



Rota-Sieve, **RS 700 BT** Operation and Maintenance Manual

PRATER INDUSTRIES

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SECTION 1: SAFETY RULES

1.1 Safety Rules

Safety must be considered through all facets of operation and maintenance on any mechanical device. Using proper tools and methods will help prevent accidents and serious injury to you and your fellow workers.

Proper operating procedures and safety precautions are listed throughout this manual. Study them carefully and follow instructions; insist that those working with you do the same. Most accidents are caused by someone's carelessness or negligence.

Examples of the four types of safety notices (Danger, Warning, Caution and Notice) in this manual are listed below:



DANGER: INDICATES AN IMMINENTLY HAZARDOUS SITUATION IN, WHICH PERSONAL INJURY OR DEATH MAY OCCUR.



WARNING: INDICATES A POTENTIALLY HAZARDOUS SITUATION IN, WHICH PERSONAL INJURY OR DEATH MAY OCCUR.

CAUTION

CAUTION: INDICATES A SITUATION WHERE DAMAGE TO THE EQUIPMENT COULD RESULT.

NOTICE

PROVIDES HELPFUL INFORMATION FOR PROPER OPERATION OF THE ROTA-SIEVE.

1.2 Safety Precautions



A PRESSURE RELIEF DEVICE MUST BE INSTALLED IN THE SYSTEM TO PREVENT OVERPRESSURIZATION OF THE ROTA-SIEVE. THE DEVICE MUST BE SET AT 14.7 PSIG OR BELOW. PRESSURES HIGHER THAN THIS COULD LEAD TO EXPLOSIVE RUPTURING OF THE ROTA-SIEVE LEADING TO DEATH, SERIOUS INJURY AND EXPOSURE OF CONTENTS TO OPERATOR AND ATMOSPHERE.



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 DEVICES PLACED ON THIS MACHINE FOR THE SAFETY OF THE OPERATOR. ANY ATTEMPT TO DEFEAT THESE DEVICES COULD RESULT IN SERIOUS INJURY.



PRESSURIZED ENCLOSURE - OPERATORS MUST BE INSTRUCTED NEVER TO OPEN OR LOOSEN DOORS AND PORTS WITHOUT ENSURING PRESSURE HAS BEEN RELIEVED FROM THE ROTA-SIEVE. LOOSENING OR OPENING DOORS OR PORTS UNDER PRESSURE COULD RESULT IN SERIOUS INJURY AND EXPOSURE OF CONTENTS TO OPERATOR AND ATMOSPHERE.



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.

The Rota-Sieve must always be operated in accordance with the instructions and precautions in this manual and on the caution plates attached to the equipment. Only workers completely familiar with the instructions and precautions in this manual should be permitted to operate the unit. The operators should thoroughly understand these instructions and precautions before attempting to operate this equipment.

This manual identifies residual risks involved with the installation, operation and maintenance of this equipment identified by a risk assessment by the supplier. The precautions listed in this manual may not be all inclusive and others might exist, that are specific to your operation or industry. It is the users' responsibility to perform a risk assessment per ANSI B11.0 or similar standard to assess these risks and to determine if these are acceptable to them or if further measures are required to further reduce these risks.

In addition, nearly all employers are now subject to the Federal Occupational Safety and Health Act of 1970, as amended, which require that an employer be kept abreast of regulations, which will continue to be issued under its authority.

Figure 1-1 is a checklist of safety precautions and proper operating procedures. Failure to observe and follow the precautions may result in serious personal injury or property damage.

Safety Checklist

ALWAYS operate Rota-Sieve in accordance with the instructions in this manual.

ALWAYS install a pressure relief device set at 14.7 psig or below to prevent over-pressurization of the Rota-Sieve. Test device prior to operation of Rota-Sieve.

ALWAYS wire door switches to motor control system to prevent the motor from starting when the switches are open and to stop the motor when the switches are opened while the motor is running.

DO NOT open inspection doors while unit is in motion or under pressure.

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 the motor, or a controller disconnecting means capable of being locked if not within sight of the motor.

DO NOT use the Rota-Sieve for processing of material other than the specific application for which it was designed.

AVOID poking or prodding into unit openings with bar or stick.

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

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

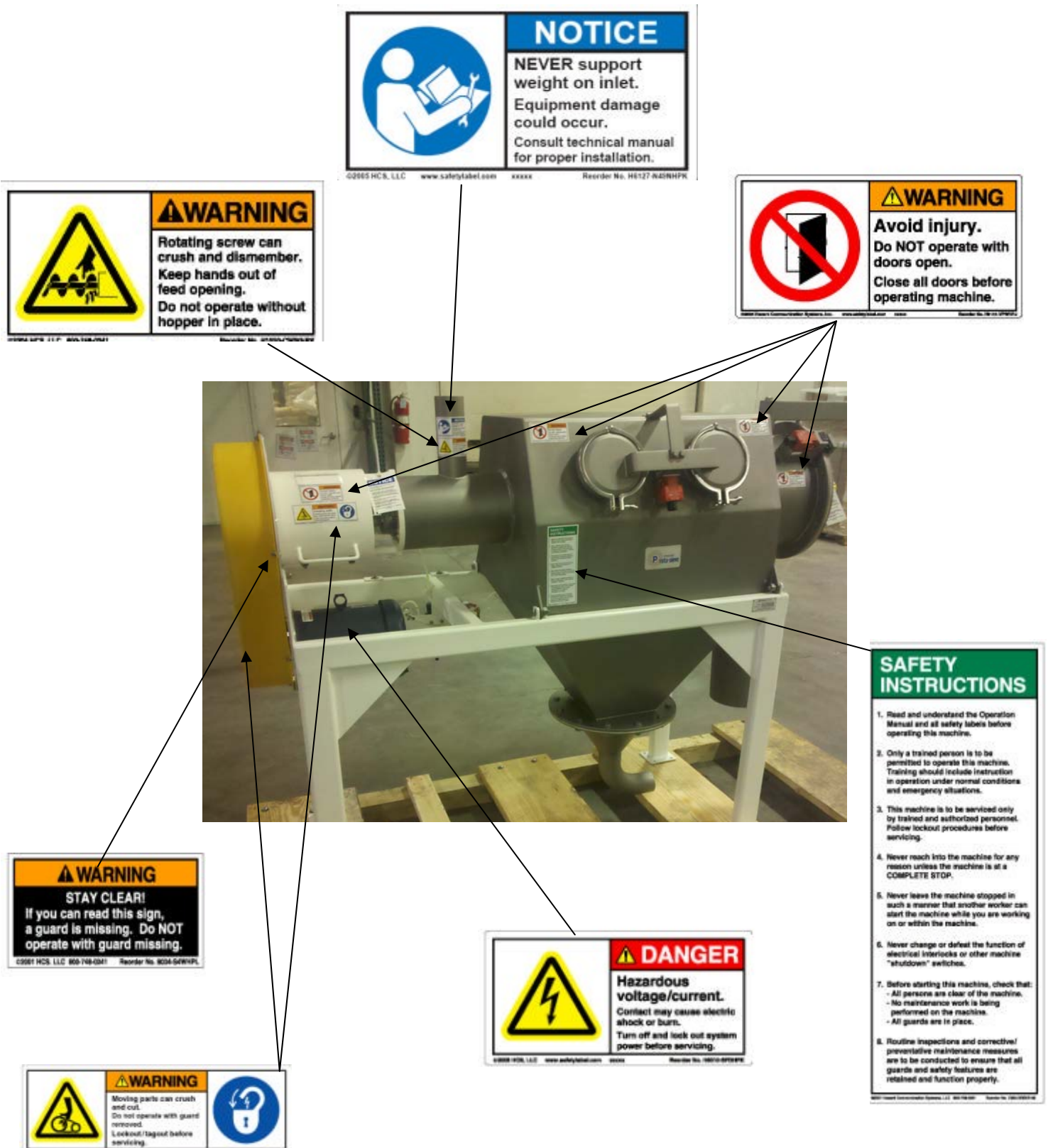
NEVER operate unit without guards and all safety devices in position and functioning.

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

NEVER put your hand near or in the inlet or outlet of the Rota-Sieve while it is operating or stalled.

Figure 1-1: Prater Rota-Sieve, RS 700 Safety Check List

Figure 1-2: Rota-Sieve Safety Labels



SECTION 2: INTRODUCTION

2.1 Manual Overview

This manual describes the installation requirements, procedures, and routine maintenance of Prater's Rota-Sieve, Model 700 BT Blow Through. Refer to this manual before beginning and during installation. Keep the manual available for future reference. Exploded views are located in the rear of the manual with their corresponding parts lists. The procedures throughout this manual refer to these drawings. Locate the exploded view for your model to use as a reference during installation. Reliable operation, personnel safety, and long service life of this equipment depend on three important considerations:

The care exercised during installation.

The quality and frequency of maintenance and periodic inspections.

A common sense approach to its operation.

To keep operating costs down and profits up, carefully follow the instructions listed for installation, operation, safety, and maintenance.

2.2 Receiving the Unit

When your shipment arrives, thoroughly inspect the Rota-Sieve 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 a possible claim against the delivering carrier.

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

2.3 Before Installation

Be sure the installation crew or millwrights are aware of all installation requirements. If they have any questions or are unsure of proper procedures, clarify the matter to avoid improper installation. Section 3 of this manual covers important steps to ensure safe, vibration-free installation. Personnel responsible for installation should be familiar with these procedures.

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

2.4 Before Operation

Make sure operating personnel are well trained in procedures for operating and maintaining the Rota-Sieve. In particular, make sure they understand the essential safety precautions described in Section 1.6.

2.5 Operating Principle

Note: This section refers to Figure 6-1 in the rear of the manual

The feed material is metered into the feed inlet (1). The inlet auger (2) moves the material from the inlet (1) into the screen frame (4). Depending on the material being processed, a screen made of metal or sieve cloth may be installed on the screen frame. The blades of rotor (3) propel the particles against screen (4). Fines pass through the screen and are discharged via the primary discharge hopper (5). Material too coarse to pass through is moved along the length of the screen and discharges through the overs discharge (7), minimizing wear caused by friction.

The Rota-Sieve's centrifugal screening action gives you more throughput capacity per unit of screen area. This is accomplished by the combination of the high level of centrifugal force, which helps the product pass through the screen efficiently, and the spreading action of the rotor, which distributes the product around the screen frame for complete utilization of the screen area.

The particles impinging against screen (4) cause it to flex and vibrate, thereby eliminating the need to stop production to clean the screen. This also eliminates the need for using cleaning media, which can contaminate the finished product. The Rota-Sieve is totally enclosed so dust problems are fully eliminated. Operation is quiet and imparts no vibration to surrounding structures.

2.6 Specifications

Sieve Model	Model 700
Voltage	230/460
Motor HP	3
Motor Speed (RPM)	1750
Motor Current (Amps)	9.2/4.6
Rotor Speed (RPM)	700
Screen Area (Sq. In.)	725

SECTION 3: INSTALLATION

3.1 Introduction

Proper installation of Prater's Rota-Sieve is critical for efficient and productive operation. The proper site preparation and placement of the Rota-Sieve and related equipment will insure that the sifter operates safely and to its fullest capacity.

The following are important considerations in Rota-Sieve installation:

1. Location: Make sure the operating location will provide strong, vibration-free base support and allow easy access to all parts of the Rota-Sieve.
2. Leveling: The Rota-Sieve must be level and must operate without vibration. Sections 3.2 thru 3.4 explain how to check for proper leveling and prevention of vibration damage during operation.

3.2 Installation Location

There are two essential considerations for the Rota-Sieve location: the foundation below the machine and the free clearance around it.

Foundation

The Rota-Sieve must be supported in a vibration free location.

Clearance

There should be sufficient open space in all directions around the Rota-Sieve to allow access for changing screens and other maintenance operations. No excessive weight can be resting on or supported from the Rota-Sieve.

3.3 Leveling

The base of the unit must be level to prevent vibrations that will accelerate wear. Before tightening fasteners, check for correct unit leveling at the corners of the Rota-Sieve and correct if necessary.

To correctly level:

1. Insert shims for proper alignment.
2. Re-check level at corners of the Rota-Sieve.
3. Tighten all fasteners.
4. Re-check level.

3.4 Vibration

The Prater Rota-Sieve 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:

Rota-Sieve damage

Structural damage

There are several conditions that cause vibration, including:

Uneven base (See section 3.3)

Loose motor fasteners

Defective motor or Rota-Sieve bearings (See Section 5)

Other equipment transferring vibration thru contact with the Rota-Sieve

Worn, missing or broken blades on rotor (Item 8, Figure 6-3).

Excess foreign material in the screen frame (Item 7, Figure 6-3).

3.5 Feeding

After the Rota-Sieve is mounted in place, the feed inlet (Item 3, Figure 6-2) must be connected to a system that will give a uniform controlled feed rate. **IT IS ESSENTIAL THAT THE FEED BE CONTROLLED** in order to prevent overfeed, or uncontrolled pulsations which can overload the Rota-Sieve. Any system may be used, as long as it provides a uniform controlled feed. **DO NOT** support anything on the Rota-Sieve feed inlet.

Averaging total feed over a period of time may allow non-uniform feed and in no way ensures that the feed rate may not be too high at some points during the run. Any over-feed will result in fines running into the oversize discharge and may result in stretching of the screens, which will adversely affect the performance of the sifter

Material should be conveyed to and from the sifter with the lowest air volume necessary to convey the product without slugging to reduce the velocity of the product entering the Rota-Sieve. Excessive velocity will force fines into the oversize discharge and decrease the efficiency of the sifter.

3.6 Primary Discharge (Fines)

The primary discharge should be attached to a line that is dust-tight. A rigid connection can be made; no flexible connection is required. One caution, which should be taken, is to be certain that there is nothing impeding the flow of product and air through the discharge. This will prevent fines from being forced into the oversize discharge.

3.7 Oversize Discharge (Coarse)

The oversize discharge outlet (Item 21, Figure 6-2) should be installed so that air cannot leak out through the door gasket (Item 9, Figure 6-2) and overs container gaskets (Item 27, Figure 6-2). Air leaking from the overs sections of the Rota-Sieve will carry fines from the screen area into the oversize discharge and decrease the efficiency of the sifter.



DO NOT REMOVE THE OVERS CAN WITHOUT CLOSING THE ISOLATION VALVE. LOOSENING OR REMOVING THE CLAMP TO REMOVE THE OVERS CAN UNDER PRESSURE COULD RESULT IN SERIOUS INJURY AND EXPOSURE OF CONTENTS TO OPERATOR AND ATMOSPHERE.

To empty the overs container (Item 21, Figure 6-2), first close isolation valve (Item 29, Figure 6-2) before removing lower clamp (Item 28, Figure 6-2).

If large foreign material enters the screen frame (Item 7, Figure 6-2), it may not exit the oversize discharge. Such material will have to be extracted by shutting down the Rota-Sieve (See Section 4) and removing the material.

3.8 Electrical Requirements

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

NOTICE

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. The employer must:

- Produce a written program explaining the procedure.

- Conduct an annual inspection to verify compliance.

- Provide documented employee training in these procedures.

The Prater Rota-Sieve may be started “across the line” if such a procedure is acceptable to your local power supply, larger motors may require reduced voltage starters to “soft start” motors in many areas.

3.9 Electrical Interlocking

As a general guide, the last piece of process equipment is started first with subsequent starts working up the line.

CAUTION

A TIME DELAY IS ALWAYS REQUIRED BETWEEN START-UP OF THE ROTA-SIEVE AND START UP OF THE FEEDER, TO ALLOW ROTA-SIEVE TO REACH FULL OPERATING SPEED BEFORE PRODUCT IS INTRODUCED.

3.10 Air Purge

The shaft seals (Figure 6-2, 16 & 39) have air purge ports (Figure 6-2, 19), which are connected to the air purge controls shown below. These seals are required to be purged anytime the sifter is pressurized. 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 (Figure 6-2, 18 & 40) and will damage the ring and seals, requiring replacement. A purge pressure of 3-5 PSI above the internal sifter pressure is adequate. The purge air volume required will be dependent on the supply pressure but should be in the range of 2-3 SCFM.

The air purge controls consist of a solenoid to start and stop the compressed air supply, a regulator with a pressure gage to set the pressure and flow gauges to ensure air is flowing to each seal. As long as the ball inside each flow gauge is floating, air is flowing to the seals. The actual reading on the air gauge is not important. If the balls are not floating when the solenoid is open, product will enter the seal area, damage the seals and leak from the seals.

Air Purge Control Assembly



3/8" FEMALE NPT CONNECTION

NOTICE

This machine is equipped with an air purged shaft seal.

To ensure proper operation, ALWAYS observe the following instructions:

- 1- Replace plug with compression fitting, then connect to a clean, dry source of compressed, regulated air.
- 2- Supply air must be 3-5 PSI greater than the maximum internal operating pressure.
- 3- Use an inline flow meter to verify airflow to the seal.
- 4- Supply air must be on whenever equipment operates AND whenever internal pressure exists.
- 5- Consult Operation Manual for additional information.

Do not remove, obstruct, or obscure this tag.

3.11 Unit Check

After installation is complete, carefully inspect all work before installation crew leaves to ensure that all instructions have been properly followed.

SECTION 4: OPERATION

4.1 Introduction

Pre-run inspections and safety checks throughout this section to ensure that the Rota-Sieve is in proper operating condition. Other aspects of operation covered in this section include: start-up and shutdown sequences.

4.2 Pre-Run Inspection

Before starting the Rota-Sieve, check the following:

- The inside of the Rota-Sieve for foreign material, (i.e., nuts, bolts, wire, etc).

- That all guards are mounted and secure.

- That all inspection doors are closed and locked.

- That all electrical starting equipment, meters, disconnect switches, and other control devices are clearly visible and readily accessible to the operator.

- That screen frame (Figure 6-2, 7) assembly is properly installed and screens are properly tensioned. (See Section 5).

- When looking from the motor end of the unit, the auger shaft should rotate counter-clockwise. (See arrow on bearing housing).

- The air purge system should be turned on, airflow confirmed and pressure adjusted.

- All clamps and hardware should be tightened to ensure product will not leak from the Rota-Sieve.

4.3 Start-Up Sequence

This start-up sequence is intended as a general guide. The start-up sequence you use will depend on your specific operation and any unique characteristics of your installation. As a general guide to electrical interlocking, you turn on equipment in reverse order from product flow. The final piece of equipment to be started should be the product feeder.

CAUTION

A TIME DELAY IS ALWAYS REQUIRED BETWEEN START-UP OF THE ROTA-SIEVE AND START-UP OF THE FEEDER TO ALLOW THE ROTA-SIEVE TO REACH FULL OPERATING SPEED BEFORE PRODUCT IS INTRODUCED.

Here is a sample start-up checklist:

1. Start air purge system before pressurizing system.
2. Start each piece of equipment in proper start-up sequence.
3. Check each motor as it starts for proper rotation and proper current draw.
4. Check interlocks to make sure they are working and in the proper sequence.
5. Begin product feed into the system at a slow rate (always less than 50% of full rated capacity).
6. If unit runs properly, slowly increase the feed.



DO NOT OPEN ROTA-SIEVE OR ATTEMPT ANY FORM OF INSPECTION OR MAINTENANCE UNTIL THE ROTA-SIEVE HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED IN THE OPEN POSITION AND INTERNAL PRESSURE HAS BEEN RELIEVED.

4.4 Shut-Down

For a typical Rota-Sieve operation, the shutdown sequence will simply be the reverse of the start-up sequence. Check that you do not have special considerations in your installation that require different procedures.

SECTION 5: MAINTENANCE

5.1 Introduction

The Rota-Sieve is designed to operate with little maintenance. Routine inspections and regular maintenance will identify any worn or broken parts before they become a problem. Worn or broken parts are damaging to the Rota-Sieve and its output. When operated without vibration or foreign materials entering the screen frame (Figure 6-1, 3), only those parts subject to the heaviest wear, i.e. drive belts and screens will require maintenance.



DO NOT OPEN ROTA-SIEVE OR ATTEMPT ANY FORM OF INSPECTION OR MAINTENANCE UNTIL THE ROTA-SIEVE HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED IN THE OPEN POSITION AND INTERNAL PRESSURE HAS BEEN RELIEVED.

5.2 Routine Inspection

Regular inspections are required to give advance warning of a problem. The simple, yet rugged, design of the Rota-Sieve provides easy access for maintenance, cleaning, and service. To decrease downtime, regularly inspect the machine and output. The output of the Rota-Sieve as well as regular inspections will determine when screens should be replaced, as well as give advance warning of a problem. Maintain an inventory of standard wear items such as drive belts and screens.

5.3 Screen Inspection

NOTICE

THIS PROCEDURE REFERS TO THE DRAWINGS IN THE REAR OF THE MANUAL. THE SCREENS CONTROL THE PARTICLE SIZE OF THE FINAL PRODUCT. INSPECT THE SCREENS FREQUENTLY TO MAINTAIN THE DESIRED OUTPUT. THE SCREENS MAY REQUIRE REPLACEMENT IF THEY ARE SHOWING SIGNS OF WEAR.



DO NOT OPEN ROTA-SIEVE OR ATTEMPT ANY FORM OF INSPECTION OR MAINTENANCE UNTIL THE ROTA-SIEVE HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED IN THE OPEN POSITION AND INTERNAL PRESSURE HAS BEEN RELIEVED.

Note: This section refers to Figure 6-2.

1. Turn off the unit and wait for the rotor to come to a stop.
2. Lock out the electrical supply to the unit before opening any of the access doors.
3. Open Inspection Door (6) by loosening the Inspection Door Clamps (20).
4. With the door open you can perform an inspection of the screens.
5. If no wear problems are identified close the Inspection Door, taking care to align the seams as close to the top as possible.
6. If screen replacement is necessary proceed to section 5.3.1.

Note:

THE END DOOR INCORPORATES A SCREEN STOP, WHICH PREVENTS THE SCREEN FRAME FROM SPINNING OR MOVING FORWARD. FIGURE 6-3 ILLUSTRATES THE SCREEN STOP ASSEMBLY. THE SCREEN FRAME SHOULD BE INSTALLED SO THAT THE SEAM WILL REMAIN AT THE TOP OF THE SCREEN FRAME WHEN THE END DOOR IS CLOSED.

5.3.1 Screen Replacement

Screen Frame Removal

Note: This section refers to Figure 6-2.

1. Turn off the Rota-Sieve and allow the rotor (8) to come to a complete stop.
2. Lock out electrical power to the Rota-Sieve.
3. Check that the compressed air supply has been turned off to the Rota-Sieve.
4. Ensure internal pressure has been relieved.
5. First loosen all the End Door stud hardware (35) before removing the hardware from the studs. Slide the End Door Assembly (5) away from the Rota-Sieve until it clears the rotor shaft
6. Rotate the End Door Assembly off to the side to allow removal of the Screen Frame Assembly (7)
7. Gently pull the Screen Frame Assembly straight out.

5.3.2 Screen Removal

Note: This section refers to Figure 6-3. In some applications the RS 700S may be a single piece, fully welded design. There are no replaceable parts in the single piece assembly.

1. Loosen jam nuts (5) and tensioning nuts (6) to allow the end flange (1) to slide toward the center. The hardware near the center ring should be left in place. This will ensure proper tensioning and assembly length when the screens are reinstalled.
2. Loosen clamps (9) and remove screen (8) and clamps (9).
3. Remove the remaining screen in the same manner.

5.3.3 Screen Installation

Note: This section refers to Figure 6-3. In some applications the RS 700S Screen Frame may be a single piece, fully welded design. There are no replaceable parts in the single piece assembly.

Note: The seams of the screens should be aligned so that they can be positioned near the top of the assembly when the screen frame is reinstalled.

1. Position clamps (9) on screen (8).
2. Slip the screen between the center flange (2) and the end flange (1).
3. Slide the screen, as far as it will go, onto the center flange (2) and secure with one clamp (9). Clamp (9) should be as tight as possible.
4. Slide the screen, as far as it will go, onto the end flange (1) and secure with the second clamp (9). Clamp (9) should be as tight as possible.
5. Tighten tensioning nut (6) until the screen is drum tight. Check the tension by pressing gently on the screen. The cloth should not deflect more than 1/16". The hardware near the center ring should be left in place. Use only the hardware on the end rings to tension the screen. This will ensure proper tensioning and screen frame assembly length.

Note: The screen may slide a bit when adjusting the tension.

6. Tighten nuts (5) after screen tension has been properly adjusted.
7. Install the remaining screen in the same manner; making certain that the seam of the second screen is in line with the seam of the first screen.
8. When the frame is assembled correctly, the outer jam nuts (5) will be flush with the ends of the tie rods (4).

Note: For proper sifter operation the overall length of the screen frame assembly must be within 1/16" of the correct length.

5.3.4 Screen Frame Installation

Note: This section refers to Figure 6-2.

1. Turn off the Rota-Sieve and allow the rotor (8) to come to a complete stop.
2. Lock out electrical power to the Rota-Sieve.
3. Check that the compressed air supply has been turned off to the Rota-Sieve.
4. Ensure internal pressure has been relieved.
5. First loosen all the End Door stud hardware (35) before removing the hardware from the studs. Slide the End Door Assembly (5) away from the Rota-Sieve until it clears the rotor shaft.
6. Rotate the End Door Assembly off to the side to allow installation of the Screen Frame Assembly (7).
7. Gently slide screen frame (7) into body assembly (2), positioning the seams as close to the top as possible.

Note: The End Door incorporates a screen stop, which prevents the Screen Frame from spinning or moving forward. Figure 6-3 illustrates the screen stop assembly. The screen frame should be installed so that the seam will remain at the top of the screen frame when the end door is closed

8. Make sure End Door Gasket is clean and installed (9) before proceeding.
9. Rotate End Door Assembly (5) back in front of body opening. The setscrews (37) in the End Door Bearing (15) must line up with the slots in end of the rotor shaft (8) in order for the shaft to slide through the bearing. The setscrew and slot alignment can best be determined by looking through the bearing guard (10) openings. The rotor can be rotated by hand to align the slots and setscrews. The setscrews are fixed in place and should not be tightened or loosened.
10. Pull the End Door Assembly (5) against the body (2). The End Door Bearing (15) is self-aligning and the End Door Assembly will slide onto the shaft easiest when equal force is used with both hands. If the door cannot be closed using firm hand pressure something is not correct. Recheck alignment and try again.

Note: Never use a tool to force the End Door Assembly onto the shaft or against the body. Doing so will damage the End Door Assembly or Rotor shaft.

11. Secure the End Door Assembly with the stud hardware. Tighten all the hardware (35) hand tight first. Then go back and tighten the nuts equally with a wrench in a pattern similar to the one below to ensure equal gasket compression around the sealing face.
12. Close Inspection Door (6) and seal with gaskets (36) and clamps (20).

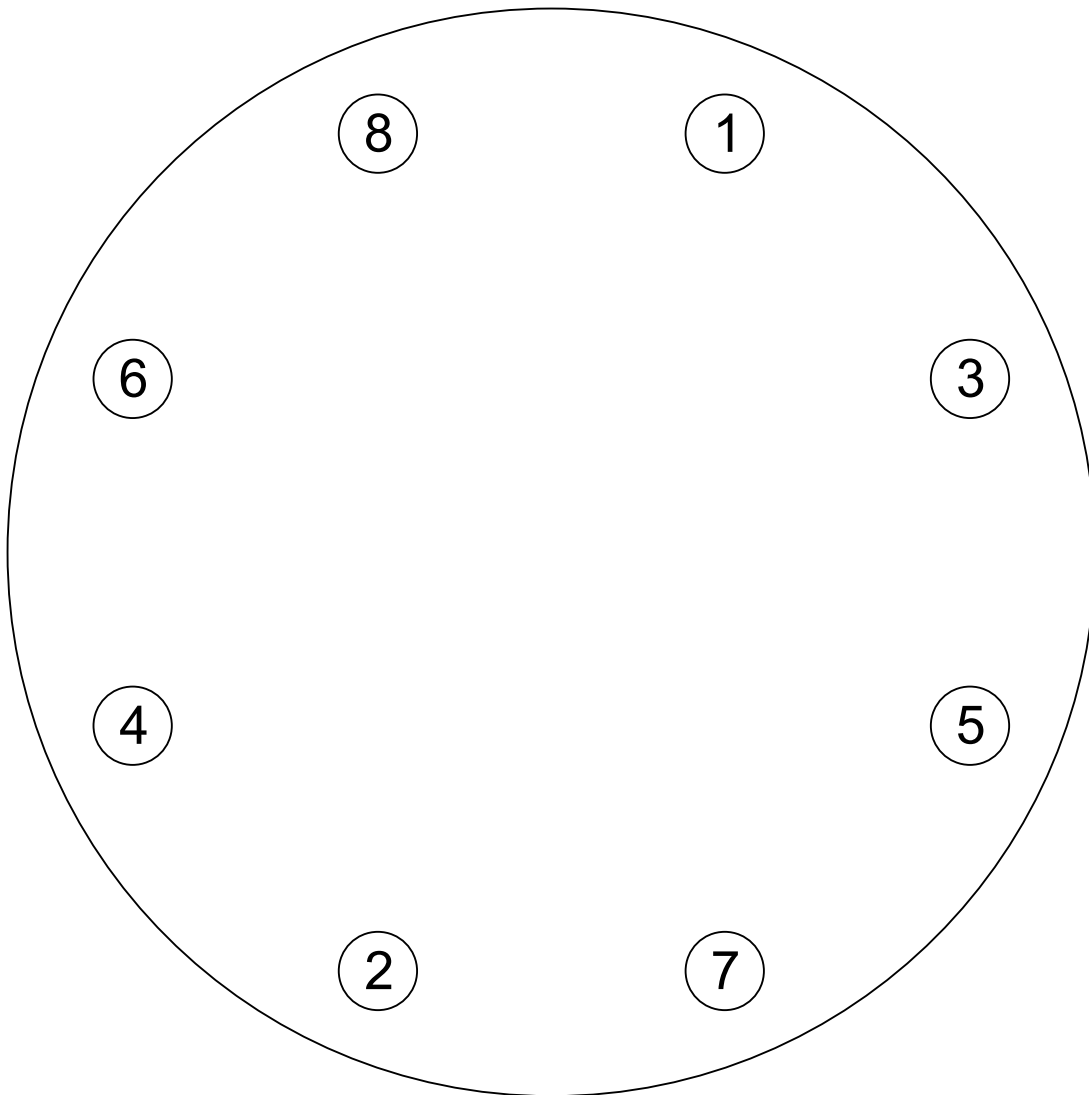


Figure 5-1 End Door Nut Tightening Sequence

5.4 Removing The Rotor Assembly



DO NOT OPEN ROTA-SIEVE OR ATTEMPT ANY FORM OF INSPECTION OR MAINTENANCE UNTIL THE ROTA- SIEVE HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED IN THE OPEN POSITION AND INTERNAL PRESSURE HAS BEEN RELIEVED.

NOTE: This procedure refers to Figure 6-2 in the rear of the manual.

1. Turn off the Rota-Sieve and allow the rotor (8) to come to a complete stop.
2. Lock out electrical power to the Rota-Sieve.
3. Check that the compressed air supply has been turned off to the Rota-Sieve.
4. Ensure internal pressure has been relieved.
5. Open Inspection Door (6) by loosening the Inspection Door Clamps (20).
6. First loosen all the End Door stud hardware (35) before removing the hardware from the studs. Slide the End Door Assembly (5) away from the Rota-Sieve until it clears the rotor shaft
7. Rotate the End Door Assembly off to the side to allow installation of the Screen Frame Assembly (7).
8. Gently pull the Screen Frame Assembly straight out.
9. From the End Door side lift rotor assembly slightly, while pulling toward the End Door. When the rotor is clear of the stub shaft, it will fall slightly until the auger assembly rests on the feed inlet.
10. From the End Door opening (5) and the Inspection Door opening (6) lift the assembly by the paddles and the shaft end slightly and walk the rotor out through End Door.

5.4.1: Installing the Rotor Assembly

NOTE: This procedure refers to the Figure 6-2 in the rear of the manual.

1. Turn off the Rota-Sieve and allow the rotor (8) to come to a complete stop.
2. Lock out electrical power to the Rota-Sieve.
3. Check that the compressed air supply has been turned off to the Rota-Sieve.
4. Ensure internal pressure has been relieved.
5. Open Inspection Door (6) by loosening the Inspection Door Clamps (20).
6. First loosen all the End Door stud hardware (35) before removing the hardware from the studs. Slide the End Door Assembly (5) away from the Rota-Sieve until it clears the rotor shaft
7. Rotate the End Door Assembly off to the side to allow installation of the Screen Frame Assembly (7).
8. Gently pull the Screen Frame Assembly straight out.
9. From the Inspection Door (6) rotate the stub shaft (4) so the key is pointed at 12 o'clock.
10. From the End Door side rotate the rotor assembly (8) so that the arrow on the end of the shaft is pointing at 12 o'clock, this should align the two keyways.
11. Insert the drive end of the rotor assembly thru the End Door opening.
12. Using both the Inspection, and End openings, carefully lift and position the drive end of the shaft into the feed inlet.
13. From the Inspection opening lift the rotor slightly and position onto the stub shaft assembly and slide it to the rotor stop. You may have to rotate slightly to find the keyway on the stub shaft.
14. Reinstall the screen frame, End Door, and close the Inspection Door.

5.5 Replacing Shaft Seals

Note: This section refers to Figure 6-6 in the rear of the manual



DO NOT OPEN ROTA-SIEVE OR ATTEMPT ANY FORM OF INSPECTION OR MAINTENANCE UNTIL THE ROTA-SIEVE HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED IN THE OPEN POSITION AND INTERNAL PRESSURE HAS BEEN RELIEVED.

A pressurized packing gland style seal is provided with the Rota-Sieve to prevent product from escaping by the rotating shaft. The packing seals (4) provided with the Rota-Sieve are split, braided rings of square sections. A manually adjusted packing gland (1) is used to maintain pressure on the packing as it wears making periodic adjustment of packing may be necessary. A lantern ring (5) is used to introduce pressurized air between the packing and the shaft to prevent product from leaking out of Rota-Sieve. The packing seals (4) and the lantern ring (5) may need replacement if product leaks develop over time and can be replaced by the following instructions.

It is important to always have a flow of purge air through the lantern ring. If no compressed air line is attached, or the line is blocked and no air is flowing, damage will occur to the lantern ring. Even if there is a pressure on the air purge line, there still could exist an airflow blockage. Damaged lantern rings caused by lack of airflow must be replaced.

1. Loosen packing gland retaining nuts (2).
2. Disengage packing gland (1) by rotating it 90°. Slots are provided in the packing gland (1) to allow rotation. Packing gland can now be pulled away from packing seals (4).
3. Remove old packing (4) and lantern ring (5). Inspect lantern ring and replace if worn or plugged. Always insert the lantern ring in the inner most packing position, in the orientation as shown in Figure 6-6.

4. Reinstall and insert new packing in the end plate packing cylinder (6). For best results, stagger the packing split cut of the different packings.
5. Re-engage the packing gland (1).
6. After the packing gland is re-engaged advance the retaining nuts (2) back down the screw (7) and snug them down.

Note: The packing gland does not need to be very tight. The air purge keeps product from escaping the Rota-Sieve. Overtightening the packing gland can cause the seals to overheat and create high motor amp draw. Air may escape from the packing area but as long as the air purge is functioning correctly, product will be contained.

5.6 Belt Tension

NOTE: This procedure refers to Figure 6-2 in the rear of the manual.



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1. Turn off the Rota-Sieve and allow the rotor (8) to come to a complete stop.
2. Lock out electrical power to the Rota-Sieve.
3. Remove drive guard (12).
4. Press firmly on the mid-point of belt (44) and measure the belt deflection. Deflection should be $\frac{1}{4}$ " or less.
5. If deflection is more than $\frac{1}{4}$ ", loosen the motor mounting bolts. Allow the motor to slide down the motor mount (1), tightening the belt. Tighten the mounting bolts after proper belt tension has been achieved.
6. Install the drive guard (12).

5.7 Bearing Details

NOTE: This section refers to Figure 6-2 in the rear of the manual.

The Rota-Sieve assembly uses regreasable-flanged end bearings (15 & 23), which require under normal operating conditions additional grease every 250 operating hours. Prater Industries, Inc. recommends the use of MOBILUX NO. 2 Grease or equivalent. Prater Industries, Inc. recommends that the bearings be changed after each 10,000 operating hours.

5.8 Drive End Bearing Removal



DO NOT OPEN ROTA-SIEVE OR ATTEMPT ANY FORM OF INSPECTION OR MAINTENANCE UNTIL THE ROTA-SIEVE HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED IN THE OPEN POSITION AND INTERNAL PRESSURE HAS BEEN RELIEVED.

NOTE: This section refers to Figure 6-2 in the rear of the manual.

1. Turn off the Rota-Sieve and allow the rotor (8) to come to a complete stop.
2. Lock out electrical power to the Rota-Sieve.
3. Now, the screen frame and rotor assembly must be removed from the inside of the machine. Follow steps in Sections 5.3.1 and 5.4
4. Remove the belt guard (12). Reduce the belt tension by loosening the motor mount bolts and sliding the motor (47) up the bracket (1).
5. Remove the washer (25) from the drive end of the stub shaft (4). Also remove the belt (44), driven pulley (46), bushing with key (43), spacer (24) and the guard back plate (11).
6. Remove the packing gland (17). You should be able to remove the drive end bearing assembly (26) by removing the bolts holding it to the body. Note the orientation of the door opening so the bearing assembly can be reinstalled in the same orientation.
7. Open the bearing access door by removing the nuts, and washers from the threaded studs. Lift the door into the open position, which allows access to the bearings.
8. Loosen bearing (23) setscrews from stub shaft (4) and remove stub shaft.
9. Remove four bolts securing each flange bearing (23) to the sifter bearing housing assembly (26) and remove the two bearings.
10. Inspect the packing gland (17), seals (16) and lantern ring (18) and replace if worn or damaged. See Section 5.5 for seal assembly instructions.

5.9 Drive End Bearing Installation

7. If the shaft seal (6-2, 16) or lantern ring (6-2, 18) were removed re-install, See Section 5.5 for correct seal assembly.
8. Install the new flange bearings (23) to the sifter bearing housing assembly (26) by re-securing with the fasteners removed in section 5-8. Ensure that the bearings are oriented with the grease fittings toward the door opening. There is no need to add grease to the new bearings at this time.
9. Insert the stub shaft from the sifter side of the bearing housing until it bottoms out against the bearing (23). Do not tighten setscrews in bearings yet.
10. Reattach bearing housing assembly (26) to sifter body (2). Make sure the bearing housing door is orientated in the same direction as it was before it was removed.
11. Next, replace the guard back plate (11), spacer (24), bushing with key (flange to sifter side) (43), driven pulley (46) and washer (25). Draw washer (25) tight to ensure stub shaft (4) shoulder is bottomed out against bearing. Tighten setscrews in bearings (23). Draw pulley (46) onto bushing (43). Shaft should spin freely. If it doesn't, recheck alignments and correct assembly.
12. Be sure to follow steps in Section 5.6 for proper belt tensioning and pulley alignment.
13. Reinstall packing gland (17). See Section 5.5 for assembly instructions.
14. Finally, secure the belt guard (12). Check to make sure all of the tools, parts, and foreign materials have been removed from within the machine and the immediate area. Follow steps from Section 3 to restart the machine.
15. Now, the rotor and screen frame can be reinstalled inside the machine. Follow the steps from Section 5.3.3 and 5.4.1.

5.10 End Door Bearing Replacement



DO NOT OPEN ROTA-SIEVE OR ATTEMPT ANY FORM OF INSPECTION OR MAINTENANCE UNTIL THE ROTA-SIEVE HAS COME TO A COMPLETE STOP AND THE ELECTRICAL DISCONNECT HAS BEEN LOCKED IN THE OPEN POSITION AND INTERNAL PRESSURE HAS BEEN RELIEVED.

NOTE: This section refers to Figure 6-2 in the rear of the manual.

1. Unbolt End Door Assembly (5) from the sifter body (2). Pull door until it slide all the way off the rotor shaft (8).
2. Remove fasteners securing the End Door Guard (10) and remove.
3. Remove fasteners securing the Flange Bearing (15) and remove.
4. Remove the two dog point setscrews (37) from the Flange Bearing (15). These can be replaced or reused in the new bearing. Note how far the dog point sticks through the bearing inner race. The new bearing should have the dog point setscrews installed the same way.
5. Inspect the packing gland (38), seals (39) and lantern ring (40) and replace if worn or damaged. See Section 5.5 for seal assembly instructions.
6. Install new Flange Bearing (15) and secure with fasteners removed in step 3. Replace setscrews supplied with bearing with new or reused dog point set screws (37).
7. Install End Door Guard (10) and secure with fasteners removed in step 2.
8. Reinstall End Door Assembly (5). See Section 5.3.4 for instructions.

SECTION 6: TROUBLESHOOTING

This section covers the more common day-to-day operating problems for the Prater Rota-Sieve. Possible causes are listed along with their suggested solutions.

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 a Prater representative 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. Did the unit receive any damage during shipment or installation? Sometimes there is hidden damage or internals can shift due to a sudden jar, thus causing drive misalignment or possible parts rubbing internally.
2. Check area where unit is installed to be sure it is level and provides a proper vibration-free foundation.
3. Be sure that there is not an excessive weight supported on top of or suspended from the Rota-Sieve.
4. Check to see that material to be handled can flow freely to and out of the unit.
5. Be sure unit is running in the proper direction (See directional arrow on unit).

6. To avoid electrical problems, a qualified electrician should verify that the proper power source is connected and correctly wired to the motor being used.

If it is thought that there may be a problem with a motor or other apparatus sold by Prater, call Prater Customer Service Department.

6.3 Excessive Vibration

Excessive vibration is an indication that something has changed and needs correction. Stop the Rota-Sieve and inspect.



DO NOT OPERATE THE ROTA-SIEVE OR ATTEMPT ANY FORM OF INSPECTION UNTIL THE ROTA-SIEVE HAS STOPPED ALL MOTION AND THE ELECTRICAL DISCONNECT HAS BEEN PLACED IN THE OPEN POSITION AND LOCKED WITH A KEY LOCK AND INTERNAL PRESSURE HAS BEEN RELIEVED. NEVER ATTEMPT TO ASSIST THE ROTA-SIEVE TO SLOW DOWN BY ANY MEANS, MECHANICAL OR OTHERWISE.

6.4 Leaking Air Purge Seals

1. Check to ensure that a compressed air supply has been installed to the Rota-Sieve. Never operate a Rota-Sieve without purge air. If the Rota-Sieve has been operated without the air purge operating, the seals are probably damaged and need to be replaced. See section 5.5.
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

6.5 Leaking Packing Seals

1. The packing gland does not need to be very tight. The air purge keeps product from escaping the Rota-Sieve. Overtightening the packing gland can cause the

seals to overheat and create high motor amp draw. Air may escape from the packing area but as long as the air purge is functioning correctly, product will be contained. If the air purge is functioning and product is escaping, the packing seals may be damaged or worn. Remove the seals and replace them. See section 5.5.

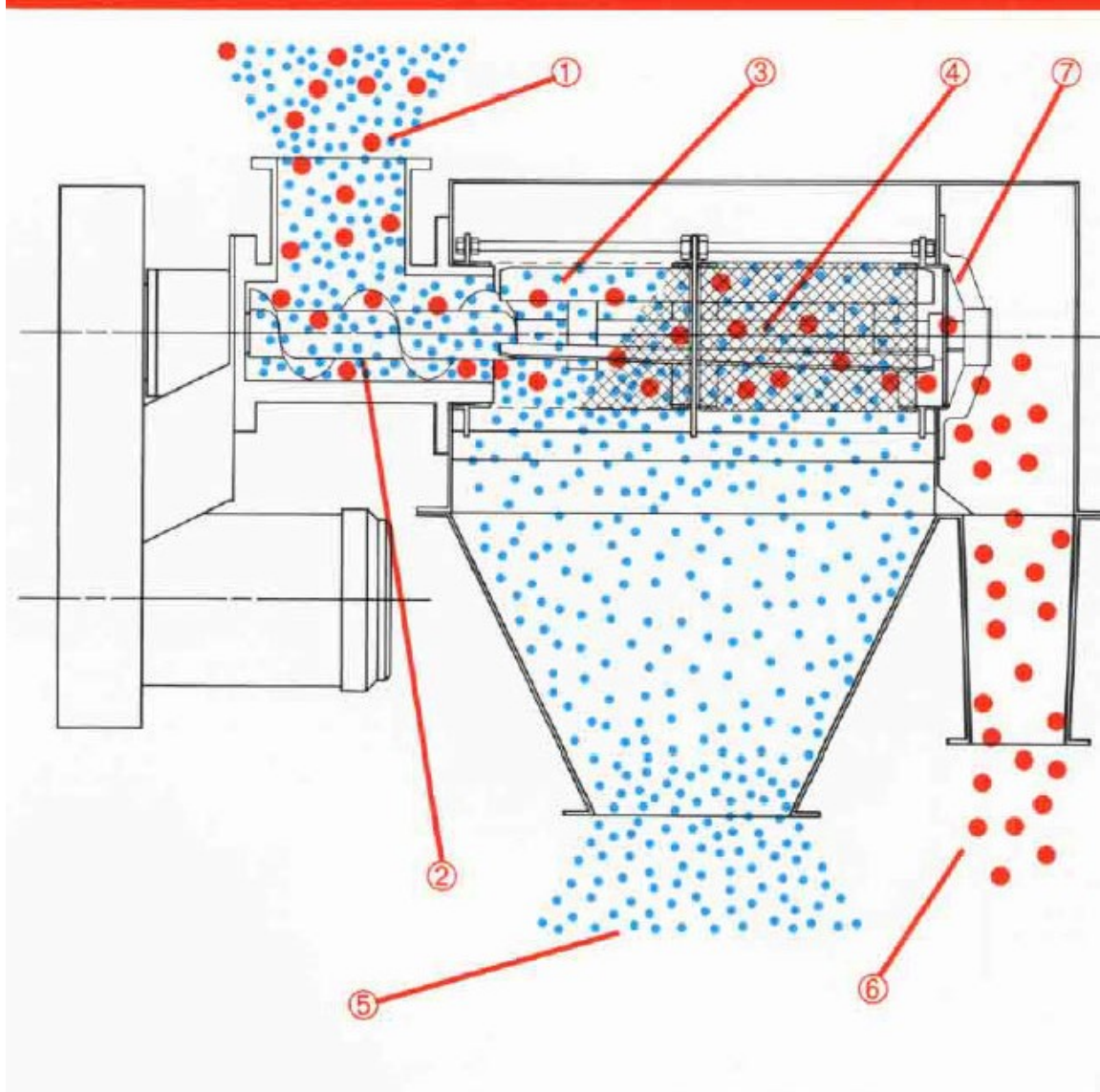


Figure 6-1: RS Theory of Operation

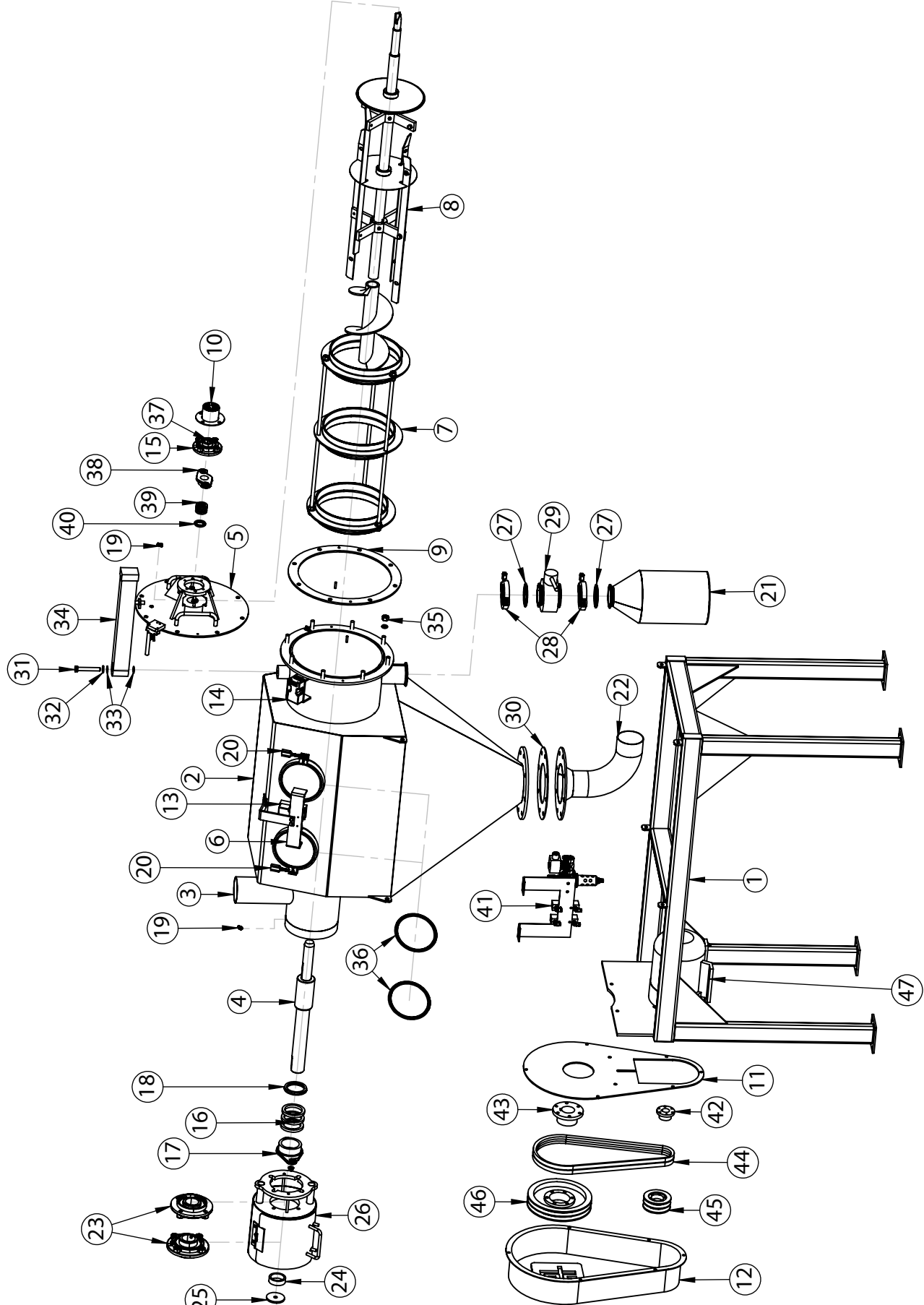


Figure 6-2: Main Assembly

PARTS LIST FOR FIGURE 6-2

1	STAND
2	BODY AND OVERS HOPPER WELDMENT
3	INLET ASSEMBLY
4	STUB SHAFT
5	END DOOR ASSEMBLY
6	INSPECTION DOOR ASSEMBLY
7	SCREEN FRAME ASSEMBLY
8	ROTOR ASSEMBLY
9	END DOOR GASKET
10	END DOOR GUARD ASSEMBLY
11	BELT GUARD BACK PLATE
12	BELT GUARD COVER
13	INSPECTION DOOR SAFETY SWITCH
14	END DOOR SAFETY SWITCH
15	END DOOR BEARING
16	DRIVE SIDE PACKING SEALS
17	DRIVE SIDE PACKING GLAND
18	DRIVE SIDE LANTERN RING
19	AIR PURGE FITTING
20	INSPECTION DOOR CLAMPS
21	OVERS DISCHARGE CAN
22	FINES DISCHARGE ASSEMBLY
23	OUTBOARD BEARING
24	PULLEY SPACER
25	PULLEY WASHER
26	BEARING HOUSING ASSEMBLY
27	OVERS CAN GASKET
28	OVERS CAN CLAMPS
29	OVERS CAN VALVE
30	FINES DISCHARGE GASKET
31	END DOOR TRACK BOLT
32	END DOOR TRACK WASHER
33	END DOOR TRACK BEARING
34	END DOOR TRACK ASSEMBLY
35	END DOOR HARDWARE
36	INSPECTION DOOR GASKETS
37	IDLE SIDE BEARING DOG POINT SET SCREW
38	IDLE SIDE PACKING GLAND
39	IDLE SIDE PACKING SEALS
40	IDLE SIDE LANTERN RING
41	AIR PURGE KIT
42	DRIVE BUSHING
43	ROTOR BUSHING
44	BELT
45	DRIVE SHEAVE
46	ROTOR SHEAVE
47	MOTOR

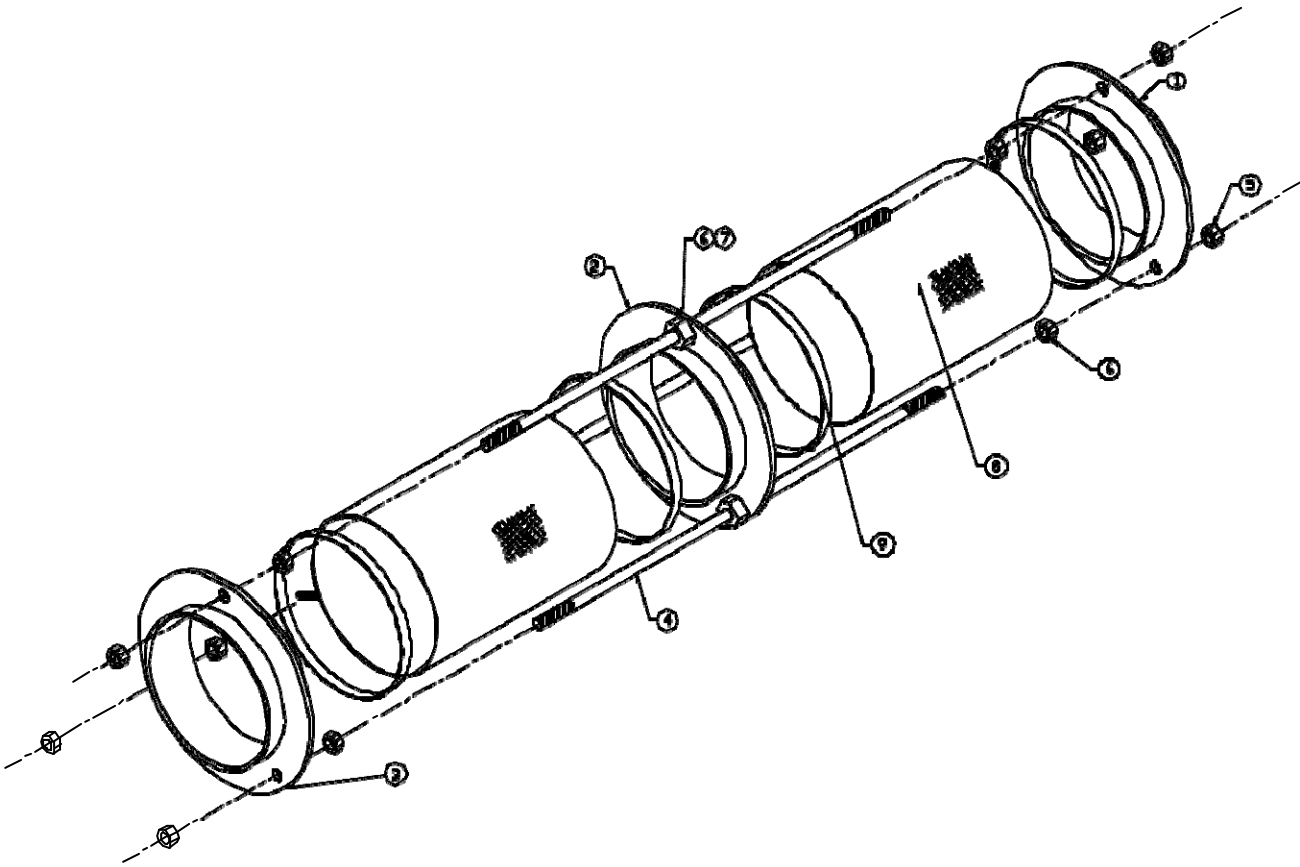


Figure 6-3: Screen Frame Assembly Exploded View

PARTS LIST FOR FIGURE 6-3

1	END RING
2	CENTER RING
3	END RING
4	ADJUSTABLE ROD ASSEMBLY
5	JAM NUT
6	TENSIONING NUT
7	STAR WASHER
8	SCREEN
9	ADJUSTABLE CLAMP

Note: In some applications the screen frame assembly may be a single piece, fully welded design. There are no replaceable parts in the single piece assembly.

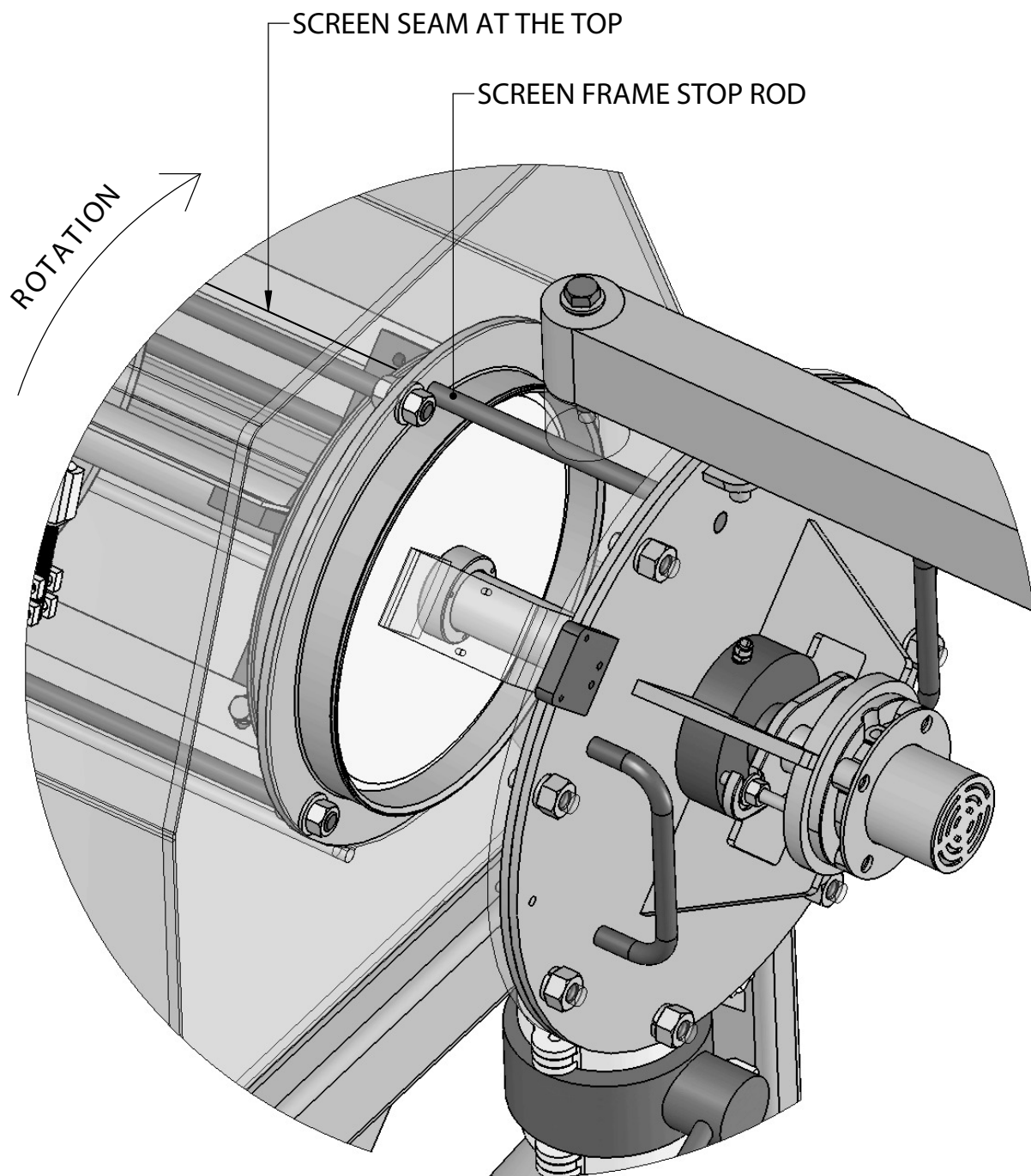


Figure 6-4: Screen Seam Position with Stop Rod

ITEM NO.	DESCRIPTION	QTY.
1	SHAFT	1
2	SPIDER ASSEMBLY	2
3	AUGER	1
4	ROTOR BAR	4
5	BAR MOUNTING BOLT	8
6	BAR LOCKWASHER	8
7	AUGER SET SCREW	2
8	SPIDER SET SCREW	4
9	BAFFLE SCREW	6
10	MIDDLE BAFFLE	1
11	BAFFLE SET COLLAR	2
12	COLLAR SET SCREW	2
13	END BAFFLE RETAINER	2
14	END BAFFLE	1

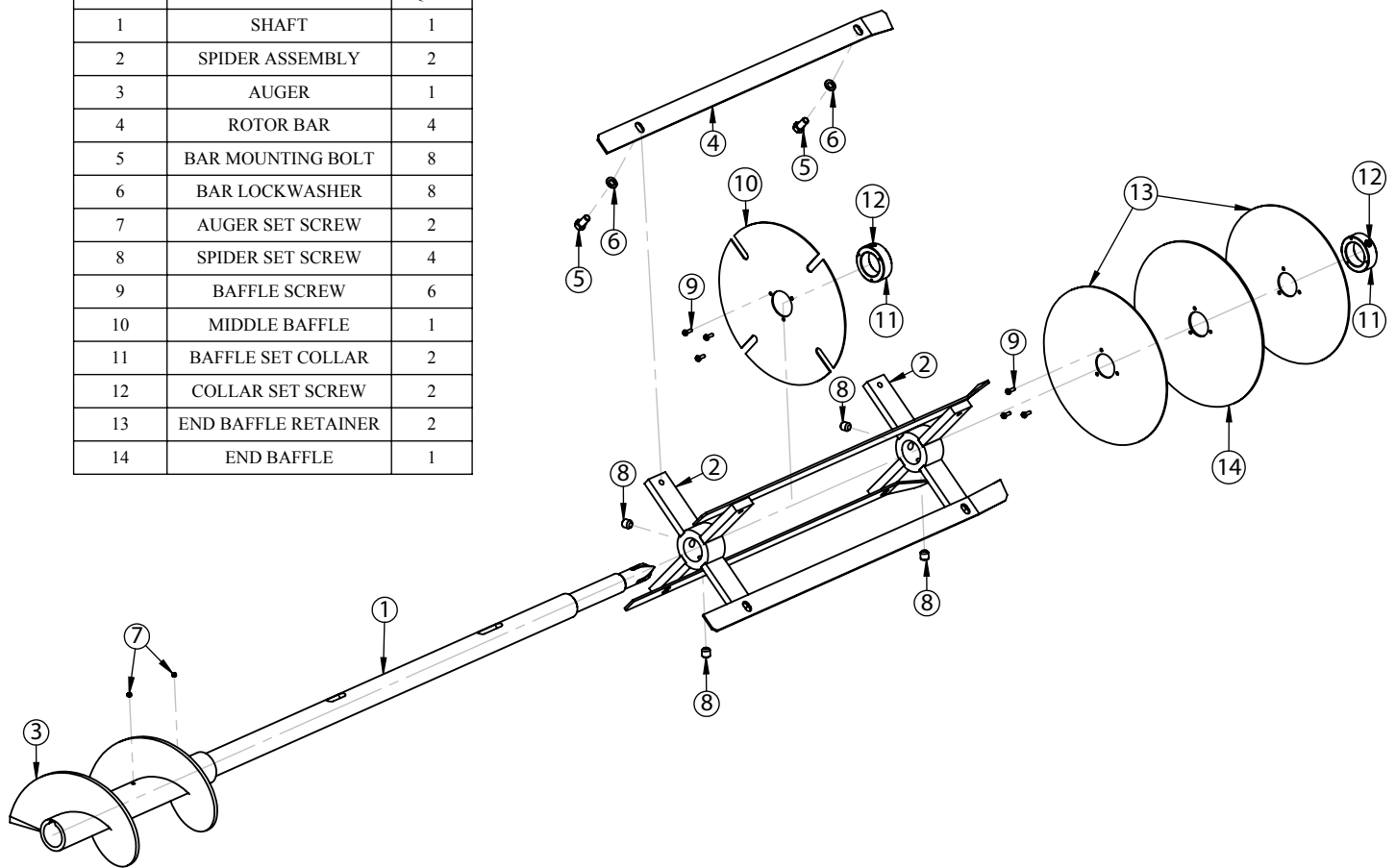
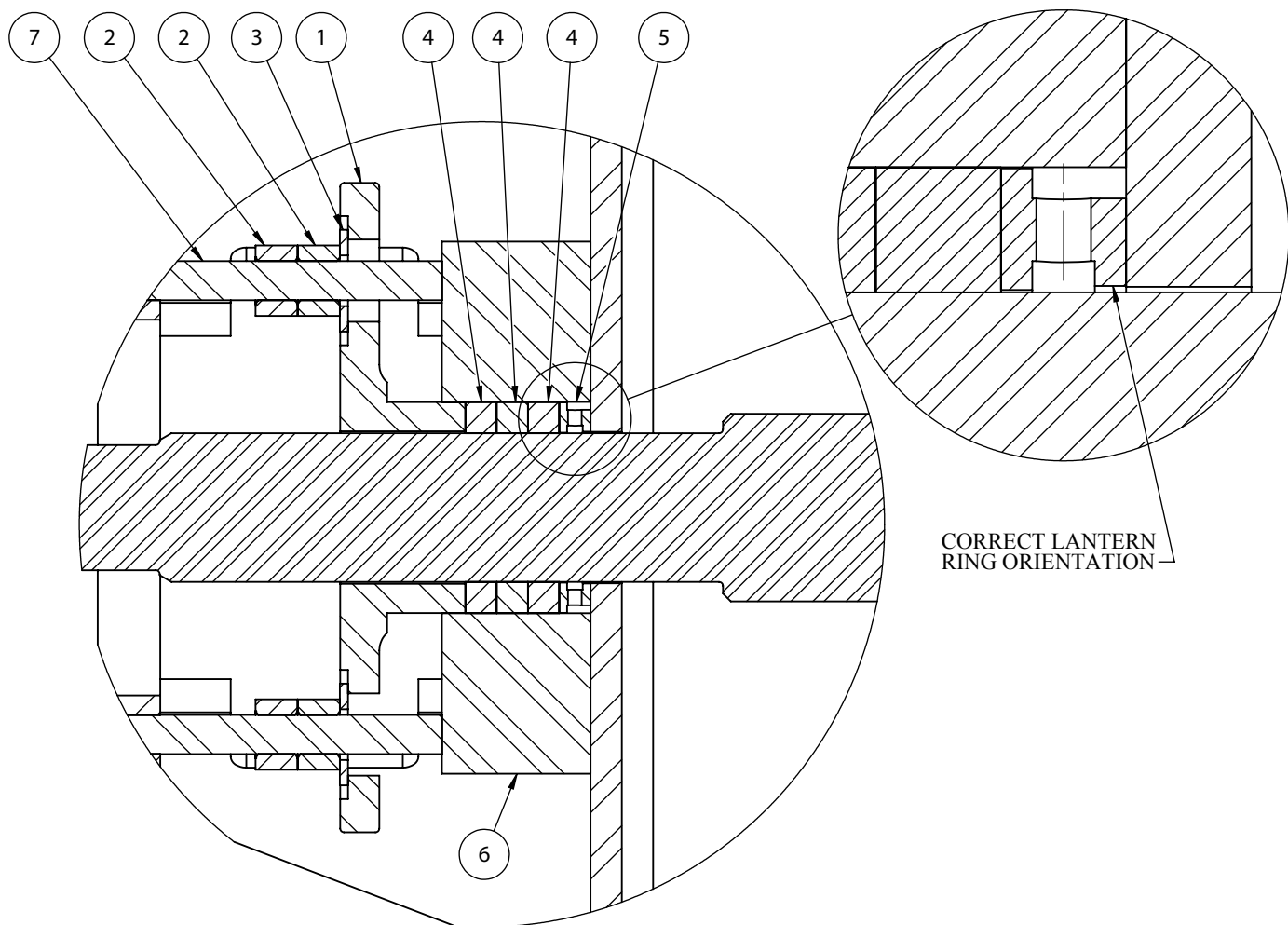


Figure 6-5: Rotor Assembly

Note: In some applications the rotor assembly may be a single piece, fully welded design. There are no replaceable parts in the single piece assembly.



PARTS LIST FOR FIGURE 6-6

1	PACKING GLAND
2	JAM NUT
3	WASHER
4	PACKING SEAL
5	LANTERN RING
6	PACKING CYLINDER
7	SCREW

Figure 6-6: Shaft Seal Assembly