Safety Instructions

At Bruning Enterprises, Inc., our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards and precautions exist, and to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation where SERIOUS INJURY or DEATH may occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

Follow Safety Instructions

Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer, or from us.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction. Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual or need assistance, contact your dealer.

Keep hands and feet away from moving parts.

Be sure all people are clear of the equipment before start-up.

Wear close fitting clothing.

Keep all shields and covers in place at all times.

Stay clear of air blast from cyclone. Always wear safety glasses to protect your eyes.

RUNeumatic™ THE GRAIN HANDLER
Bruning Enterprises, Inc.
7718 N. State Road 9
Shelbyville, Indiana 46176
317-835-7591

DANGER - Lethal Voltages Exist Inside The Electrical Panel

Install and Use Equipment Properly.

Ground all electrical equipment as well as the bin itself.

Disconnect all power before servicing or opening control box, adjusting or lubricating the equipment, or opening the control box inner panel.

All electrical hook-ups should be in accordance with local and National Electrical Code. If 3 phase power is used, identify wild leg.

Never use plastic tubing for any lines carrying grain.

Wear Protective Clothing.

Wear close fitting clothing and safety equipment appropriate to the job.

Remove all jewelry.

Long hair should be tied up and back.

Safety glasses should be worn at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

Wear steel toe boots to help protect your feet from falling debris.

Tuck in any loose or dangling shoe strings.

A respirator may be needed to prevent breathing potentially toxic fumes and dust.

Wear hard hat to help protect your head.

Wear appropriate fall protection equipment when working at elevations greater than 6'.

Eye Protection

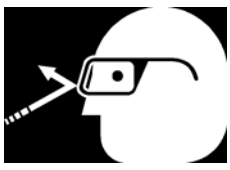
Gloves

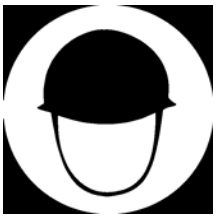
Steel Toe Boots

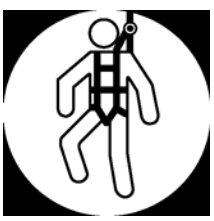
Respirator

Hard Hat

Fall Protection







Owner's Manual

Air Pressure Systems Models 310~ 650

We, at Bruning Enterprises, Inc., want to thank you for your purchase of the BRUNeumatic Grain Handling System. The first pneumatic grain handling system, and still the best.

Designed by farmers for farmers. Trouble free operation being our primary objective. This manual has been prepared with this goal in mind.

The BRUNeumatic requires a minimum amount of regular maintenance. If you become familiar with this manual and follow the requirements, we know you will find that the BRUNeumatic is a very reliable system. However, if a problem develops, contact your dealer. If the problem persists, contact us at the factory. We will work with your local dealer to take care of the problem as quickly as possible.

Again, thank you for your confidence in the BRUNeumatic, THE grain handler for today's farmer.

Manufactured by:
Bruning Enterprises, Inc.
7718 North State Road 9
Shelbyville, Indiana 46176
(317) 835-7591
www.bruningenterprises.com

Sold by:

Index

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bruning@bruningenterprises.com

Maintenance Schedule & Instructions

Initial Start-Up

Roots Blower - Oil level with middle of sight glass, if so equipped.

Airlock Gearbox - look for any oil leaks.

Air Filter - Installed properly and clean.

V-Belts - Tensioned and aligned properly.

Chains - Tensioned and aligned properly.

Tubing System - All couplers tight. All tubing connections have good fit. Tubing laid out straight. Elbows fitting properly.

After First 10 Hours and Daily

Air Filter - Check for excessive dust build-up.

V-Belts - Check tension alignment.

Tubing - Check all connections for leaks and signs of separating.

Weekly

Chain - Oil with heavy chain oil.

Blowers and Gearbox - Check oil levels and look for signs of leakage

1500 Hours (Synthetic Oil)

Roots- Drain oil and replace with synthetic oil. (Fill to middle of sight glass.) if so equipped.

Extended Shut Down

Disconnect Main Power Unit

Blower - Remove inlet assembly and spray oil on lobes while rotating by hand, to prevent rust. **Keep hands and objects out of blower.** Re-install inlet assembly.

Airlock - Coat interior with oil, while rotating by hand, to prevent rust.**Keep hands and objects out of blower.** Re-install weather cover.

Chain - Oil chain to prevent rust.

WARNING - DISCONNECT ALL POWER PRIOR TO REMOVING ANY COVER OR DOING ANY SERVICE TO THIS AIR SYSTEM.

Air System Installation Instructions

1. Determine the most convenient location for the airlock and blower. Take into consideration the direction of the prevailing winds. It is important to locate the blower in as clean an environment as possible. This greatly reduces the maintenance requirements on the air filter system. When the distance between the airlock and blower is over 10', it is best to use galvanized pipe and couplings. Another option might be galvanized pipe with short flex hose on the ends to couple the units together to keep airflow restrictions to a minimum.

2. The noise level of the blower unit can be reduced by placing the unit behind a wall, barrier or in a small building. If this is done, make sure that the building has adequate ventilation for both air intake and cooling of the blower and motor.

3. The grain discharge chute on the airlock is assembled at the factory so that grain movement is at 90° to the length of the skid. This orientation can be changed by removing the mounting hardware at the base of the airlock and rotating the discharge chute to the preferred direction. Be sure to keep the gasket in place between the skid and the discharge chute. Note that the airlock itself is sealed to the skid surface and does not need to be moved to redirect the discharge chute.

NOTE:

A minimum of 10' is needed between the airlock discharge and the first elbow in the system.

4. Determine the best routing of the galvanized steel pipe from the airlock to the storage areas. Use galvanized elbows for changing the grain direction. This will give better performance and longer life than flex hose.

5. Bolt the tube mounting brackets to the desired location using at least two (2) mounting brackets on the vertical wall and two (2) on the roof of the grain bin. The mounting brackets can be formed to match existing hole patterns in the bin.

6. Determine the number and degree of arc required in the elbows. The 90° elbows are standard - different lengths of arc can be cut from these standard elbows. See HOW TO CUT YOUR ELBOWS TO LENGTH

NOTE:

A minimum of 8' between elbows is required for proper operation.

7. Cut the steel tubing to the required length and fasten it together with compression couplings. The ends must be cut square to fit properly. Make sure that the stainless steel gasket protecting sleeve is placed over the joint before tightening the coupler. Tighten the bolts on the coupler evenly or until the coupler flanges butt together.

8. The steel tubing can be laid underground, on top of the ground or placed on blocks. If placed on blocks, the tubing must be supported every 15'.

If placed underground, the tube should enter and exit the ground at a 45° angle and be coated with a protective tar to prevent corrosion.

9. Measure the distance between the airlock and blower. Use flex hose or a combination of flex hose and galvanized tubing to connect the units together. Note that the grain discharge chute on the airlock is tapered and that grain can discharge in either direction.

10. Install all tubing required to transfer grain to the storage areas.

11. To attach the deadhead deflector to the tubing, simply slide the deadhead deflector onto the tubing and tighten the clamp provided. Flexible galvanized tubing can be attached to the deadhead down spout if needed. If a cyclone is used, supports and an elbow and mounting brackets are needed.

12. Select a location to mount the electrical control box that is accessible and easily reached should shut down of unit be necessary. It should be close enough to the blower to run the 30' of rubber pressure hose between the blower and the control box. Otherwise, a longer length of hose must be ordered.

13. Before wiring or operating the Air System unit, read the control box description to understand the operation of the Air System control box. If the control box is to be wired to remote equipment, review the wiring diagrams for proper hook-up. Electrical connections should meet applicable electric codes for your area.

BRUNeumatic 90 degree elbows are formed on the center radius. Important to note would be that the following radius guide should be used.

Tube Diameter	Radius
2”	24”
3”	36”
4”	48”
5”	48”
6”	60”

On each end of the BRUNeumatic elbow, there is a tangent or straight length of tube. This tangent is usually twice the diameter of the tube. If you require an elbow that is less than 90 degrees, the elbow chart below can be followed to achieve the desired angle of tube you require. When using the distance in inches chart, always measure along the outside radius of the elbow. Be sure to cut the elbow perpendicular to the curved center. The chart below has the tangent included in the measurement.

Distance In Inches Chart For Cutting 90 Degree Elbows To Different Angles

Tube Size	Inches Per 1 degree	Tangent Length	30 elbow	35 elbow	40 elbow	45 elbow	50 elbow	55 elbow	60 elbow	90 elbow
2"	5/8"	5 1/2"	24 7/8	28 1/8	31 3/8	34 1/2	37 3/4	41	44 1/4	69
3"	5/8"	6"	25 5/8	28 7/8	32 1/8	35	38 3/4	42	45 1/4	71
4"	7/8"	8"	34 1/8	38 1/2	42 7/8	47 1/4	51 5/8	56	60 3/8	94 1/2
5"	7/8"	10"	36 1/2	40 7/8	45 1/4	49 5/8	54	58 1/2	62 7/8	99 3/8
6"	7/8"	12"	38 3/4	43 1/8	47 1/2	52	56 1/2	61	65 3/8	104

Here is an example of the above chart in action.

A 6” system is being installed and a 60 degree elbow is required. From the chart, you would look down the row to the 6” tube, then follow across to the 60 degree column. That number to produce a 60 degree elbow is 65 3/8”. You can measure from either end of the 90 degree tube to a distance of 65 3/8” and cut the elbow at that location. You would then have one 60 degree elbow and one 30 degree elbow.

When a measurement is needed that is not listed, for example a 37 degree elbow, you would then figure that 37 degrees is 2 more degrees than a 35 degree elbow. To figure the cut on this elbow, you would take the measurement for the 35 degree elbow and add from the inches per degree column. In this case, the 43 1/8” measurement would have to have (2) two of the 7/8” added to it.

$$2 \text{ x } 7/8” = 1\ 3/4” \quad – \quad 1\ 3/4” + 43\ 1/8” = 44\ 7/8”$$

The above picture shows how to measure on the outside radius of the tube.

Operation Information

In automatic the air lock and the air pump start together and are under the control of the pressure switch And the time delay. Upon shutdown, the air lock will stop first then after an adjustable time delay, the Air pump will shut down.

The pressure switch should be set about two pounds above operating pressure, normally set to 8 PSI.

If the pressure rises above this setting, the air lock will shut down, then the pump will shut down, depending Upon what the setting is on the electronic time delay.

When using the system with the pressure switches to control the operation, set the machine on automatic.

The control panel is wired to operate one auxiliary auger if needed, and works with the air lock control.

CAUTION

Guards, access doors and all covers must be securely fastened before operating this equipment.

Lock out power before removing guards, access doors or covers.

Warranty requires factory approved replacement parts only.

Failure to follow these instructions may result in severe personal injury or property damage.

START UP PROCEDURE

BRUNeumatic Air System

Ensure selector switch is in the center or OFF position.

Depress Emergency Stop Pushbutton

Turn on main power supply and ensure circuit breaker is on inside panel.

Pull out Emergency Stop Pushbutton

Push Green Start Pushbutton for control circuit to energize

For Automatic - Turn Selector Switch to AUTO

For Manual - Turn Selector Switch to Manual, depress and release Green Start Pushbutton to airlock to start

ALWAYS RUN AIR PRESSURE SELECTOR SWITCH IN AUTOMATIC FOR NORMAL OPERATION

SHUT DOWN PROCEDURE

On Automatic operation, turn the selector switch to the center (OFF) position and wait for time delay to shut off the entire system. Depress the emergency stop pushbutton located on the side of the panel and shut off main power.

On manual operation, push the red stop pushbutton. Turn the selector switch to the center (off) position. Wait for the air pump to shut down. Depress the emergency stop pushbutton On the side of the panel and shut off main power.

In case of shut down caused by a line plug

1.) Turn the selector switch to off.
2.) Place the air pressure switch to bypass.
3.) Push the green pushbutton for the control circuit.
4.) Turn selector switch to manual position.
5.) Watch the amperage and air pressure gauges for excessive readings for more than 3 or 4 seconds. If this happens, depress the emergency stop pushbutton on side of panel, then:

* Disconnect air line from air lock and restart unit
* Surge line with hose and release.
* Repeat as needed
* When lines are clear, shut down, reconnect lines, reset the air pressure switch to auto, continue with normal operations.

If you have any questions, please feel free to contact your dealer. If you need further information, please contact us direct.

Specific product information may be found on our web site

www.bruningenterprises.com

This information may cover the rotary air lock, blower, motors and many other items.

Spare Parts / Replacement Parts, Sales and Service are available through:

Bruning Enterprises, Inc.
7718 North State Road 9
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(317) 835-7591 Phone
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bruning@bruningenterprises.com

BRUNeumatic, The Easy Way To Move Grain and Seed. Designed by farmers, for farmers.

2011 - Bruning Enterprises, Inc. SOP-002 - Revision 3

Troubleshooting - Continued

System plugs up.

1. Check belt tension on air blower and tighten if loose.
2. Check air filter and clean out. Locate in a place where there is less dust.
3. Check tubing system for any obstructions.
4. Reduce feed-in rate.
5. Air Pressure switch setting may be too low.

Excessive grain damage.

1. May be overfeeding airlock, causing vanes to shear off grain. Reduce feed rate.
2. Air velocity may be excessive. Slow air blower by changing pulleys.
3. Damage can occur if system is running at less than full capacity. Increase feed rate.
4. Rubber hose used to change grain direction or used for extended lengths.

Airlock stops or is noisy.

1. A foreign object may have become lodged in the airlock vanes.
2. Check belt tension.
3. Check gearbox drive.
4. The rotor vanes may be rubbing on the ends of the airlock.
5. The rotor vanes may have become rusted to the airlock housing. The airlock can be broken loose by using a pipe wrench on the exposed rotor shaft.
6. "U" cup packings on rotor too tight. (Contact factory.)

Unit does not start, "ready light" is not ON.

1. Check AC power supply.
2. Check control box fuses.
3. Thermal overload tripped.
4. Air Pressure Limit switch may be misadjusted. If pressure switch is not reset, turn pressure adjustment clockwise until switch resets.
5. Be sure "Start" switch is pushed.

Unit does not start, the "ready light" is ON.

1. Blower, Airlock and Auxiliary switches must be in either "AUTO" or "MANUAL" to operate.
2. The automatic control not wired correctly or not working. (Requires a closed contact across TB1 and TB2 to auto start.)

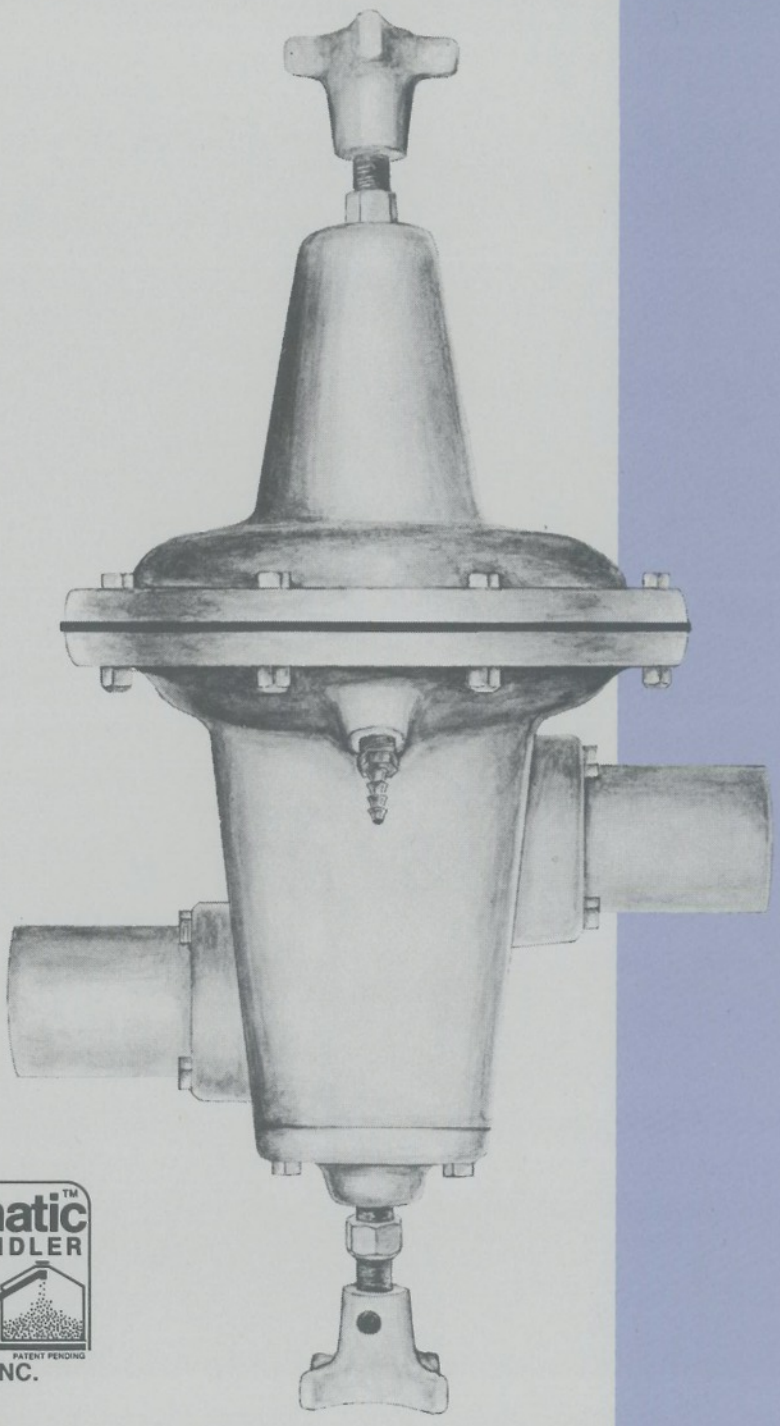
Blower motor trips thermal overload.

1. Check current draw using amp meter. The motor should not be pulling more current than the nameplate specifies. Reduce feed rate if excessive.
2. Check overload amp settings.
3. Check for loose connections and/or too small gauge wire.
4. Wrong voltage (either high or low).
5. Too much load due to obstructions, bad bearings or dry gears, massive plug in air line.

No control voltage.

1. Control fuse inside the control box is down.
2. Check main power for proper voltage. 3. Check transformer (if installed) fuses.

Air Control Regulator



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PATENT PENDING

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Operating and Instruction Manual

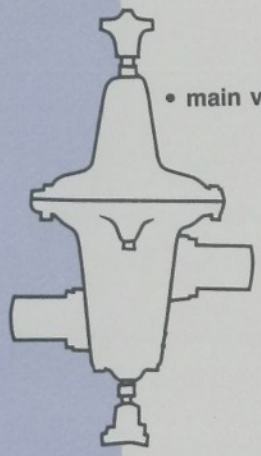
About your new Air Controller

Congratulations. You've just made a wise move. A move toward air command by air control. A move toward regluating the speed of grain in your pneumatic grain handling system with a Bruneumatic Air Control Regulator.

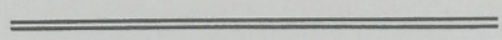
The Air Controller is designed to move grain from your holding bin or dryer more efficiently and with minimum damage. Whether your grain is traveling 30 ft. or 300 ft., air velocity moves it at optimum speed—speed you control automatically with this regulator.

Parts

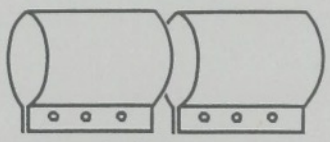
Before starting installation, take a look at your air control kit. It includes:



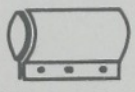
• main valve



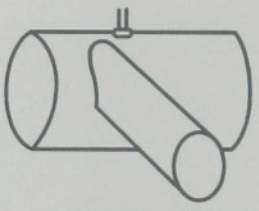
• regulator hose



• main line compression couplers

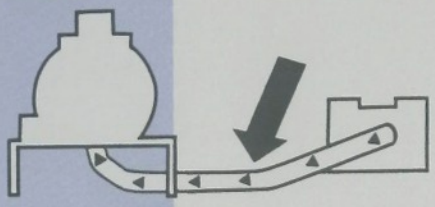


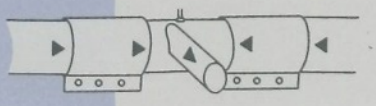
• inlet compression coupler



• main line fitting

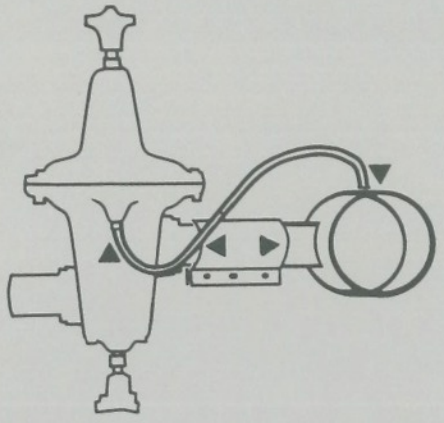
Easy Installation





Installating your new Bruneumatic Air Controller is a breeze. Follow these simple steps and you'll soon find how easy air control really is.

1 The Air Control Regulator splices into your main air line between your air pump and rotary air lock. After splicing, clamp the main line fitting in place with the main line couplers.

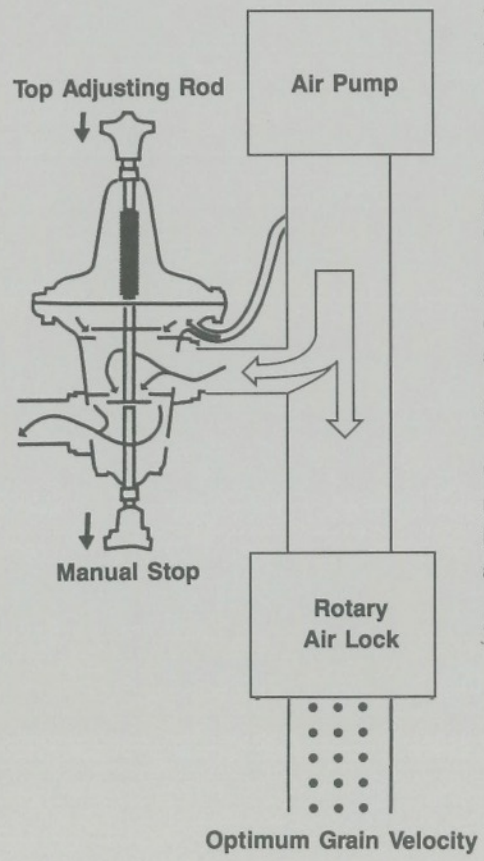


2 Using your inlet coupler, clamp the inlet of your Air Control Regulator to the main line fitting. Make sure you attach the valve correctly. When installed, the valve should be upright. You can check this by looking at the top of the valve which is stamped "Bruneumatic."

3 Slide the regulator hose over the hose barbs on the main valve and main line fitting.

A pressure gauge should be visible when adjusting yoru Air Controller. If your control panel pressure gauge isn't nearby, an optional gauge can be spliced into your regulator hose.

Operating Instructions



The top and bottom valve adjustments on your Air Controller work together to control the velocity of your grain, as well as the air moving that grain.

To begin the operation, follow these simple steps:

1 The bottom adjusting rod functions as the valve stop. Open this manual stop 6 full turns (approx. ½") from the shut position. Lock it into place with the locknut. You can leave it in this position for most all normal operation.

2 The top rod is the main valve adjustment. The tighter you screw it down, the further the valve opens and the more air you release. To begin, screw the rod out to close the valve.

3 Start-up your pneumatic system and let the grain begin to flow.

4 Slowly start opening the valve by screwing down the top adjusting rod. Keep tightening down the rod until your system's pressure gauge increases 1-2 lb. **NOTE: This applies to normal operation of 5 lb. psi and under.**

5 After adjusting, lock the top rod in place with the locknut.

Air command through Air Control

Once you've got your Air Controller adjustments set properly, the valve automatically regulates your speed of grain.

If the system begins to get clogged, the valve automatically allows more air to push the grain through. If moisture is high and dryer output is low, the system automatically opens up to slow the air velocity. This slows the speed of the smaller volumes of grain in the system and cuts down on grain damage.

It all works toward giving you air command through air control.

For More Information

For specific problems or applications, call:

(317) 835-7591

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