum maintenance. Routine inspections and regular maintenance will identify any work or broken parts before they become a problem. Worn or broken parts are damaging to the Rotary Airlock Feeder and its output.

WARNING DO NOT OPEN ROTARY AIRLOCK FEEDER OR ATTEMPT ANY FORM OF INPSECTION UNTIL THE AIRLOCK HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISSCNNECT HAS BEEN LOCKED OUT.

5.2 Routine Inspection

Rotating equipment requires regular routine preventative maintenance procedures. Regular inspection of the rotor blades should be carried out particularly where abrasive materials are being processed. The wear pattern on the rotor blades will vary depending upon operating condition. If visual inspection shows noticeable wear which would allow for air or product leakage replacement of rotor, or optional wear bars may be required.

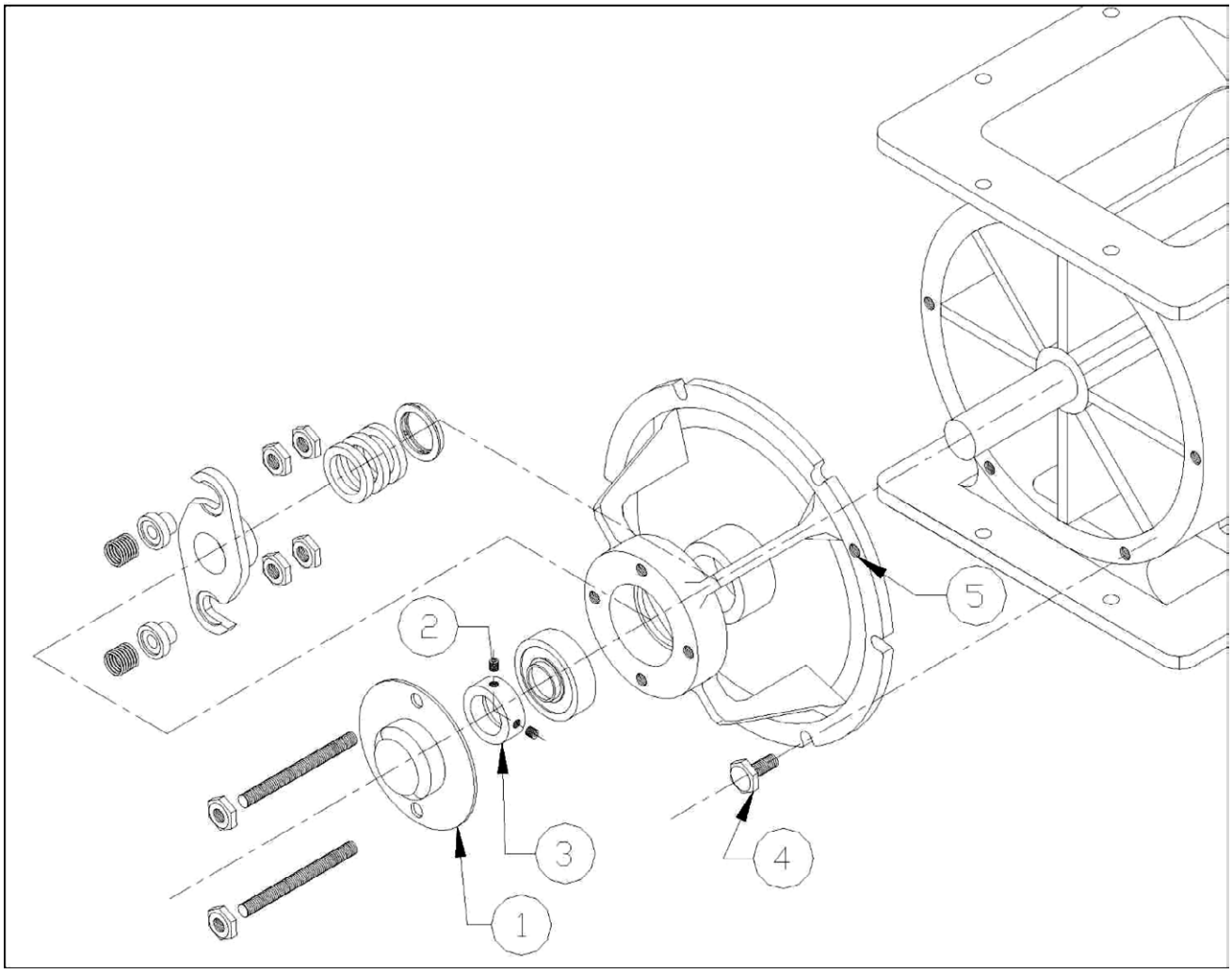
5.3 End Plate Removal

1. Turn off the Rotary Airlock Feeder and allow the rotor to come to a complete stop.
2. Lock out electrical power to the Rotary Airlock Feeder.
3. Remove bearing cap (1) in Figure H-H.
4. Loosen set screws (2) in the eccentric locking collar (3) which secures the bearing inner race to the shaft.
5. Rotate the collar (3) to the left until it is free, then slide it off the shaft.
6. Remove the 6 cap screws (4) which secure the end plate to the housing.
7. Slide the entire end plate assembly, complete with bearings, packing and packing gland off the shaft.
8. If there is difficulty removing the end plate, jack bolt holes (5) have been provided. Insert a bolt in each jack bolt hole and slowly screw the bolt into the end plate. When the bolt hits the housing the endplate should begin to detach from the housing.
9. To re-attach the end plate and follow the procedures of this section in reverse order. Whenever the locking collars are removed from the rotor it is necessary to re-gap the rotor in the housing upon reassembly as described in Section 5.4.

5.3.1 Jack Bolt Holes

Two jack bolt holes are supplied on each end plate for PAV-6, PAV-8, PAV-10 & PAV-12 with a 3/8-16 thread. PAV-14, PAV-16, PAV-18 & PAV1420 have a 5/8-11 thread. No jack boltholes are supplied for PAV-1824 & PAV-2830.

FIGURE H-H
END PLATE REMOVAL



5.4 Gapping the Rotor

When received from the factory, the Rotary Airlock Feeder has a precisely positioned rotor to create even gaps on the bore and sides of the housing. If the bearing locking collars are removed for any reason, such as removing an endplate, the rotor must be gapped before returning to operation.
To achieve the desired clearance, use feeler gages, and insert the proper clearance gage between the rotor end, and the endplate. Lock one of the bearing collars with the spacer in place. Next space the opposite gap between the rotor and the other endplate. Adjust by lightly tapping the shaft end, and when the proper gaps are achieved lock the second bearing collar. Finally make sure the proper gap is achieved between the housing bore and the rotor blade tips. If it is not, check to make sure the bearings are seated properly in the endplates. To determine proper clearances, call Prater Industries and give the CS Representative the S/N of the airlock to obtain required clearances for the application.

5.5.1 Bearings

The bearings provided in the Rotary Airlock Feeders are lubricated and sealed at the factory and require no further lubrication for the life of the Feeder. If bearing failure occurs, Prater Industries can provide replacement bearings, such as in the spare parts kit discussed in Section 5.6.

5.5.2 Re-greasable Bearings

If re-greasable bearings have been requested, they should be lubricated as needed. A zerk fitting drilled into the end plate allows for the lubrication of these bearings. Lithium based greased is recommended, and only fill bearings while the rotor is rotating.

5.5.3 Packing Replacement and Self-Adjusting Packing Glands

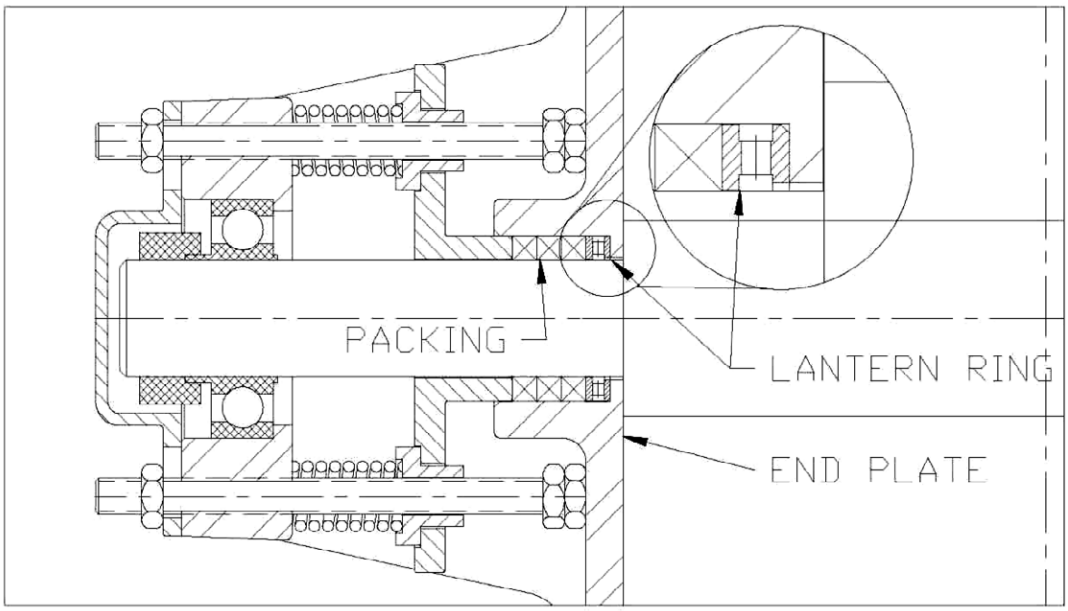
Packing seals provided with the Rotary Airlock Feeder are split rings of square sections, constructed of either abrasion resistant, or teflon. A self-adjusting packing gland is used to maintain constant pressure on the packing as it wears making periodic adjustment of packing pressure unnecessary. Packing may need replacement if product leaks develop over time and can be completed by the following instructions.

1. Remove end plate as described in Section 5.3
2. Advance both spring release nuts (8), see Section 2.1.1 along spring release screws (6) until spring retainers (7) are disengaged from the packing gland (5).
3. Disengage packing gland (5) from spring retainers (7) by rotating it 90°. Slots are provided in the packing gland (5) to allow rotation.
4. When the packing gland (5) is free of the end plate remove old packing and insert new packing in the end plate packing cylinder (2). For best results, stagger the packing split cut of the different packings.
5. To re-assemble the packing gland (5) it may be necessary to further compress springs (9) by advancing spring release nuts (8) against spring retainers (7) until packing gland (5) can be re-engaged with spring retainers (7)
6. After the packing gland is re-engaged advance both spring release nuts (8) back down the spring release screw (6) and snug them down to the end plate (2).
7. Finally re-attach the end plate by following the reverse procedure in Section 5.3.

5.5.4 Lantern Ring Air Purge

It is important to always have a flow of purge air through the optional lantern ring if it is installed. If product is run through a Rotary Airlock Feeder with a lantern ring, but no air line is attached, or the line is blocked and no air is flowing, damage will occur to the lantern ring. If product leakage is developing on an air-purged system, an air flow meter can be used to make sure adequate purge air is being supplied. Even if there is a pressure on the air purge line, there still could exist an air flow blockage. Damaged lantern rings caused by lack of airflow must be replaced. For replacement follow the same procedure as packing replacement in Section 5.5.3, and always insert the lantern ring in the inner most packing position, in the orientation as shown in Figure J-J.

Figure J-J Lantern Ring Orientation



5.6 Spare Parts Kit

To keep the Rotary Airlock Feeder performing optimally, a spare parts kit can be purchased from Prater Industries. This kit includes original factory replacements to components that commonly wear. Table K-K

Table K-K

Part Number from Exploded View	Description	Quantity Included
5	Packing Glands	2
4	Bearing	2
7	Nylon Spring Retainer	4
9	Music Wire Spring	4
6	Socket Set Screw	4
8	Nut, Heavy Hex Jam	8
10	Packing	10

5.7 Gearmotor Lubrication and Maintenance Information

A. MOTOR

During maintenance, inspect the fan guard and remove any accumulated debris from under it and around the motor and gear. Motor bearings are greased during assembly. For re-lubrication the following suggestions are offered:

HOURS OF SERVICE PER YEAR	HP RANGE	SUGGESTED RELUBE INTERVAL
5,000	1/4 to 7 ½ 10 to 40 50 to 150	5 years 3 years 1 year
CONTINUOUS Normal Application	1/4 to 7 ½ 10 to 40 50 to 150	2 years 1 year 9 months
SEASONAL SERVICE Motor is idle for 6 months or more	ALL	1 year (beginning of season)
CONTINUOUS High ambients, dirty or moist locations, high vibrations, or where shaft is hot (pumps - fans).	1/4 to 40 50 to 190	6 months 3 months

Use high quality ball bearing grease. Use consistency of grease suitable for class of insulation stamped on nameplate as follows:

INSULATION CLASS	CONSISTENCY	TYPE	TYPICAL	FRAME TYPE
A & B	#2	Lithium Base	Shell Alvania Grease R 3	215 T & smaller
A & B	Medium	Polyurea	Shell Dolium Grease R	254T & larger
F & H	Medium	Polyurea	Shell Dolium Grease R	All

Procedure:
If motor is equipped with Alemite fitting, clean tip of fitting and apply grease gun. Use 1 to 2 full strokes on motors in NEMA 215 frame and smaller. Use 2 to 3 strokes on NEMA 254 through NEMA 365 frame. Use 3 to 4 strokes on NEMA 404 frames and larger. On motors having drain plugs, remove grease drain plug and operate motor for 20 minutes before replacing drain plug.

On motors equipped with slotted head grease screw, remove screw and apply grease tube to hole. Insert 2 to 3 inch length of grease string into each hole on motors in NEMA 215 frame and smaller. Insert 3 to 5 inches length on larger motors. Having grease drain plugs, remove plug and operate motor 20 minutes before replacing drain plug.

Caution: Keep grease clean. Lubricate motors at standstill. Remove and replace drain plugs at standstill. Do not mix petroleum grease and silicone grease in motor bearings.

B. GEARS
Gear units should have the oil changed every 10,000 hours or 2 years. If synthetic lubricant is used it should be changed every 20,000 hours or 4 years. For adverse operating conditions the interval should be shorter. DO NOT MIX SYNTHETIC & MINERAL BASE OILS. Units should be checked periodically for increased noise, surface temperature, vibration, shaft movement & amperage draw. Units with inspection covers should not be operated with the inspection cover removed.

The table below offers suggestions on the viscosity & manufactures of recommended lubricants.

RECOMMENDED LUBRICANTS FOR HELICAL & BEVEL-HELICAL GEARING

Type of Lubricant	Ambient Temperature Range (ºF)	kin Viscosity (cSt) at 40 ºC (mm 2/s)	Viscosity SUS 175 100 º	AGMA Lubricant No.	ISO Grade	AMOCO	CHEVRON	EXXON	MOBIL	SHELL	TEXACO
Oil	15 to 125	198 to 242	900 to 1100	5EP	220EP	AMOGEAR EP220	NL GEAR Compound 220	SPARTAN EP220	Mobil Gear 630	Omala Oil 220	Meropa 220
	-10 to + 75º	90 to 765	465 to 165	3-4EP	100-150EP	AMOGEAR EP150	NL GEAR Compound 150	SPARTAN EP150	Mobil 629	Omala Oil 100	Meropa 150
	Below 10º‡‡	15 to 680	135 to 165	-	-	-	E.P. Hydraulic Oil 22	UNIVIS J13	Mobil D.T.E. 11	-	Texamatic Fluid 9226 or Texamatic Type F
Oil-Synthetic	-40ºto175º‡ **	-	90 to 4000	-	-	-	-	-	Mobil SHC 629 or 634	-	Synstar GL75W-140
Fluid Grease	5º to 120º	-	-	-	-	-	-	-	-	-	MARKFAK 00

For bearings not lubricated in oil bath use a lithium base bearing grease, NLGI #2 or #3
‡ Ambient temperature below -20ºF and above 140ºF require special oil seals
‡‡ Consult with Nord Gear Corporation for these applications
Bold ambient temperature indicates factory filled

Actual capacity should be established by opening the oil level plug and filling until oil runs out of the oil level hole.

SECTION 6: TROUBLESHOOTING

WARNING DO NOT OPEN ROTARY AIRLOCK FEEDER OR ATTEMPT ANY FORM OF INSPECTION UNTIL THE ROTARY AIRLOCK FEEDER HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED OUT.

6.1 Introduction

This section is offered as a general guide to analyzing problems. If after reviewing this section you have not identified your problem, contact Prater Customer Service Department for further assistance.

6.2 Start-Up Problems

Prater Equipment is made of high quality materials and assembled by skilled workers who take pride in their work. However, even on the best equipment there can still be start-up or operational problems.

If trouble occurs, please check the following:

1. Check the power source for sufficient power as specified on the nameplate. Check the wiring connections and the motor protection devices, i.e. fuses, circuit breakers, and overload elements. Replace fuses, if blown, and reset the circuit breakers or overload elements, if tripped.

2. The motor may be burned out. If it is, it will need to be repaired or replaced.

3. The gears in the gear case may have seized up due to the lack of oil. Replace the gears or the gear case.

4. If the drive is a mechanical variable speed drive and the motor runs but the output shaft doesn't turn, turn the control to 0, which is the lowest feeder speed, and adjust it back to the desired speed.

5. Check for proper assembly of the drive chain and the sprockets. The chain may be disconnected or broken.

6. Check for jamming of the rotor. If jammed, the feeder may need to be disassembled, and cleaned. Do not attempt this until the unit has been locked out. The bearings or seals may need to be replaced.

6.3 Unusual Drive or Motor Noise

1. Check for the proper alignment of the drive components. Align the sprockets with a straight edge. Insure that the chain is not rubbing against the drive guard.

2. Check for proper adjustment of the chain. If the chain is too tight, it will overload the shaft and bearings. If the chain is jumping on the sprockets, they may be worn and need to be replaced. The chain may need to be lubricated.

3. Check the oil level in the gear case. If it needs to be filled, see section 5.7.

6.4 Unusual Feeder Noise

1. Check the motor's amp draw to determine whether material build-up on the rotor or housing is overloading the motor. If the build-up is excessive, clean the rotor and housing after locking out the unit.

    - Check for the correct direction of rotation. A rotor with relieved tips rotating in the wrong direction will cause material build-up.
    - Some materials are susceptible to build-up and may cause a squealing noise as the rotor turns. This will be normal for some types of material and should not be a cause for concern if it does not cause a motor overload or damage the rotor.

2. The rotor may be rubbing on housing. Check for external loads on the inlet and outlet flanges. The feeder is not to be used as a support for loads other than the drive assembly and line adapter. Make sure rotor is centered in the housing so that it does not rub the end plates.

6.5 High Temperature

Motors operating under rated load (amp draw) and ambient conditions, as specified on the nameplate, may feel warm when touched. If overheating it suspected, check the following:

1. Check for proper operation of the feeder bearings. See section 6.6.

2. Check for excessive material build-up in the rotor. See section 6.4, step 1.

3. Verify that the electrical overload elements are properly sized per the full load amp specification on the motor nameplate. Oversized elements will not protect the motor from overload.

4. Check for proper ventilation around the motor. Material or dust build-up on the exterior of the motor may hamper ventilation.

5. Check the oil level in the gear case. If it needs to be filled, see section 5.7.

6.6 Feeder Bearing Malfunction or Failure

1. Disassemble the bearing from the feeder.
    - Check the wear, dirt or material in the bearings. If there is damage, replace the bearings. If there is material in the bearings, check the condition of the seals. See paragraph 6.7.

6.7 Leaking Air Purge Seals

1. Check to insure that a compressed air supply has been installed to the feeder. Never operate a feeder that has air purge seals without purge air. If the feeder has been operated without the air purge operating, the seals are probably damaged and need to be replaced. See section 5.5.3

2. Check for proper operation and adjustment. The air should be set 3 - 5 PSI above the conveying system operating pressure. If the air is set too low, material will not be properly cleaned from the air purge diffusers and will damage the seals. The seals should be replaced. See section 5.5.3

6.8 Leaking Packing Seals

1. The packing gland may not be tight against the packing. Be sure spring release nuts (8), See section 2.1.1 are not in contact with spring retainer (7).

2. The packing seals may be damaged or worn. Remove the seals and replace them. See section 5.5.3

6.9 Air Loss

1. Check for the correct rotor-to-housing and rotor-to-end plate clearance. Excessive clearance will result in excessive air loss.

2. Check the condition of the seals. See paragraphs 6.7 and 6.8.

6.10 Material Not Flowing

1. Check for material build-up in the rotor pockets. Clean the feeder rotor after the unit has been locked out.

2. Check for correct rotor-to-housing and rotor-to-end plate clearance. If there is too much clearance, air loss through the clearances may cause the material to bridge above the feeder decreasing the material flow.

3. Vented shear protectors are designed to minimize the changes for material bridging above the feeder by venting the displaced air from each pocket as it fills, as well as any air leakage through the clearances. A vented shear protector may need to be installed for your application.

4. If a vented shear protector is installed, check the condition of the long seal flap. If it is worn or sheared off due to incorrect installation or incorrect rotor rotation, it will need to be replaced.

5. Check for the correct feeder RPM.

Return and Missing Material Information

Prater must be advised within five (5) working days of receipt of shipment on all claims regarding missing parts or shortages. Failure to inform Prater within this period will forfeit any such claims.

All parts and units must have pre-approval by Prater Customer Service Dept. before any parts or units are returned.

Customer service will issue a return material authorization (R.M.A.) Number prior to return of parts.

Any item which the customer claims to be defective must be returned prepaid, unless Prater has shipped incorrect material, then the following action will be taken:

UPS call tag will be issued.

If the material exceeds UPS weight limits Prater will direct its freight carrier to pick up the material.

Only material which has been in the customer's possession for less than one year after ship date will be authorized for return.

All returns must be received within 30 days from issue date of R.M.A. number.

Material must be returned undamaged with no signs of rust and/or marks.

Only material deemed standard by Prater would be authorized for return unless the return is necessary due to Prater error.

A 25% restocking charge will be imposed on returns, which are due to customer's error.

Merchandise credit will be issued on returns approved by customer service.

Installation

The company does not provide installation services. Installation and operating instructions, drawings and suggested electrician's wiring diagram (where required) will be furnished. The Company is not responsible for the improper installation or wiring or system problems where the Company does not supply the whole system. If a Company service technician is to inspect the installation when completed perform adjustments, direct changes and/or instruct personnel in equipment use and service, see rates below.

Service Rates:

1. $_____ per day portal to portal based on eight (8) hours per day, Monday through Friday.

2. If less than eight (8) hours are applicable in any one day, the rate shall be $_ _____ per hour, portal to portal, Monday through Friday.

3. An eight (8) hour work period on Saturday, Sunday or holidays shall be $_____ per day, portal to portal.

4. If the service technician shall be required to work more than twelve (12) hours at a time. The technician will be allowed a minimum of ten (10) hours of before required to return to a job.

5. All travel and living expenses are to be changed at the cost incurred plus 10%. All efforts will be made to keep this to a reasonable level.

7. Company car: mileage charge = $_____per mile.

The rates quoted are those in affect at the date indicated on this sheet and are subject to change without notice.

The above rates cover a qualified factory-trained service technician. If an engineer or other type specialist is required, a different rate will apply.

Dated: _____

FINE GRINDERS
HAMMERMILLS
CRUSHER/FLAKE BREAKERS
COMPACTORS/BRIQUETTERS
AIR CLASSIFIERS
ROTARY SIFTERS
VIBRATING SCREENS
ROTARY FEEDERS
QUICK-TAKE-APART AIRLOCKS
MINI-SIFTERS
BATCHING SYSTEMS MODULAR
WEIGHING SYSTEMS BAGGING
CONTROLS

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