



SOVA™ SERIES 7 OPERATION, MAINTENANCE AND PARTS MANUAL



REED, provides this manual for the guidance of all owners, operators and servicing personnel in order to obtain the longest possible trouble-free service. It contains data, specifications, warranty, schematics, operating instructions, lubrication procedures, maintenance procedures, illustrated parts breakdown, vendor information, service bulletins, and safety rules.

Serial No.: _____

Date Delivered: _____

Customer: _____

NOTE: Additional copies of this manual (**P/N: 20402**) may be obtained through the **REED** Parts Department.

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SOVA SERIES 7 PNEUMATIC SPRAYING MACHINE

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INTRODUCTION

A major factor in the minds of the operators and maintenance personnel should be use of the machine in a **SAFE** and **PROFICIENT** manner. This can only be accomplished by having a better understanding of the operation and maintenance of the **REED GUNCRETE SOVA™ SERIES 7 DRY PROCESS PNEUMATIC SPRAYING MACHINE**.

This manual (Part Number 20402) is provided to assist in accomplishing this goal. It is considered to be a **VALUABLE** tool to our **CUSTOMERS**. It includes an Operation Section, General Maintenance Procedures, and Illustrated Parts Section. Everyone involved with the operation, maintenance and repair of the machine should be given and should take this opportunity to **READ** and thoroughly **UNDERSTAND** all sections of this manual. It is in their **BEST INTEREST** to do so.

This manual covers and is applicable to a **STANDARD EQUIPPED MACHINE** having either a **5HP - 8AM** air motor. Depending on customer requirements and circumstances, it is possible your machine may be equipped with various options and specialized equipment. If you are aware of these items, we suggest you make a note of these which will assist you and **REED** when the need arises for ordering of parts and service. If by chance, service information is not found, it is suggested you contact the **REED SERVICE DEPARTMENT** which will forward the proper information if available.

All product descriptions, illustrations and specifications found throughout this manual were in effect at the time the manual was released for printing. It should be noted **REED RESERVES THE RIGHT TO MAKE CHANGES IN DESIGN OR TO MAKE ADDITIONS TO OR IMPROVEMENTS IN THE PRODUCT WITHOUT IMPOSING ANY OBLIGATIONS UPON ITSELF TO INSTALL THEM ON PRODUCTS PREVIOUSLY MANUFACTURED**.

NOTE

*If you have not yet done so, please record the **SERIAL NUMBER** of your **SOVA™ SERIES 7** on the cover page of this manual. Throughout this manual, reference may be made to the serial number. When talking to our **SERVICE DEPARTMENT** or **ORDERING PARTS**, use of the serial number will assist us in giving prompt and accurate response and service.*



SOVA SERIES 7

PNEUMATIC SPRAYING MACHINE

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PRODUCT DESCRIPTION

The **REED GUNCRETE SOVA™ SERIES 7** is a dry mix pneumatic spraying machine designed specifically for the purpose of inducing granular materials into a compressed air stream. The material is then conveyed by the air through a hose line delivery system to a nozzle, where water is introduced which then mixes with the dry material and air and then is sprayed from the nozzle for the specific application. The machine is of a simple design, compact, lightweight, and is of a rugged construction to withstand the work environment surrounding the many applications of dry mix spraying.

The **SOVA™ SERIES 7** utilizes as its main power source a 5HP air powered motor. The air supply for operations of the motor is provided by an external compressed air source. The air motor through an oil bath spur gear arrangement, is used to rotate the feed wheel or bowl. A means is provided to vary the rotating speed for the feed wheel, which in turn varies the output feed rate.

In operation, dry or damp material is placed into the hopper where it is allowed to freely fall through openings and down into the "U" shaped pockets of the feed wheel. As the feed wheel rotates, the pockets which are now loaded with material, pass under a molded rubber sealing pad which is set tight against the top portion of the feed wheel. The rubber pad and back-up plate each contain two (2) specifically designed openings. One is used as an inlet for the compressed air and the other is used as an outlet for the air material mixture. These openings are designed to align with the "U"-shaped pockets of the feed wheel. As the loaded pockets pass under the pad and line up with the openings, the compressed air which is directed to the inlet opening of the pad pushes the material from the pockets of the feed bowl and up through the pad's outlet opening where it travels through the gooseneck and on into the delivery hose and on to the nozzle. With the constant even rotation of the feed bowl, the material can be exhausted into the hose in an extremely steady flow.

The **SOVA™ SERIES 7** is equipped with a 5HP rotary vane motor. Protection of the air motor and other related components against premature wear, the system is equipped with an air filter and lubricator. The filter is used to remove any liquids and solids from the incoming compressed air. The lubricator is used to induce a controlled oil flow into the air stream where it is atomized into an airborne oil fog which is carried to the air motor.

Controls for operation of the unit are at the machine. They include the ability to turn on and regulate the air power to the motor and feed bowl, to monitor the pressure of the systems and adjust the pad clamps.

SPECIFICATIONS

TECHNICAL DATA

	U.S.	METRIC
• Output Maximum	9 yds ³ /hr	6.9m ³ /hr
• Aggregate Size – Maximum	3/8"	10mm
• Air Motor	5HP	3.7KW
• Conveying Distance – Horizontal Max	1000 ft.	305m
• Conveying Distance – Vertical Max	300 ft.	91m
• Hose Size – I.D.	3/4" to 1 1/2"	19mm to 38mm
• Refractory Hopper Capacity	25.90 ft ³	0.734m ³

Material conveying distances shown are to be used only as a guide. Maximum attainable distances and maximum aggregate size are all dependent on mix design and material hose diameters. Maximum output and distances cannot be reached simultaneously.



NOTE: WATER SEPARATOR SHOWN IS AN OPTIONAL ACCESSORY. INSTALLATION IS HIGHLY RECOMMENDED.

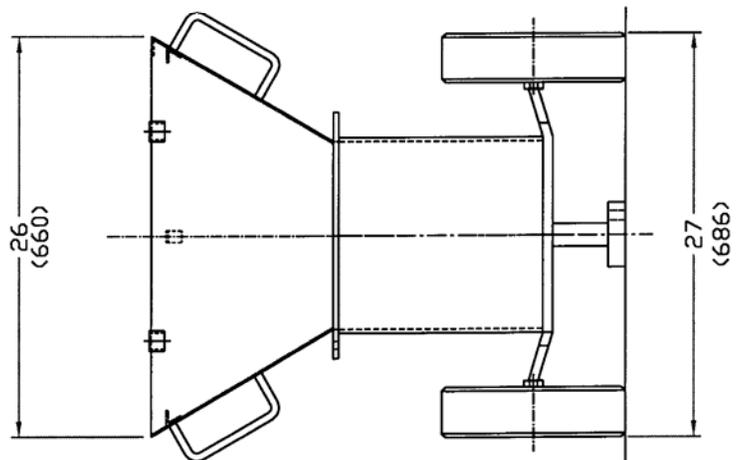
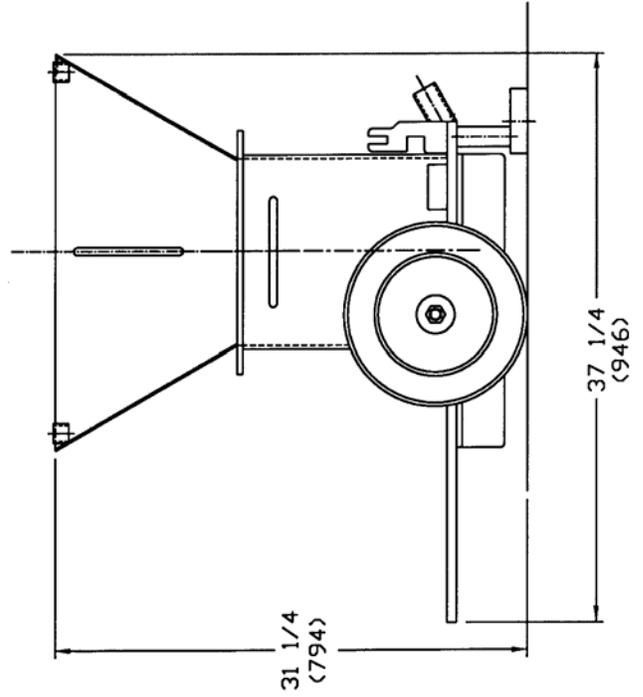
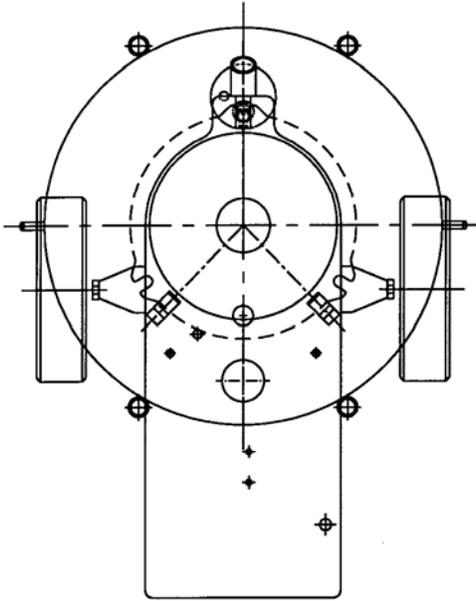
Hose Size	Output/hr	Max Air Required		Feed Wheel
		@ 100 PSI (7kg/cm ²)	Aggregate	
3/4" (1.9cm)	2 yd ³ (1.5m ³)	125cfm (3.0m ³ /min)	1/8" (3.5mm)	16 - 18 PKT
1" (2.5cm)	2 yd ³ (1.5m ³)	250cfm (6.0m ³ /min)	1/4" (7mm)	16 - 18 PKT
1 1/4" (3.2cm)	6 yd ³ (4.6m ³)	315cfm (9.0m ³ /min)	1/4" (7mm)	16 - 18 PKT
1 1/4" (3.2cm)	6 yd ³ (4.6m ³)	315cfm (9.0m ³ /min)	3/8" (10mm)	16 - 18 PKT
1 1/2" (3.8cm)	9 yd ³ (6.9m ³)	365cfm (10.5m ³ /min)	3/8" (10mm)	16- 18 PKT



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SAFETY AWARENESS AND PRECAUTIONS

The **REED GUNCRETE SOVA™ SERIES 7** dry mix pneumatic spraying machine is only to be used for the purpose of inducing granular materials into a compressed air stream which is then conveyed through a hose line to a spraying nozzle.

All personnel assigned to operate, repair or troubleshoot the **SOVA™**, must be thoroughly familiar with this Technical Manual (P/N 20402). For the protection of yourself and others around you, it is of utmost importance that the **WORK** be done **SAFELY**. One of the best ways to accomplish this is to fully **UNDERSTAND** and **KNOW** the job you do. If there is any doubt that what you are doing is **UNSAFE**, even marginally, obtain assistance from other trained/qualified personnel.

During operation, troubleshooting, or repair, problems may arise or be encountered that seem singular, but may in fact be due to several causes. These need to be sorted out and identified before proceeding with the task at hand. The information contained in this technical manual can be used to assist in the safest and best manner of operating and repairing the **SOVA™ SERIES 7** machine.

ADVISORY LABEL LOCATION

Cautionary signal word (Warning-Caution) may appear in various locations throughout this manual. Information accented by one of these signal words must be observed to minimize the risk of personal injury to service personnel, or the possibility of improper service methods which may damage the pump or render it unsafe. Additional Notes are utilized to emphasize areas of procedural importance and provide suggestions for ease of repair. The following definitions indicate the uses of these use of these advisory labels as they appear throughout the manual:

CAUTION

Directs attention to unsafe practices, which could result in damage to equipment and possible subsequent personnel injury or death if proper precautions are not taken.

WARNING

Direct Attention to unsafe practices, which could result in personnel injury or death if proper precautions are not taken.

NOTE

An operating procedure, practice, condition, etc., which is essential to emphasize.

REVISION:

----- THINK SAFETY -----

The following points out some pretty **COMMON** conditions and situations that you might encounter at one time or another. **BE ALERTED** to these and try to **PREVENT** the inevitable. They may seem simple, but are often the **MOST OVERLOOKED**.

- Get enough sleep to be ready for the day's work. Accidents can happen when the body is on the job, but the mind is not.
- Arrive to work on time. Accidents can be caused by hurrying through procedures.
- Don't bring your personal problems to work with you. In an office setting this may be annoying to co-workers, but on a construction site it can be deadly. The workers around you depend on you for their safety.
- Use only qualified operators and nozzle men who know the machine.
- Use only qualified maintenance personnel who understand the systems.
- Dress in appropriate apparel (See Figure 1. Personal protective equipment). You should always wear these items when using **SOVA™**.

- Hard hat
- Safety glasses or goggles
- No loose clothing
- Gloves
- Appropriate boots
- Hearing protection
- Breathing mask (Respirator)
- Check the specific **OSHA** requirement for your jobsite
- Jewelry, athletic shoes, sandals, and shorts are examples of clothing that should **NOT** be worn when operating.

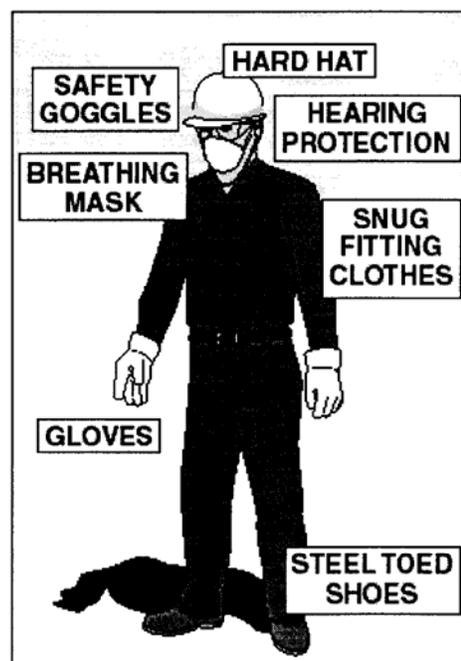


Figure 1
Personal protective equipment

-----THINK SAFETY-----THINK SAFETY-----

⚠ WARNING

BE SURE THAT ANY CLOTHING YOU WEAR DOES NOT HAVE STRINGS, FRINGES, OR OTHER EXTERNAL TIGHTENING MEANS THAT COULD BE CAUGHT IN MOVING PARTS (FIGURE 2. NO STRINGS ATTACHED).

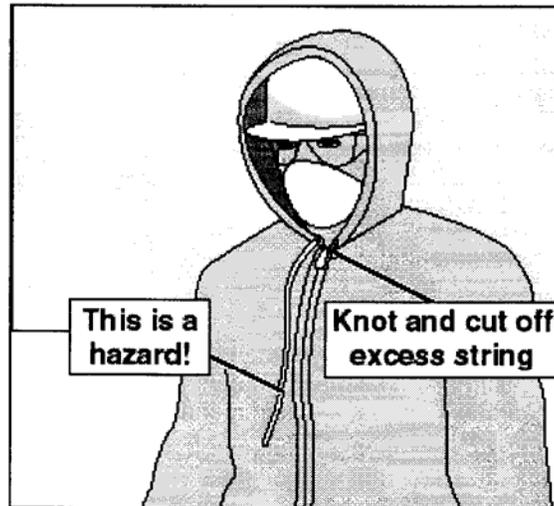


Figure 2
No strings attached

NEVER go to work on a construction site or work on, around or near a piece of machinery when under the influence of drugs or alcohol. Beware of “over the counter” drugs, many of which have specific warnings about operating machinery after taking the medication (See Figure 3. Your co-workers depend upon you for their safety).

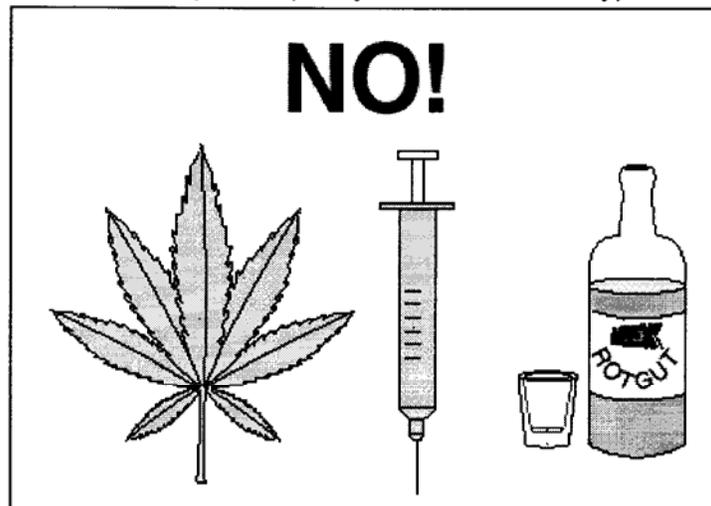


Figure 3
Your co-workers depend upon you for their safety



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SAFETY ALERT DECALS

DANGER ----- CAUTION ----- WARNING

Decals are designed for your protection. They are placed at appropriate areas on the machine to be constant reminders of the ever-present dangers. Know and adhere to the information they provide.

WARNING
ALWAYS WEAR SAFETY GLASSES
WHEN OPERATING THIS MACHINE

WARNING!

The wear pad area of this machine is extremely dangerous when the wear pad and Pad back-up assembly are removed.

It is essential that strict safety procedures be followed before performing any work in the wear pad area.

If maintenance must be performed in this area then proceed as follows:

- (1) Shut off power.
air / electric
- (2) Disconnect air feed line or electric cord.

Work in the wear pad area can now be performed safely.

Upon completion of this work, reconnect air feed line or electric cord, and restore power.



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-----THINK SAFETY-----THINK SAFETY-----

No matter how often it is said or pointed out, there are people who have a tendency to **IGNORE** safe operation until it becomes too **LATE**. Don't be this type of person. Keep **SAFETY** utmost in your mind.

The following points out some pretty **COMMON** conditions and situations that you might encounter at one time or another. **BE ALERTED** to these and try to **PREVENT** the inevitable. They may seem simple, but are often the **MOST OVERLOOKED**.

- Use only qualified operators and nozzlemen who know the machine.
- Use only qualified maintenance personnel who understand the systems.
- Wear protective equipment such as hard hats, goggles, and dust masks in close quarters.
- Keep work area clear of unauthorized personnel
- Level machine on uneven terrain and slopes.
- Do not operate machine in traffic lanes. Always place cones and barricades around the unit.
- Don't clean, lubricate, or make maintenance adjustments while unit is in operation.
- Keep safety decals and operation instructions legible.
- Do not alter or disconnect safety devices.
- Use whip-check cables or chain safety couplings on air supply hoses.
- Rubber gloves are to be worn by workmen with sensitive skin subject to cement burn.
- Use only sturdy & safe lifting devices, platforms and scaffolding for those spraying operations that are performed off the ground. All platforms should be equipped with safety rails.
- Never remove the hopper screen and put your hands into the hopper.
- Report items that need attention or require service.

WARNING

**BETTER SAFE THAN SORRY – DON'T TAKE CHANCES THAT
COULD CAUSE INJURY TO YOU AND/OR OTHERS.**

YOUR SAFETY IS OUR UTMOST CONCERN AND YOUR RESPONSIBILITY



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SAFETY ALERT DECALS

DANGER ----- CAUTION ----- WARNING

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WARNING
ALWAYS WEAR SAFETY GLASSES
WHEN OPERATING THIS MACHINE

WARNING!

The wear pad area of this machine is extremely dangerous when the wear pad and Pad back-up assembly are removed.

It is essential that strict safety procedures be followed before performing any work in the wear pad area.

If maintenance must be performed in this area then proceed as follows:

- (1) Shut off power.
air / electric
- (2) Disconnect air feed line or electric cord.

Work in the wear pad area can now be performed safely.

Upon completion of this work, reconnect air feed line or electric cord, and restore power.



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WARNING!

The inside of the hopper of this machine has moving parts which are extremely dangerous.

It is essential that strict safety procedures be followed before any work is done in-side the hopper.

The screen on the hopper is bolted in a closed position to restrict access. If maintenance must be performed inside the hopper, proceed as follows:

- (1) Shut off power.
air / electric
- (2) Disconnect air feed line or electrical cord.
- (3) Remove bolts securing the hopper screen

Work inside the hopper may now be performed safely.

Upon completion of this work, replace the bolts and secure the hopper screen in a closed position. Reconnect air feed line or electrical cord and restore power.

CAUTION **DO NOT LIFT**
THIS MACHINE BY HOPPER HANDLES.
USE SLINGS UNDER MACHINE.





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OPERATOR QUALIFICATIONS

Making the choice for an operator and nozzleman is a vital decision as it affects safety and productivity. The **REED GUNCRETE SOVA™ SERIES 7** has been thoroughly inspected and tested by the **REED** Quality Control Department prior to shipment. The design of the unit incorporates several built-in safety features and also allows for an average skilled person to readily become proficient in the safe operation of the **SOVA™ SERIES 7**. The unit is a pressurized material pump and can be potentially **DANGEROUS** in the hands of **UNTRAINED** or **CARELESS OPERATORS**.

Knowing the characteristics of the machine and function of the controls are important to **SAFE, PROPER OPERATION** and **USE**.

It is the responsibility of the users to read and comply with the following rules and information designed to promote **SAFETY** and **UNDERSTANDING** of the **SOVA™ SERIES 7** spraying machine.

- The first requirement for any user/operator is to obtain a thorough understanding of the operating characteristics and limitations of the machine. This should not be overlooked regardless of their prior experience with similar type equipment.

Only **QUALIFIED TRAINED** personnel who have been authorized must be allowed to operate the **REED GUNITE SOVA™ SERIES 7**. A Qualified Trained Operator is one who has **READ** and **UNDERSTOOD** the instructions in this manual and is thoroughly familiar with the operating characteristics and limitations of the machine.

- Individuals who cannot **READ** and **UNDERSTAND** the signs, warnings, notices and operating instructions that are part of the job, in the language in which it is printed **MUST NOT BE ALLOWED** to operate the **SOVA™ SERIES 7**.
- Know and follow all cautions, warnings, and operating instructions on the machine.
- Repair and adjustments must only be made by **QUALIFIED TRAINED** personnel.
- No modification is to be made to the machine without prior written consent of the **REED** Customer Service Department.
- Attach a **SIGN-OFF** sheet on the unit to enable the operator to report any damage, defects, problems, or accidents to his work supervisor.
- Understand and **OBEY** all applicable Local and Government statues and regulations applying to safe operation and use of material pumping machines.

**AN UNKNOWING OPERATOR IS AN UNSAFE OPERATOR
AND A SORRY OPERATOR**



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PRE-OPERATION INSPECTION

The **CONDITION** of the unit prior to start-up is a very **IMPORTANT** factor as it directly affects the operator's safety as well as those around him. It should be a common practice that the operator performs a general inspection of the **REED GUNCRETE SOVA™ SERIES 7**, before each day's operation.

The purpose of the operator's inspection is to keep the equipment in **PROPER** working condition and to **DETECT** any sign of malfunction during normal operations between scheduled maintenance checks.

DOWNTIME is **COSTLY** and can possibly be prevented by taking a few minutes prior to start-up to do a thorough walk around inspection. This inspection must be performed each day before the unit is operated. Report any damage or faulty operation immediately. If need be, attach a sign on the machine which states-----**DO NOT OPERATE**----- . Repair any discrepancies before use.

Some of the major items to be considered for your inspection include the following:

1. OVERALL MACHINE CONDITION

- External structural damage
- Hopper screen in place
- Lock pins, chains, and retainers in place
- Wheel nuts tight
- Decals, placards, warning signs legible
- Unit is clean and free of concrete build-up
- Feed wheel wear surface is clean and flat
- Wear pad in good condition
- Gooseneck liner is in good condition
- Agitator secure, in good condition

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2. AIR SYSTEM

- Loose or damaged hoses, tubing, fittings
- Air leaks
- Air valves and control levers

3. DRIVE SYSTEM

- Air motor secure
- Gear box oil at proper level
- Condition of feed wheel, seals, and wear pad
- Pad adjustment secure
- Outlet nozzle secure
- Adjustment knobs tight

CAUTION

Defective components, structural damage, missing parts or equipment malfunctions jeopardize the SAFETY of the operator and other personnel and can cause extensive damage to the machine. A poorly MAINTAINED machine can become the greatest OPERATIONAL HAZARD you may encounter.

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GETTING ACQUAINTED (UNIT FAMILIARIZATION)

As previously indicated, it is important from a **SAFE** operational standpoint that you, the **OPERATOR**, know your machine. This means the function of each control as to what happens when it is activated, how it might interact with other functions and any limitations which might exist. A **GOOD UNDERSTANDING** of the controls and capabilities will enhance operation and assure maximum operating efficiency and **SAFETY**.

These next few pages will assist you in **GETTING ACQUAINTED** with the **MODEL SOVA™ SERIES 7**. Carefully study them.

HOPPER AND PAD INSTALLATION
(SEE PART SECTION GROUP 40)

**NOTE: WATER SEPARATOR SHOWN IS AN
OPTIONAL ACCESSORY. INSTALLATION
IS HIGHLY RECOMMENDED.**



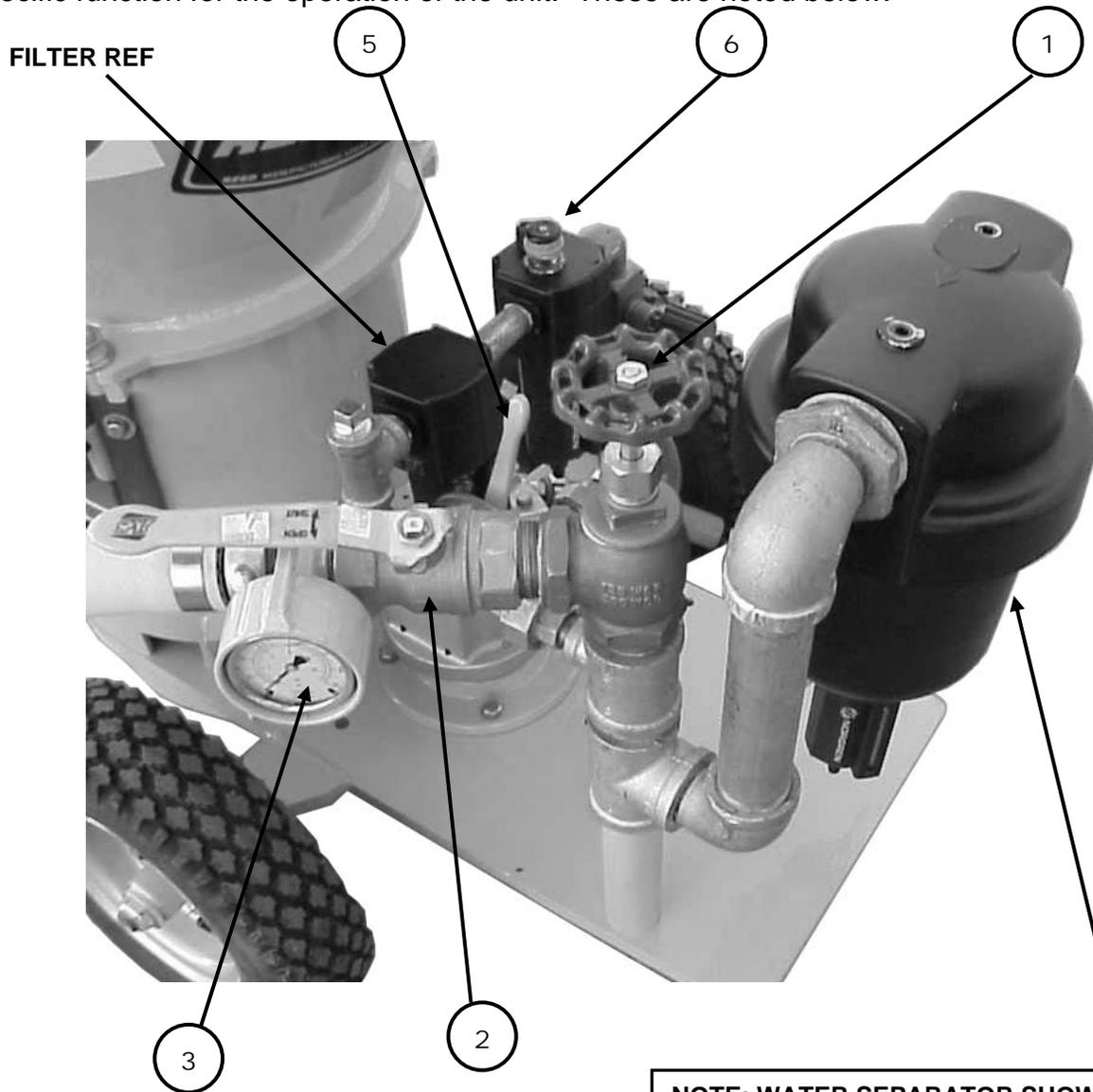
BASE GEAR INSTALLATION
(SEE PART SECTION GROUP 30)

AIR INLET AND VALVE INSTALLATION
(SEE PART SECTION GROUP 50)

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CONTROL AND COMPONENT FAMILIARIZATION

The **SOVA™ SERIES 7 GUN** is equipped with various controls and adjustment knobs. The controls are located at easily accessible points on the machine and each is dedicated to a specific function for the operation of the unit. These are noted below.



1. THROTTLE VALVE – FEED BOWL

This is a globe type valve and is used to throttle (adjust) the air flow through the feed bowl for exhausting of the material. The throttle valve can be adjusted for a minimum to maximum air flow. Turn knob counterclockwise to **INCREASE** air flow and clockwise to **DECREASE** air flow.



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2. MATERIAL FEED VALVE

This is a quarter turn valve used to control the air flow (**ON-OFF**) through the feed bowl. This permits the operator to turn the air on-off without disturbing the setting of the throttle valve. Valve is closed (**OFF**) with handle turned perpendicular to the pressure line and open (**ON**) with the handle turned in a parallel position to the pressure line.

3. PRESSURE GAUGE – 160 PSI (11.2 Bar)

This air pressure gauge is used to indicate the air pressure being directed to the feed wheel.



4. THROTTLE VALVE – AIR MOTOR

This is a needle type valve and is used to throttle (adjust) the air flow to the air motor for its operation. The throttle valve can be adjusted for a minimum to maximum air flow. Turn knob counterclockwise to **INCREASE** air flow which in turn increases the RPM of the motor and feed bowl and clockwise to **DECREASE** the air flow or speed.

5. AIR MOTOR VALVE

This is a quarter turn valve used to control the air flow (**ON-OFF**) to the feed bowl. This allows the air to be turned on-off, starting-stopping of motor, without disturbing the setting of the air motor throttle valve. Valve is closed (**OFF**) with handle turned perpendicular to the pressure line and open (**ON**) with handle turned in a parallel position to the pressure line.

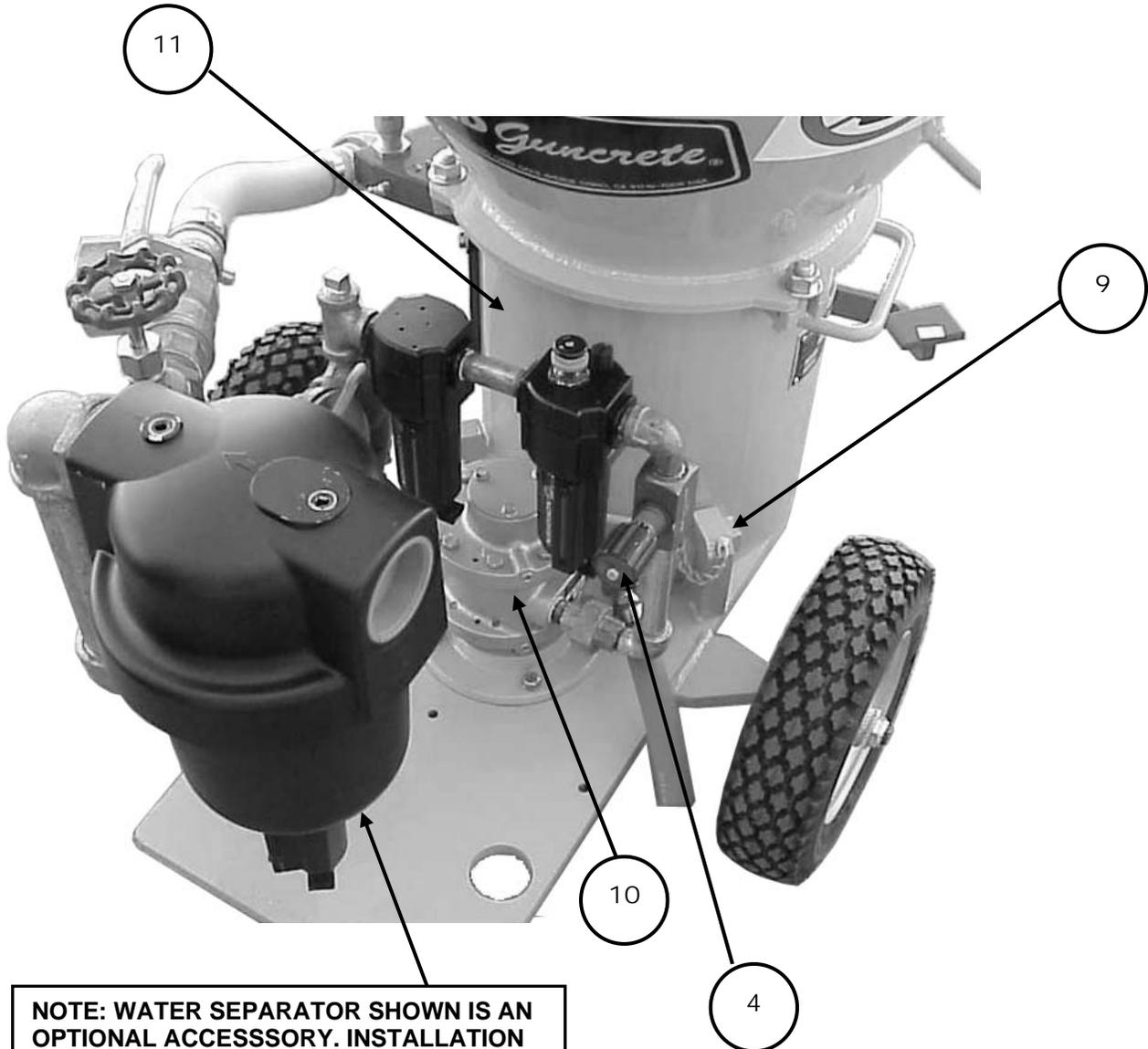
6. LUBRICATOR

Located on the air supply line to the air motor is an air filter and lubricator. These components are installed as protection for the air motor. The lubricator is equipped with a means to adjust the drip rate of oil into the air system. The top of the lubricator is equipped with the adjustment knob. Turn knob counterclockwise to **INCREASE** feed rate, clockwise to **DECREASE** feed rate. Adjust oil drip to two (2) drops per minute as a start. Drops are visible through the sight glass.

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7. PAD ADJUSTMENT KNOBS

Three (3) knobs are located on top of the pad housing at the gooseneck. These knobs are used to adjust the sealing wear pad. The left knob adjusts the exhaust side of the sealing pad; the center knob adjusts the rear of the pad and the right knob adjusts the right side of the pad. Turn knob clockwise to increase pressure on pad and counterclockwise to decrease pressure on pad.



NOTE: WATER SEPARATOR SHOWN IS AN OPTIONAL ACCESSORY. INSTALLATION IS HIGHLY RECOMMENDED.

8. PAD HOUSING SEAL KNOB

Located just beneath the gooseneck is one (1) clamping knob. This knob is used to apply the necessary pressure to the curved outside surface of the rubber pad



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9. FEED WHEEL HOUSING LOCK

The feed wheel housing is secured to the base by use of heavy duty lugs. To remove the feed wheel housing, it is necessary to rotate the housing to free the locking lugs. To facilitate the breaking loose and rotation, a kick bar or foot pedal is provided. Pushing down on lever will apply pressure to locking lug, rotating housing.

10. AIR MOTOR

The **SOVA™ SERIES 7** is equipped with a 5HP designated 8AM air motor. The motor is designed and manufactured to **REED** specifications and offer precise speed control for operational power of the feed wheel which is highly important in that it permits an even flow of material through the delivery hose as required for the application. The 8AM motor is of the four (4) vane type and is suitable for most general gunning applications.

11. FEED WHEEL HOUSING

The feed wheel housing is the circular tube like component that locks to the base plate assembly and is used to enclose the feed bowl. It is also used as the support or mounting structure for the hopper.

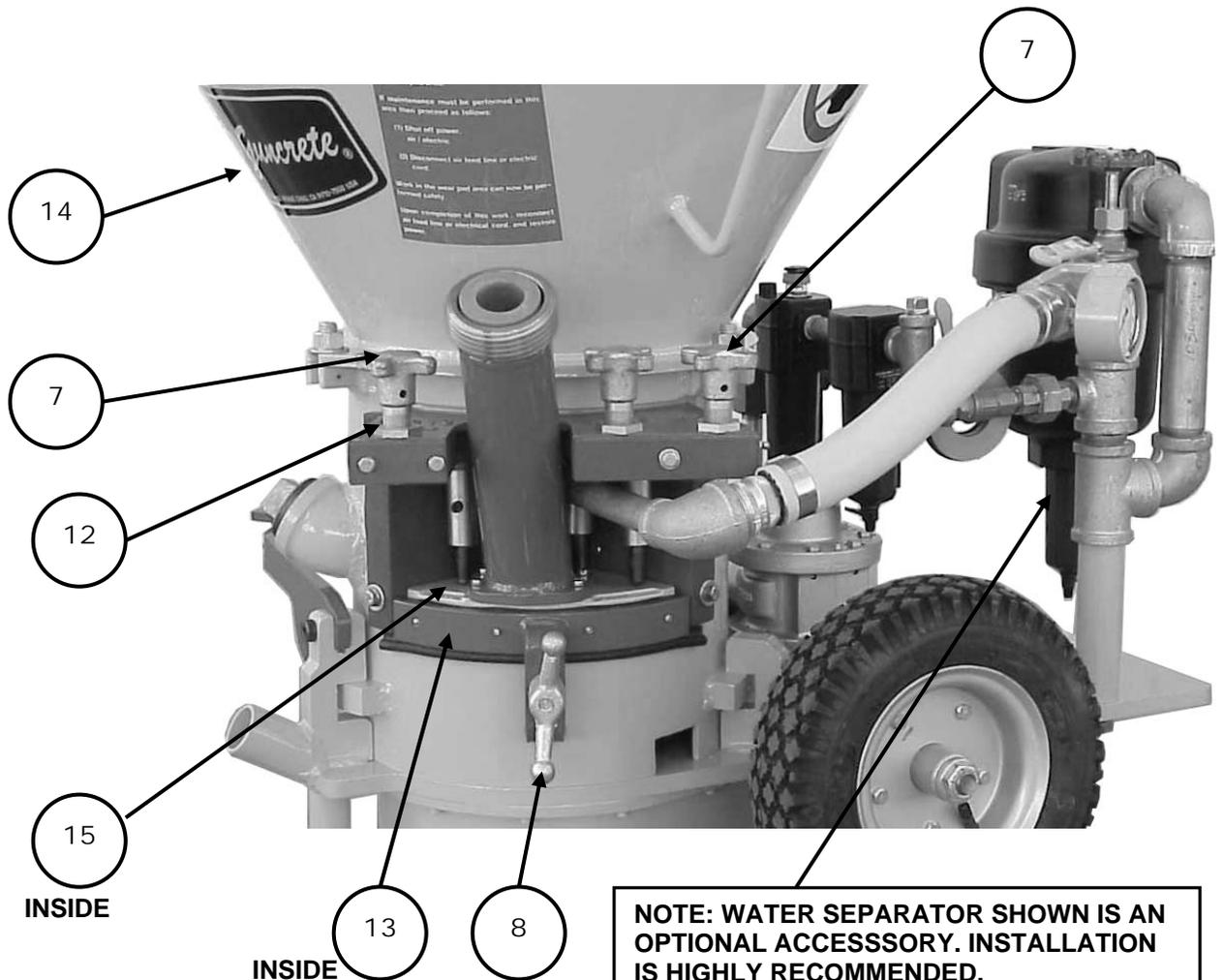
In an effort to prevent the leakage of material and dust to areas under the feed bowl, a felt seal is used. The feed wheel housing contains, on it's inside, a retainer ring. The retainer ring is used to hold the felt seal in place. The felt seal which is saturated in oil is installed in the ring and is used to close the gap between the outer surface of the feed bowl and feed wheel housing.

12. PAD HOUSING

The pad housing is the pie wedge like component that is mounted to the feed wheel housing and seals off a portion of housing preventing a direct entrance of falling material into the area.

The pad housing assembly consists of the pad clamping mechanism, which applies pressure for a positive pad seal, a pad back-up plate to which the inlet manifold and gooseneck are installed and a pad seal clamping system.

REVISION:



13. FEED BOWL

The feed bowl is that component which resembles a bowl on the outside and contains a number of pockets on the inside. The bowls normally used on the **SOVA™ SERIES 7** are the 16 and 18 pocket and usually the application, type of material and size of aggregate will determine which feed bowl will be best suited

14. HOPPER

The hopper is installed on top of the feed wheel housing and is used to contain the material as it works its way into the feed bowl. The refractory hopper is a continuous feed type with a screen and a bag breaker. The unit is equipped with a shot pre mix 2-blade agitator.

15. ROCK SHEAR

The rock shear, if used, is installed in the pad housing assembly. The rock shear is used to strike off material/rocks to an even level of the feed wheel before entering the pad area.



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OPERATION INSTRUCTIONS

Having **READ** and **UNDERSTOOD** the previous pages on **SAFETY** and **CONTROL FAMILIARIZATION**, you are now in a position to learn how to operate the **REED GUNCRETE SOVA™ SERIES 7**. If you have not read the previous pages, we suggest you do so before proceeding.

CAUTION

For your own SAFETY and others around you, it is your RESPONSIBILITY to insure the unit is in proper working condition. Check out the unit by using the PRE-OPERATION INSPECTION notes previously identified.

WARNING

OBSERVE ALL SAFETY PRECAUTIONS WHILE OPERATING THIS MACHINE.

SET UP AT JOB SITE

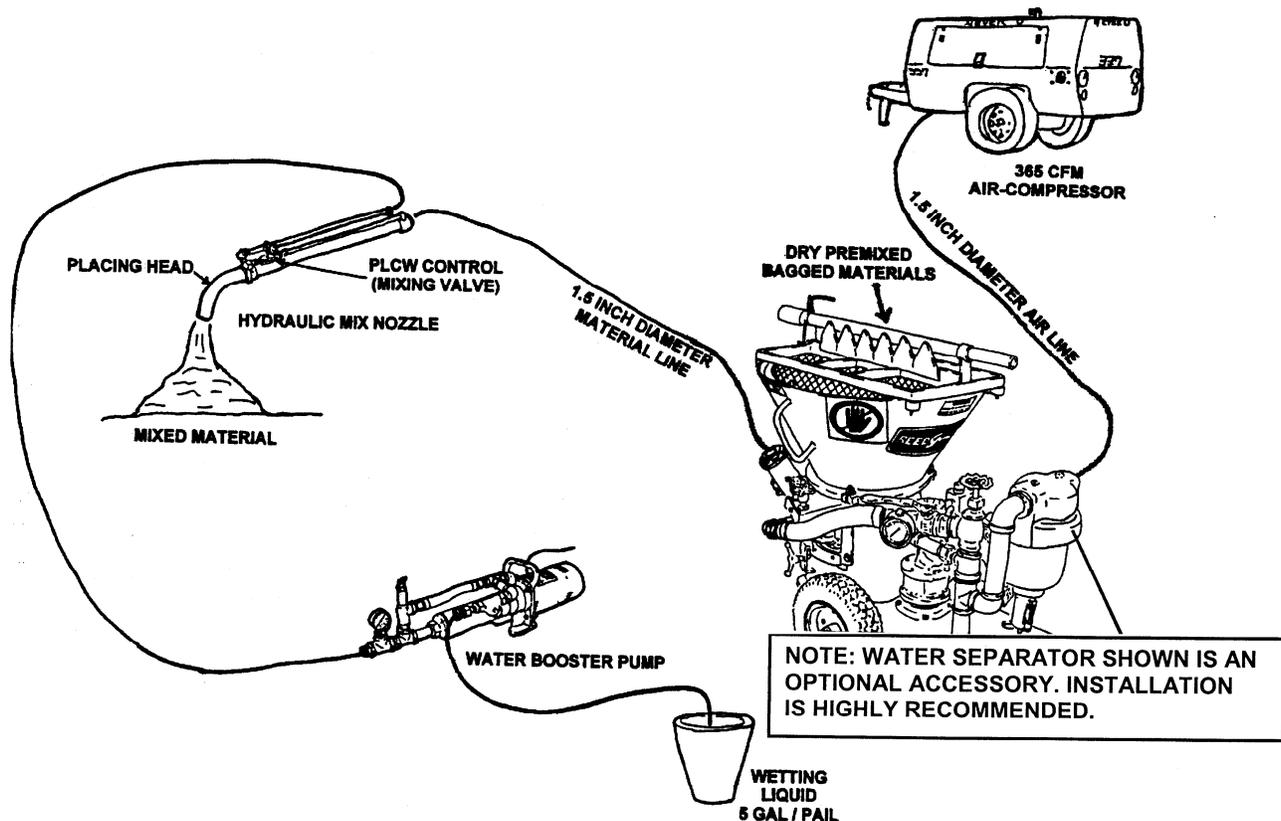
Your first and primary concern when arriving at the job site is to insure the machine can be safely operated and it will afford the maximum production efficiency without jeopardizing safety.

- The machine should be located on as level ground as is possible.
- Keep a sufficient distance away from slopes, pits, trenches, and excavations that could breakaway.
- Remove handle bar from front of machine and store. If necessary, place blocks under front leg to provide a firm footing on ground.

REVISION:

NOTE

The SOVA™ utilizes compressed air to drive the motor and to convey the material through the hose. As a result, the production and efficiency of the machine is highly dependent on the amount of available compressed air. This needs to be taken into consideration before starting a job. Refer to specifications "GENERAL SECTION" of this manual for suggested requirements.



START-UP OF THE UNIT

- Check that all valves are in the "OFF" position.

Connect the main source air line from compressor to inlet on manifold. The diameter of the air supply line should be at least equal to the diameter of the conveying line. Make sure connection is tight and secure with safety chain or cable if required.



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- Attach material hose to gooseneck and tighten.
- The nozzleman should install on the material hose the nozzle complete with water hook-up to its source.
- Add material to the hopper and alert nozzleman that system is ready.
- On the signal from the nozzleman, fully open material feed valve and **SLOWLY** turn on the feed bowl throttle air valve to the material hose to desired air flow.
- The nozzleman will then slowly turn on the water at the nozzle.
- Fully open the main shut-off valve for the motor, then slowly open the air motor throttle valve.
- Material should now be flowing and nozzleman will then give the necessary signals for the desired air flow and material feed rate.
- Check the oil feed rate from the lubricator to the air motor. Adjust if necessary.
- As spraying continues, maintain a steady flow of material to the nozzle.

SHUT-DOWN OF MACHINE

It is important that the machine be shut down in the proper manner to eliminate the possibility of complications on restart.

- Stop the feed wheel rotation first. This is accomplished by shutting off the **AIR MOTOR VALVE** (to air motor) without disturbing the throttle valve.
- Permit the air from the main line to continue to flow to the gooseneck and material hose until all material has been blown out. Shut off **MATERIAL FEED VALVE** to system.
- Following this, the nozzleman may now shut-off the water at the nozzle.
- As water is being turned off, hold nozzle and point down toward ground to prevent any water leakage from running back into the material hose.
- Shut down main source of air.

REVISION:



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OPERATIONAL TROUBLESHOOTING TIPS

This Operational Troubleshooting Tips section is designed to assist you in recognizing the symptom, providing a probable cause and suggested corrective action. The items listed are based on logical symptoms from our experience as well as that of our users.

A. SYMPTOM – EXCESSIVE AIR BLOWING UP AND OUT OF HOPPER

CORRECTIVE ACTION

- * Adjust rubber pad pressure by tightening the three (3) adjustment knobs to provide a positive seal.
- * Inspect rubber sealing pad. It may need to be replaced.
- * Check installation of rubber wear pad. Make sure rubber portion is down against top of feed wheel.
- * Top of feed wheel may be worn and needs to be resurfaced or replaced.
- * Foreign material may be clamped or lodged between steel feed bowl and wear pad. This would permit air to blow between the two (2) parts and escape into hopper.
- * Agitator not securely tightened.

NOTE

If the above condition is allowed to continue without remedy, premature failure of the rubber pad or feed bowl will occur and as a result will create even more noticeable discharge of air back into the hopper or atmosphere. Do not confuse pocket exhaust with seal failure. Pocket exhaust is rhythmic puffing which should not cause material to be blown out of the hopper.



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B. SYMPTOM – INSUFFICIENT VOLUME TO THE NOZZLE

CORRECTIVE ACTION

*Pad not completely seated in the pad housing. Pad must be inserted far enough into pad housing to allow the inlet and outlet ports of the pad to align with the feed wheel pockets. When pads are removed, wear patterns should be regularly checked to assure the sealing portions of the rubber face are in alignment with the outer rim, the center divider and the inside hub portion of the feed bowl.

*Inadequate air supply or pressure

C. SYMPTOM – EXCESS MATERIAL LEAKING TO THE GROUND FROM AROUND FEED BOWL ON LOWER EDGE OF FEED WHEEL HOUSING

CORRECTIVE ACTION

*Felt ring inside wheel housing is not pushed down close enough to the top of the feed wheel.

*Check condition of felt seal. It may be hard and dry from the lack of regular cleaning and oiling. Adjust felt pressure. See **ADJUSTMENT SECTION**.

D. SYMPTOM – SURGING MATERIAL THROUGH THE HOSE AND NOZZLE.

CORRECTIVE ACTION

*Feed wheel spinning too fast resulting in too much material being discharged into material hose for the amount of air being used. Adjust RPM of feed wheel or increase air.

*Some pockets in the feed wheel may be plugged.

*The pockets in the feed wheel may be too large for the small diameter hoses.

*Material may have a high moisture content causing the material to bridge above feed wheel causing material to feed sporadically.

* Insufficient air supply.



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*Uneven feed rate maintained into the hopper by material loading system.

E. SYMPTOM – FEED WHEEL RUNNING TOO SLOW OR STOPS

CORRECTIVE ACTION

*Insufficient air supply to motor. Check air motor valve that it is fully opened. Check motor throttle valve that it is set properly.

*Check that compressor is of sufficient size for the intended operation.

*Check air filter at motor that it is not plugged.

*Check for possible obstruction in feed wheel.

*The air muffler is iced, restricting the air flow through the motor. If it is necessary to remove the muffler, make sure a plug or cap is installed during service in its place to prevent the entrance of foreign material into the motor.

*Check the pressure on the pad clamp that it is not too tight.

*Vaness in air motor may be worn out. Never operate motor without the air filter or lubricator in proper working condition.

F. SYMPTOM – EXCESS REBOUND WHEN SPRAYING

CORRECTIVE ACTION

*Using a poor nozzle spraying technique. Water to cement ratio is out of balance. Improper angle or distance to work face.

*Plugged water ring or water chamber in the nozzle assembly.

*Imbalance of sand, water, and cement ratio.

*Mixture too dry or wet

*Contamination of the mix and/or water.

*Excessive large aggregate, fiber, or wire mesh.



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G. SYMPTOM – HOSE BLOCKAGE

CAUSE – Often the cause of hose blockage is the result of:

- *Using oversize material
- *Operating with an insufficient supply of air
- *Feeding the hose too much material
- *A prehydration of the material inside the hose
- *Not clearing the hose after turning off material feed
- *Sharp bends or kinks in the hose
- *Improper coupling of hose ends
- *Faulty hose (Liner separation from outer hose jacket.)

CORRECTIVE ACTION – CLEARING A HOSE BLOCKAGE

When a line blockage occurs, turn off air and start searching for the point of blockage beginning at the nozzle and working back toward the machine. The hose will continue to be soft from the nozzle to the point of blockage. When blockage has been found bend or pound on the hose careful not to damage hose at that point to free the blockage. Slowly turn on the air.

WARNING

Exercise EXTREME CARE when attempting to blow the material clear using air. ALWAYS have the nozzle end securely held and have a person at the machine who will be ready to cut back on the air if and when required.



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H. SYMPTOM – INSUFFICIENT COMPRESSED AIR

CORRECTIVE ACTION – HOW MUCH AIR IS ENOUGH?

Most problems occurring on the average gunning jobs are the result of improper application of air or insufficient amount of air.

*Make sure the compressor is of adequate size, is properly adjusted and capable of producing maximum capacity.

*Multiple compressors may be used to gain the required volume of air. In this situation, the compressors should be arranged so that they discharge into a certified central air receiver. From this a single air line of proper size can then be run from receiver to machine.

*Always supply the machine with the same size air supply hose as the material hose being used for gunning. Multiple small hoses often do not have the carrying capacity of a single larger hose.

*Make sure all valves are open between the air source and machine. Check that supply line is free of kinks or blockages.

*Run material hoses from the machine to the nozzle in as straight a line as is possible. This will improve the flow characteristics and reduce wear.

*Exercise caution when coupling hoses that no foreign objects are present or restrictions at point of connection.

*Always use good premium hose specially manufactured for gunning applications.

*The amount of air flow being received can be tested for proper volume as follows when flow meter or orifice testers are not available:

*With hopper empty of material and having the pad loosely clamped, open main air valve to full open position.

*Open the air motor main valve and the throttle valve to full open.

*The air motor should reach full RPM without hesitation. If air motor does not come to full RPM, the air supply to the machine is marginal. This condition could result in a marked decrease in the volume of material introduced into the air stream within the machine and out of the material hose.



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PREVENTATIVE MAINTENANCE

How good is any of the equipment you own? It is only as good as it is **MAINTAINED**. Even the finest equipment manufactured requires attention and care. The **REED GUNCRETE SOVA™ SERIES 7 MACHINE** is no different. A good well planned and carried out preventative maintenance program will enhance a properly operating unit as well as the safety of those operating and using the equipment.

It is very important to establish a good maintenance program. Costly repairs and loss of revenue can often be avoided by planning ahead, setting a regular schedule and exercising good preventative maintenance techniques.

NOTE

All points noted herein regarding the maintenance and checks are not intended to replace any local or regional regulations which may pertain to this type of equipment. It should also be noted that the list and schedule is not considered to be inclusive.

⚠ CAUTION

It is your responsibility to always insure that the applicable safety precautions are strictly observed when performing the inspections and maintenance checks. Make certain any components that are found to be defective are replaced or those in need of adjustment or repair are correct before operating the machine.

SCHEDULED INSPECTION

The main purpose of accomplishing scheduled inspections is to identify and detect any potential malfunction before it can expand into a major problem. In so doing, it will help ensure a good safe unit performance.

1. FRAME AND RELATED COMPONENTS

- Frame integrity, visually check welds for cracks
- Rear wheel mounting, spindle nut tight
- Front support stand in good condition

**NOTE: WATER SEPARATOR SHOWN IS AN
OPTIONAL ACCESSORY. INSTALLATION
IS HIGHLY RECOMMENDED.**





SOVA SERIES 7

PNEUMATIC SPRAYING MACHINE

1. HOPPER

- Visually check for structural damage, cracked welds
- Check condition of screen, attaching hardware
- Check condition of mounting hardware
- Check condition of agitator, structural damage

2. MAIN OPERATING PARTS

- Inspect feed wheel for damage
- Check feed wheel top for excessive wear
- Wear pad fits properly, installed properly, good seal
- Visually check gooseneck, mounting, connection
- Check pad clamping system
- Inspect felt seal and replace if necessary.

3. AIR MOTOR AND GEAR CASE

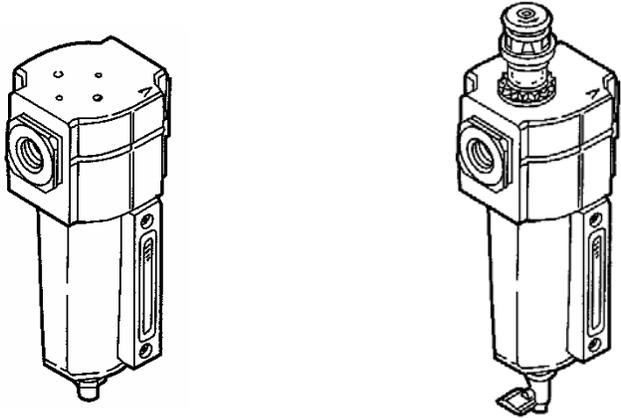
- Check oil level in gear case
- Air motor mounting secure
- Connections to motor are tight
- Check condition of air filter
- Check condition of air motor lubricator

4. CONTROLS AND INSTRUMENTS

- All valves open or close easily
- All piping and hose connections are secure and tight

GENERAL MAINTENANCE AND SERVICE

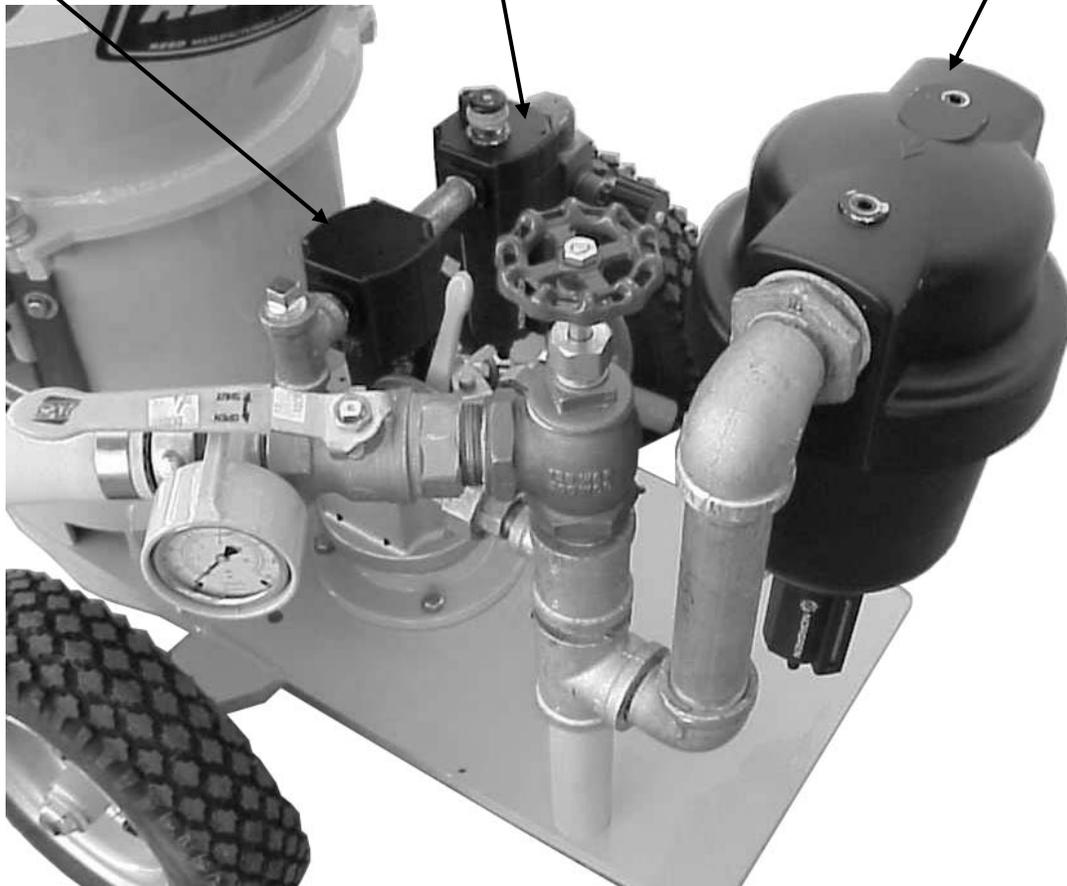
The **REED SOVA™ SERIES 7** is equipped with several components that because of the application require frequent attention. Rapid wear and probable component breakdown will result if the unit is operated with inadequate service.



FILTER – AIR MOTOR

AIR MOTOR LUBRICATOR

NOTE: WATER SEPARATOR SHOWN IS AN OPTIONAL ACCESSORY. INSTALLATION IS HIGHLY RECOMMENDED.



FILTER – AIR MOTOR**OPTIONAL SERVICE LIFE INDICATOR**

Senses air pressure upstream and downstream from the filter element. The indicator shows green when the pressure drop is below 5 psid. As pressure differential increases across the filter element with retention of solid particles, the indicator changes from green to red. When the indicator shows more red than green, the pressure differential is in excess of 10 psid and the element should be replaced.

LOUVERS

Air entering the filter is guided into a swirling pattern by the louvers. Coarse solid particles and liquids are forced to the bowl wall by centrifugal force and drop to the bottom.

FILTER ELEMENT

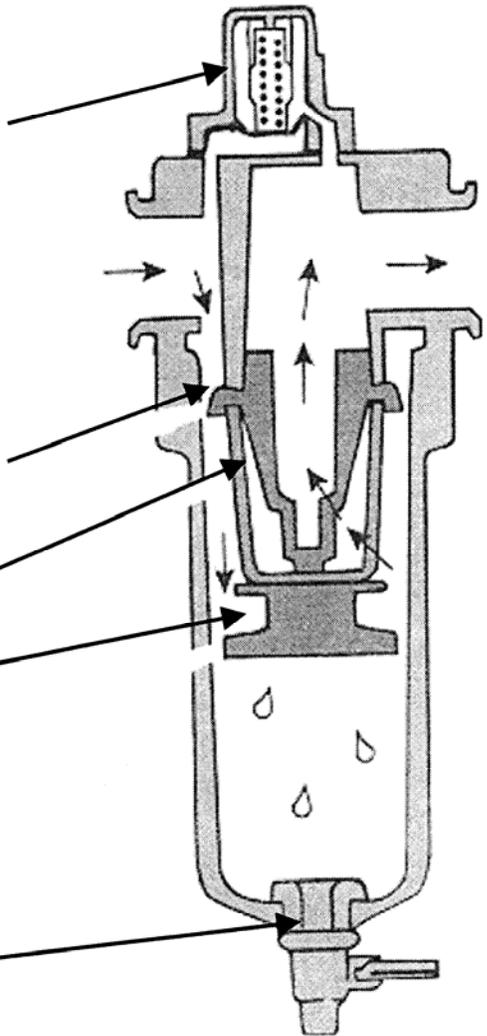
Removes most solid particles.

BAFFLE

Creates a quiet zone at the bowl bottom and prevents air turbulence from picking up liquids and returning them to the air stream.

MANUAL OR AUTOMATIC DRAIN

Dumps accumulated liquids.

**SECTION VIEW****SERVICING**

*Keep accumulated liquids below baffle on general purpose units and below element on oil removal units.

*Replace filter element when dirty or when service indicator (if so equipped) shows approximately one-half red/green.

*Reassemble filter, however, **DO NOT OVERTIGHTEN BAFFLE** when replacing element or stud will be stripped from top casting.



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AIR MOTOR LUBRICATOR

Oil-Fog Lubricators inject a fog of oil into a flowing stream of compressed air to automatically provide the proper internal lubrication of one air operated tool or other device. Oil is injected only when there is an air flow through the lubricator.

The lubricator reservoir (5) is pressurized through the charge valve (4). Whenever there is an air flow through the lubricator, the flexible flow sensor (3) in the lubricator throat creates a small pressure drop that is proportional to the rate of air flow. The drop in pressure is sensed in the sight-feed dome (2) through the nozzle passage (7). This establishes a pressure drop across the needle valve orifice (6) which aspirates oil upward through the siphon tube (9) into the sight-feed dome where it drips into the nozzle passage and then into the lubricator throat. The adjusting knob (1) controls the oil drip rate. The oil drops are atomized by the air flowing through the lubricator throat and are carried downstream as oil-fog. All the drops visible in the sight-feed dome are delivered downstream to the device being lubricated. The proportional control afforded by the flow sensor provides a nearly constant oil-to-air density ratio over a wide range of air flows. The check ball (8) keeps the siphon tube full of oil during periods of no air flow.

The charge valve (4) controls the rate of reservoir pressurization and allows depressurization for refilling without shutting off the air pressure. When the oil fill plug (not shown) is loosened, a bleed orifice is exposed which reduces the reservoir pressure. This pressure causes the charge valve (4) to close and restrict air flow into the reservoir to eliminate blow-back when adding fresh oil. When the fill plug is replaced, the reservoir repressurizes through the charge valve. The charge valve opens when inlet pressure is reached. The charge valve is not used with bidirectional lubricators and lubricators having 2 or 5 gallon reservoirs. These lubricators cannot be refilled under pressure unless the lubricator is equipped with an optional quick-fill cap or remote fill device.

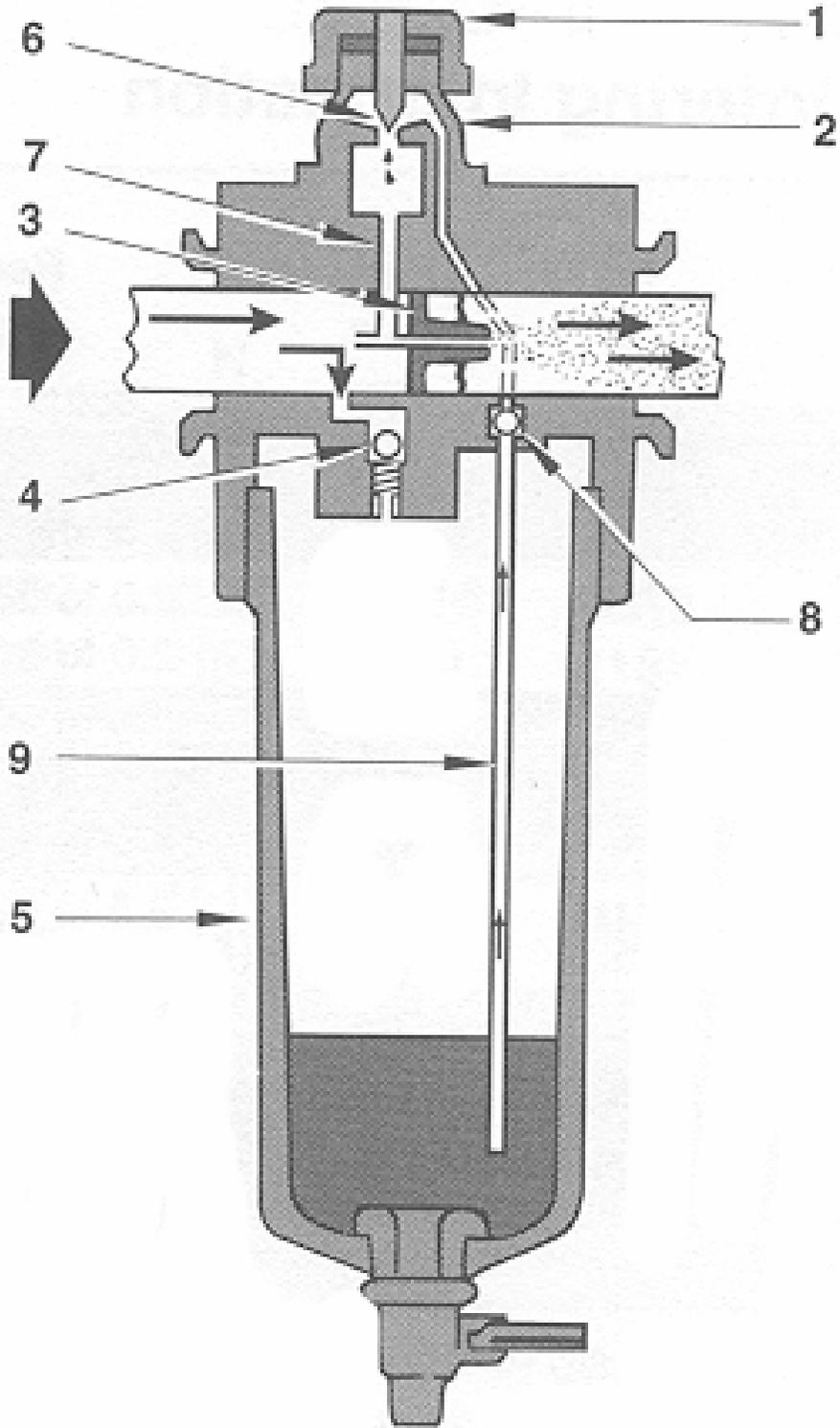
SERVICING

Fill reservoir with a light, misting type oil suitable for compressed air tools.

ADJUSTMENT

Turn adjustment on sight feed dome to increase or decrease oil delivery. Monitor the device being lubricated and readjust if needed.

REVISION:



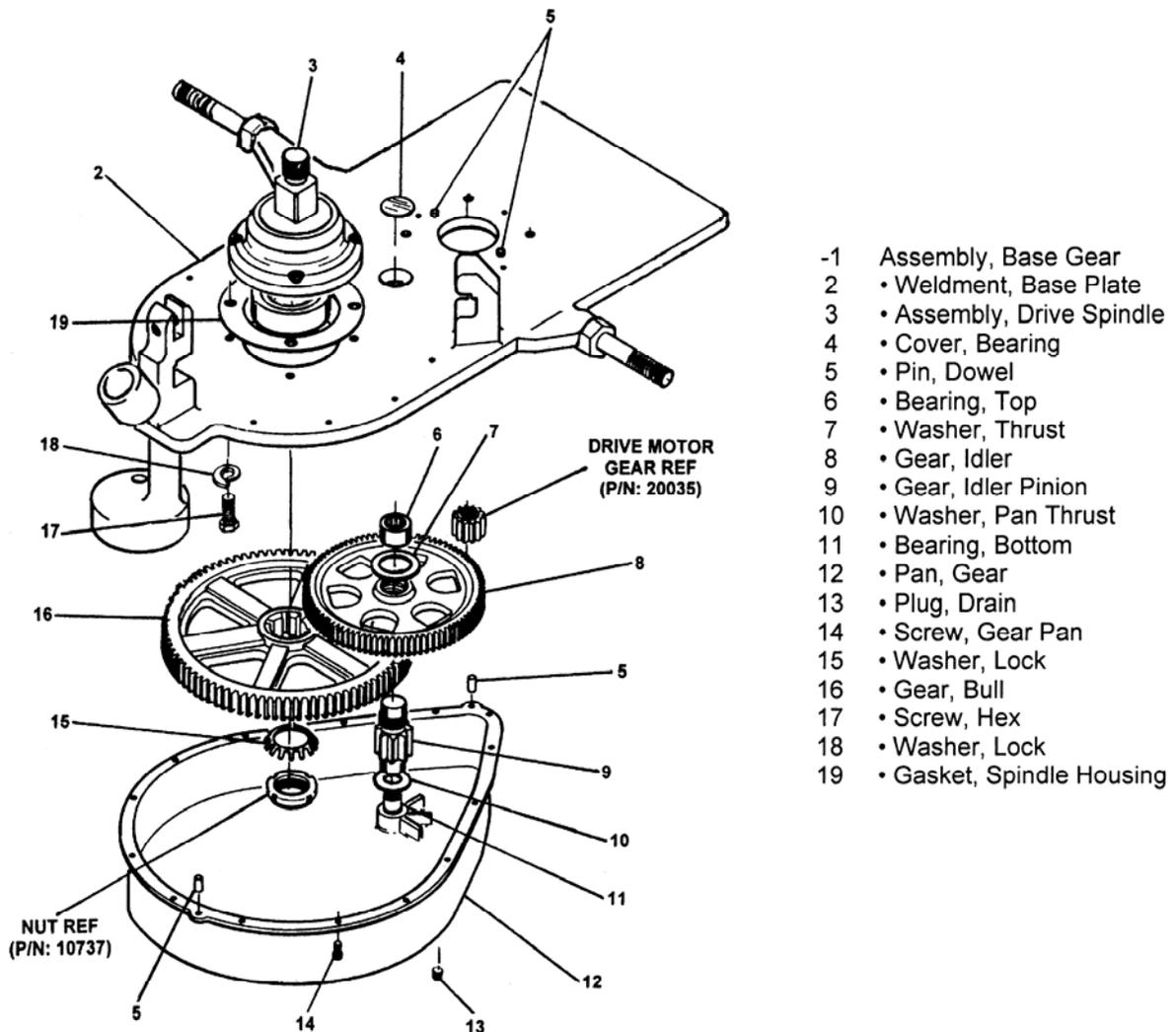
AIR MOTOR LUBRICATOR SECTION VIEW

GEAR CASE

Under and part of the baseplate is a transmission or gear case used to transmit the power from the air motor to the feed wheel for its rotation. The gears are lubricated by running continuously in oil. Based on this, it is important that the level in the gear case be maintained to its proper level. The gear case should be kept at least one-half (1/2) full.

Interval – Check level once a week, sooner if above average usage occurs.

Lubricant – Shell 90 weight gear oil or equal



Remove motor cover housing making gear case vent cap accessible. Remove vent cap and check level. Add oil if required. Replace vent cap.

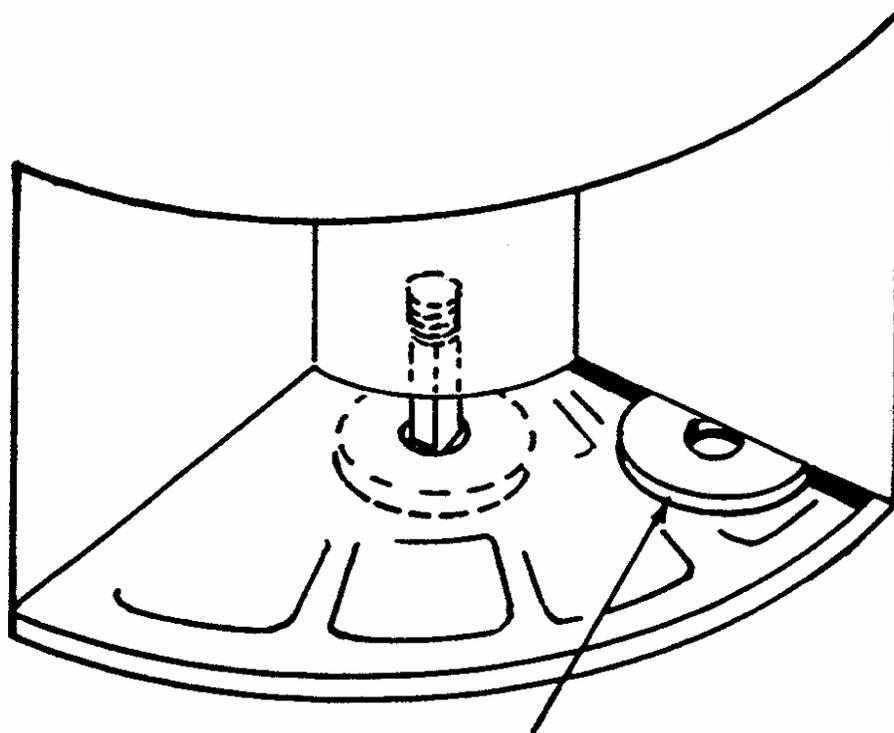
ADJUSTMENTS

In the course of using the machine as well as in cleaning, operation, and maintaining, periodic adjustments may be required to continue the factory type performance. The following is offered to assist in accomplished these functions.

RISER PLATE INSTALLATION

The top surface of the feed wheel is a wear surface which will need to eventually be reground for continued use or replaced totally. As the top surface wears or is resurfaced, the feed wheel needs to be raised to now minimize the space caused by grinding and once again provide a good seal.

To raise the bowl, riser plates can be installed underneath the bowl. At the delivery of each machine, a set of three (3) plates, each of different thickness, thick, medium, and thin are furnished. The plates are double dish blanchard ground parts and may be used in any combination required to elevate the feed wheel to the proper position. Do no substitute with anything less than those furnished by **REED**.



FOR CHECKING ONLY,
IF THIN RISER PLATE SLIDES IN HERE,
RISER PLATE SHOULD BE PLACED
UNDER FEED BOWL.

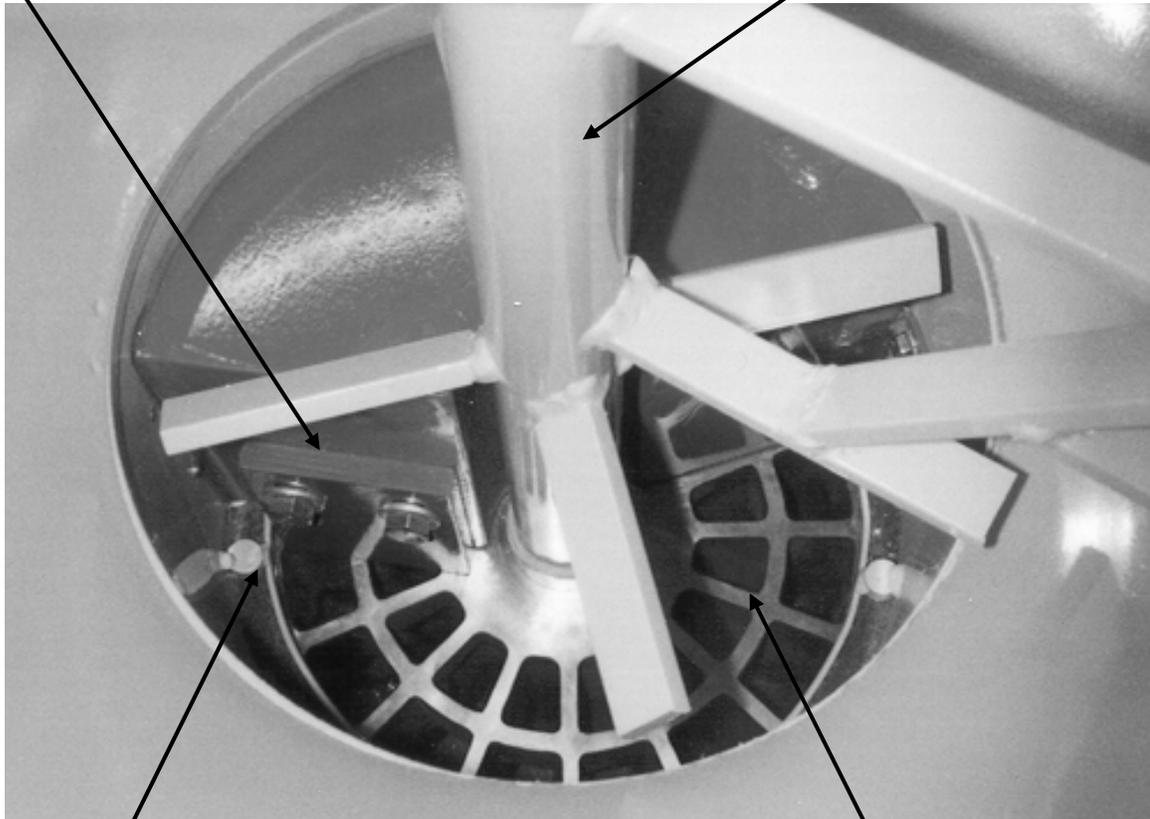
To determine the required riser, insert one of the plates, thick or thin, between the pad housing and the top surface of the feed wheel or wear plate. After making this check, proceed to install the same thickness of riser under the feed wheel.

NOTE

When a machine has been in use for a period of time, riser plates may have already been installed. These are often difficult to see on the spindle shaft. To dislodge the existing riser plate from the spindle hub, tap lightly around the outer diameter of the hub with a soft faced hammer or mallet until separation of the plates occurs.

ROCK SHEAR

AGITATOR (REMOVAL CLOCKWISE)

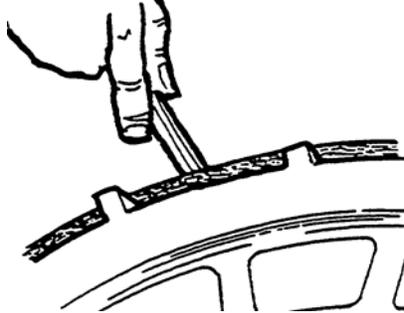


FELT SEAL

FEED BOWL ROTARY

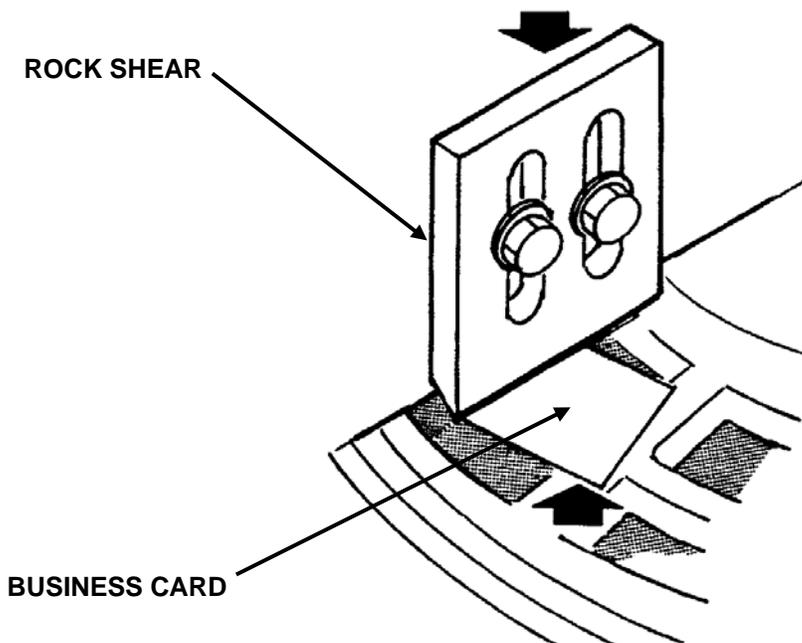
FELT SEAL

Inside the feed wheel housing is a felt seal ring that is used to retain the felt seal in position. The purpose of this felt seal is to prevent material from escaping out of the bottom of the housing assembly. Before installing felt seal, lubricate the seal with oil then install in ring and pack felt seal down from inside hopper.

**FELT SEAL BEING ADJUSTED TO WEAR PLATE****ROCK SHEAR**

Installed on the top side of the feed wheel is a rock shear. The purpose of the rock shear is to act as a wiper in keeping large aggregate from being lodged between the wheel and the rubber pad thus providing increased life of the pad.

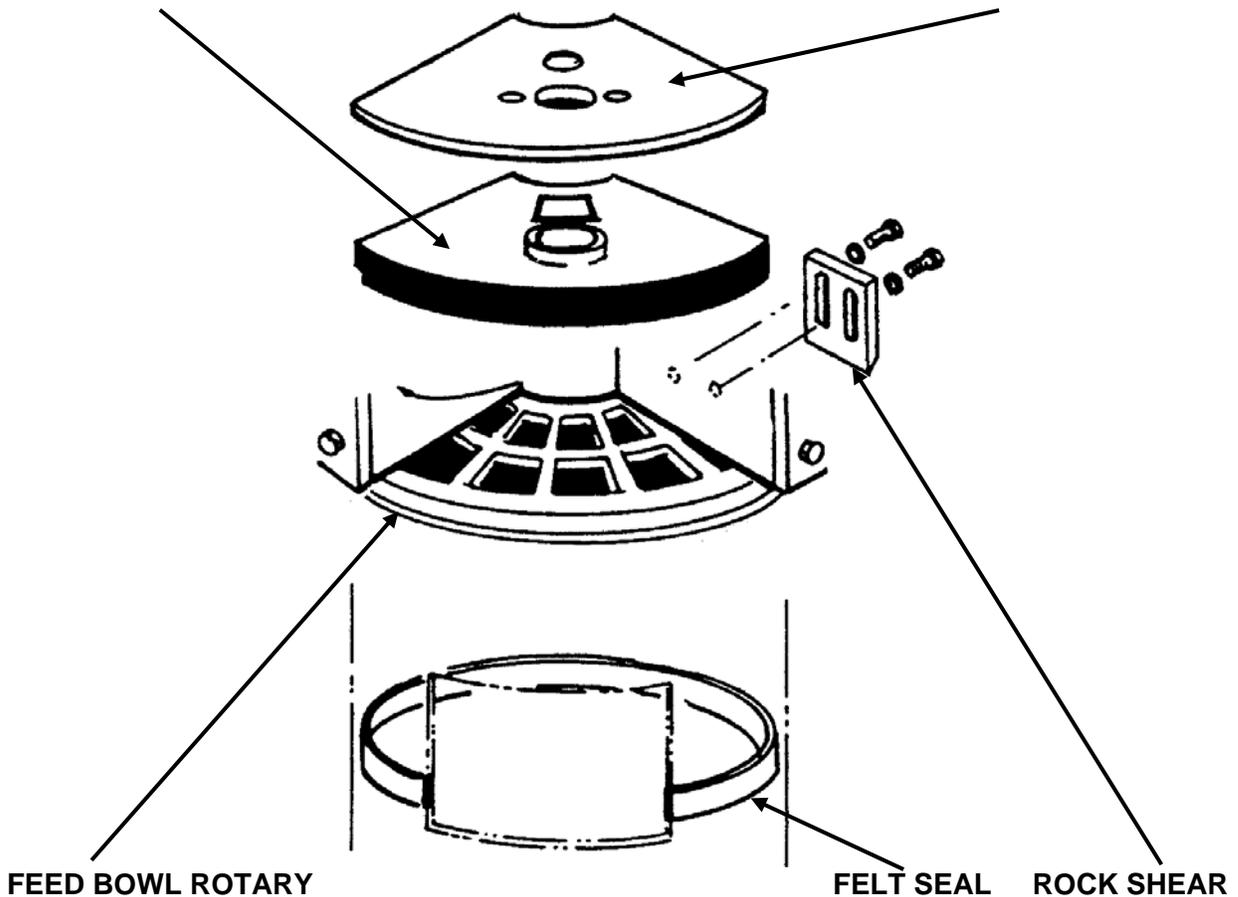
The rock shear is adjustable and should be positioned as close as possible to the top of the wheel without allowing to scrape directly on the feed bowl. A common practice is to use a business card as a gauge, placing it between the rock shear and the feed wheel. Then tighten bolts starting with the lower bolts first.



RUBBER SEALING PAD

This component is a major ingredient in the operation of the machine. It is used to seal off all the pockets loaded with material, except for one, allowing the air to be directed to the intake opening of the feed wheel and exhausting the material air mixture through the outlet and into the gooseneck. It is a seal, thus the match up of the rubber pad to the back up plate is crucial.

- Make sure the inlet and outlet openings of the rubber pad match the openings of the feed wheel.
- The rubber flange ring on top of the pad must fit snugly into the corresponding round hole in the back up plate.
- Make sure that the inlet pipe or nipple attached to the threaded hole in the back up plate is not protruding beyond the underside of the plate (threaded in too far). If nipple protrudes beyond the under surface, it will prevent the sealing pad from mating flat with the back up plate.
- Install wear pad with grease for ease of installation.

RUBBER SEALING PAD**PAD BACKUP PLATE**



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PAD ADJUSTMENT

As noted previously, the rubber pad acts as a seal between the back-up assembly and top surface of the feed wheel. As a result, the control of excessive dusting during operation and the efficiency for successful gunning is very dependent on the adjustment of the pad.

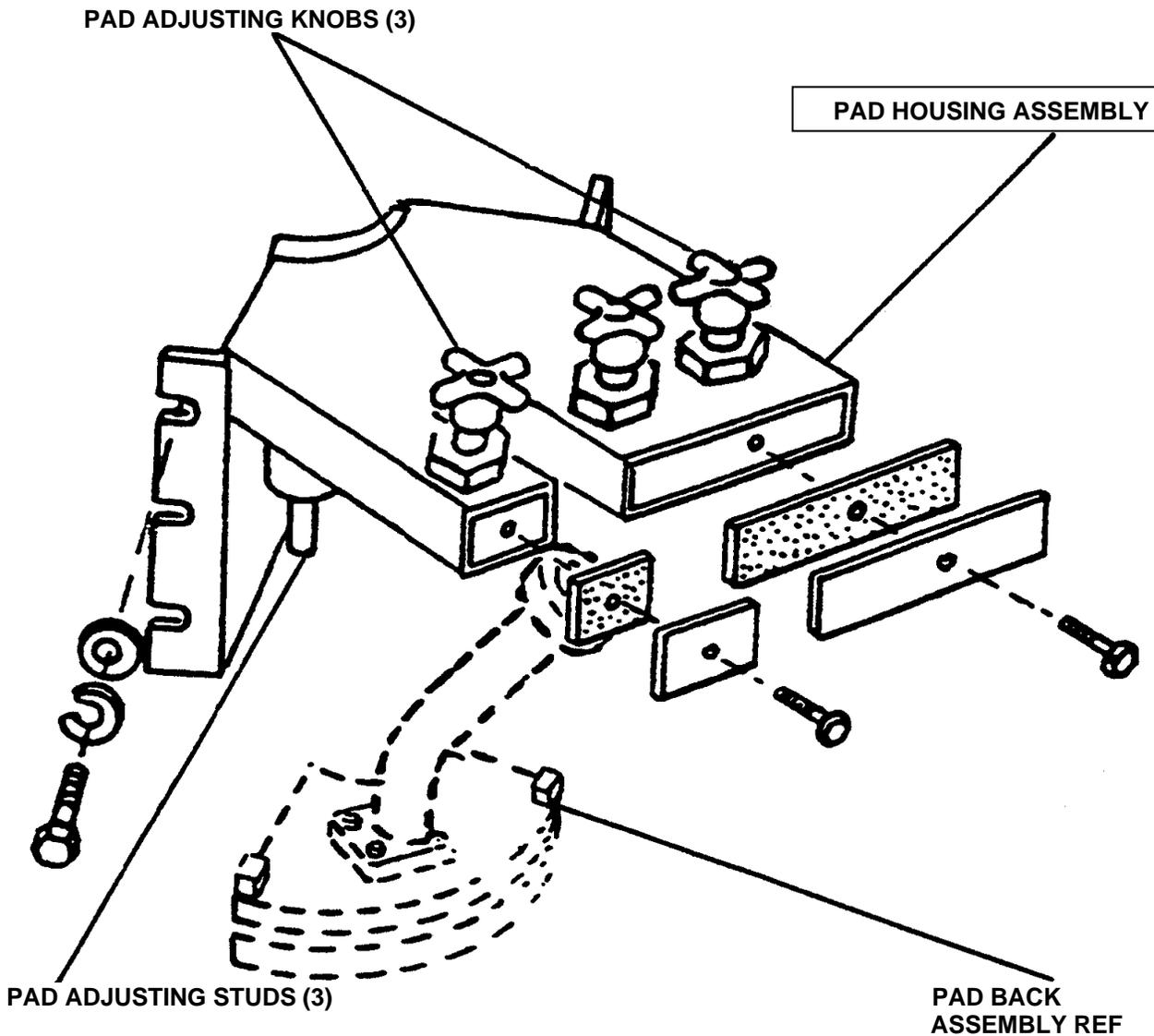
The adjustment of the pad is accomplished by the use of the adjustment mechanism located on top of the pad housing. This mechanism consists of three (3) knobs each containing a chain and sprocket arrangement for control of the pad adjusting stud. In directly facing the gooseneck-pad housing, the left hand knob is used to adjust the left or exhaust side of the sealing pad. The center knob is used to adjust the rear of the pad and the right hand knob is used to adjust the right side of the pad. Turn knob **CLOCKWISE** to apply pressure moving studs **DOWNWARD**. Turn knob **COUNTERCLOCKWISE** to **RAISE** adjusting studs, to relieve pressure.

NOTE

The initial pad adjustment should be done before the material hose is connected to the outlet or gooseneck and with vertical pad clamps loose.

To adjust the new wear pads:

- Adjust all three (3) adjusting studs **DOWNWARD** turning knobs **CLOCKWISE** until each stud contacts the top surface of the pad.
- Proceed then to turn **CENTER** knob **CLOCKWISE** 1¼ turns to move stud downward.
- Adjust **LEFT** knob 1¼ turns **CLOCKWISE**.
- Adjust **RIGHT** knob 1¼ turns **CLOCKWISE**.
- Make final adjustment and tighten the vertical pad clamps.
- The sealing rubber pad is now secure and the pad housing is ready for start-up.



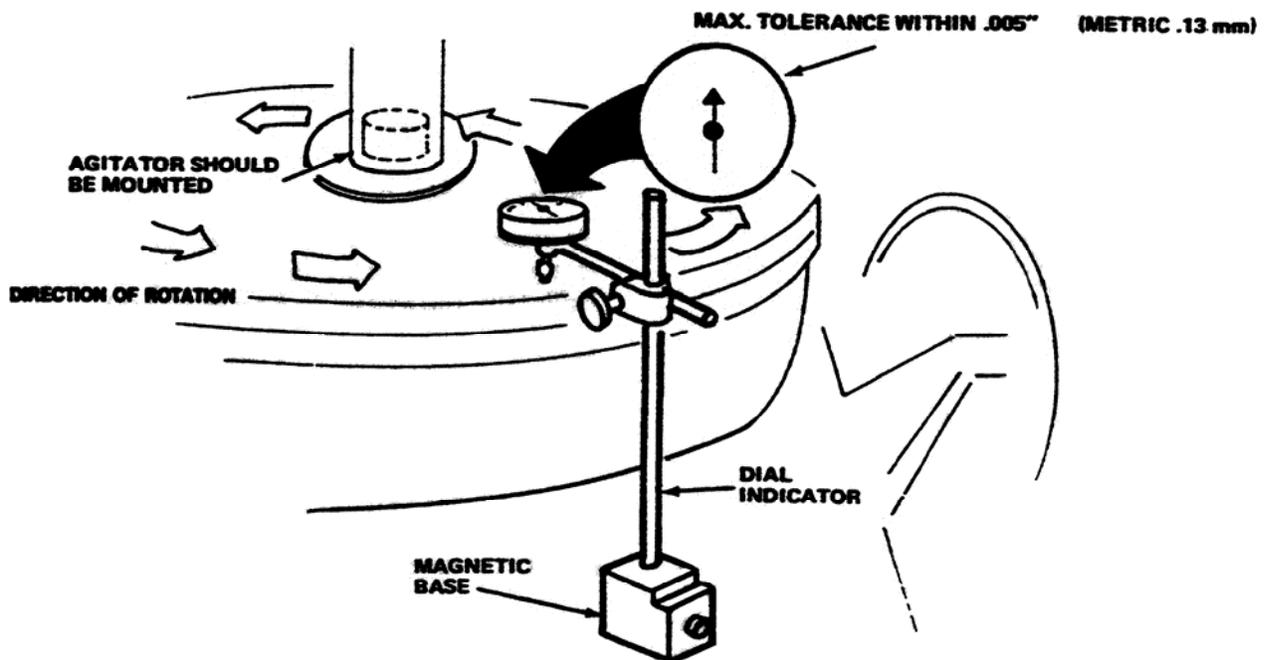
NOTE

*Final adjustment to each adjusting stud may be necessary after machine is in operation. Every effort should be made to keep **DOWNWARD PRESSURE** adjustments on the sealing pad **EQUAL** on the three (3) studs.*

Keep in mind that improper adjustments of downward pressure to one side of the pad over the opposite side, causes excessive wear to the rubber sealing surface and thus results in increased wear. This condition can also allow the pressurized air to escape free from under the sealing pad in the area of least downward pressure. This air blasting, coupled with particles of material or sand can quickly eat into the metal surface and destroy it.

THE FEED BOWL

The top surface is originally ground with a slight concave dish radiating from the center to the outside edge, measuring 0.002 inches (0.05 mm) to 0.005 inches (0.13 mm). The bottom surface of the feed bowl must be maintained free of any disfiguration. This bottom surface is used to locate the part in the grinder when it becomes necessary to resurface the top face. If there are severe knicks on the bottom surface of the feed bowl that cannot be removed evenly with a file, then we recommend lightly filing the top surface free of burrs and knicks and place the top surface down in the grinder and Blanchard grind the bottom surface first. Then turn the feed bowl over and dish the top surface.

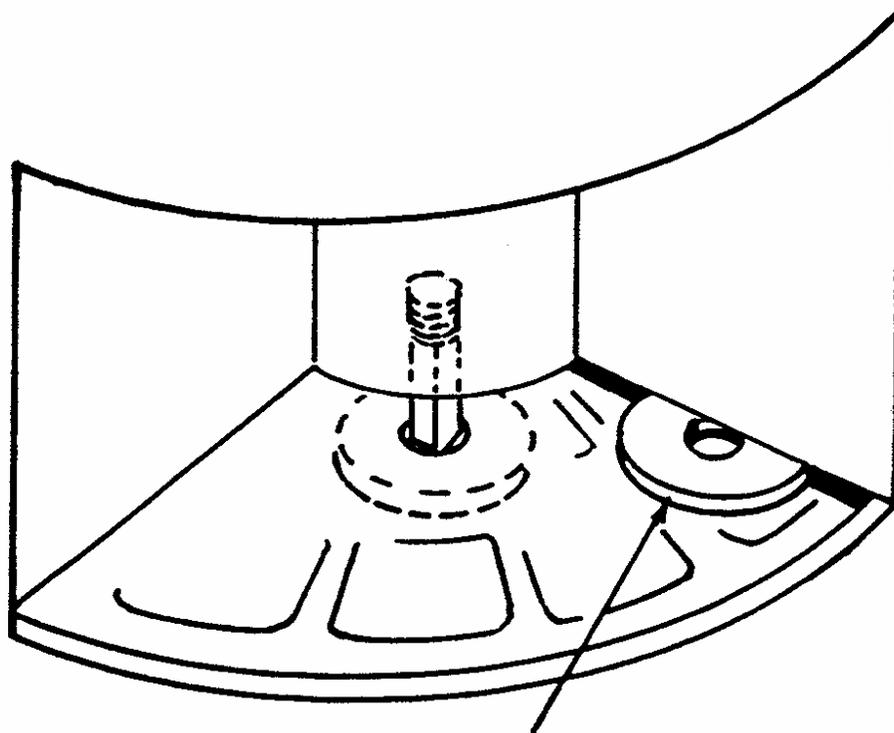


THE RUBBER SEALING PADS

The best method of reconditioning rubber pads is also done on a Blanchard grinder. Some **REED** owners report that they get an acceptable reconditioning job by freezing the pad and refacing the frozen rubber on motorized wood plane. Others report they do acceptable refacing with an extremely sharp knife blade that is kept well lubricated with oil during the trimming of the high ridges of rubber. **REED** pads with imbedded bosses must be resurfaced by grinding. Mill or grind the bosses down 1/16 inches (1.5 mm) after removing the rubber required to make the face flat and smooth. The rubber face of the pad must be kept parallel to the steel back side of the pad.

RISER PLATES

Riser plates are specially manufactured and precision ground parts. No substitute should be used to raise the feed wheel assembly to its proper position. These parts are not subject to wear and consequently need not be reconditioned but they must be thoroughly cleaned prior to installing. Knicks or burrs should be removed with a file. Riser plates are only used to position the feed wheel assembly to its proper operating height.



FOR CHECKING ONLY,
IF THIN RISER PLATE SLIDES IN HERE,
RISER PLATE SHOULD BE PLACED
UNDER FEED BOWL.

THE FEED WHEEL ASSEMBLY

After riser plates and feed bowls are manufactured they are checked at the factory for proper tolerances. Riser plates, feed bowls are mounted on a spindle. They are secured in place with an agitator. The assembly is rotated and checked with dial indicator as in the adjacent drawing. After reconditioning these parts it is advisable to check the final assembly in the same manner.

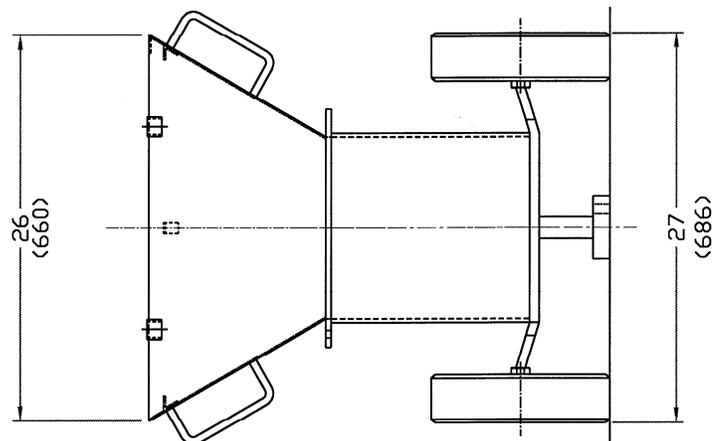
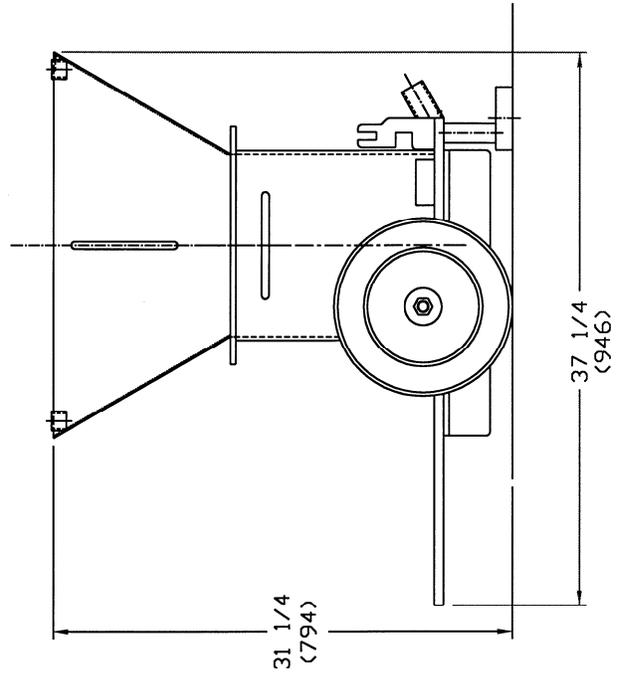
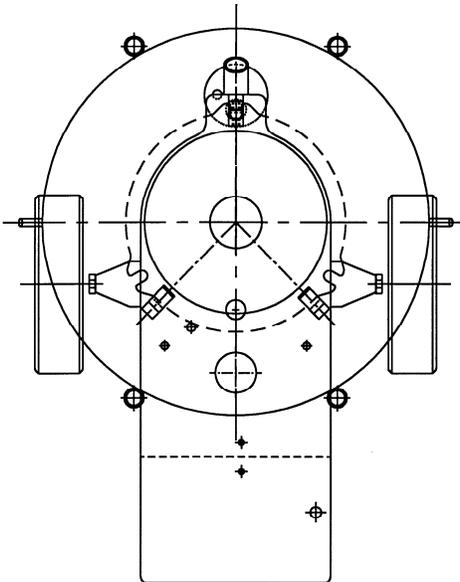


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DIMENSIONS



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