



MAGNUM
S Y S T E M S

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NOTICE

**THIS ENVELOPE CONTAINS
IMPORTANT DOCUMENTS**

DO NOT DESTROY

ROTARY VALVE
O&M DOCUMENTATION

MODEL: CAP
(*Cavity Air Purge*)

N10-370

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MAGNUM SYSTEMS ROTARY VALVE AIRLOCK FEEDER INSTALLATION & MAINTENANCE INSTRUCTIONS

WARNING! READ ALL INSTRUCTIONS. FAILURE TO FOLLOW SAFETY RULES LISTED BELOW, AND OTHER BASIC SAFETY PRECAUTIONS, MAY RESULT IN SERIOUS PERSONAL INJURY!

WARNING! When installing Airlock Feeder DO NOT connect to the power source until chain guard is in place and the Airlock inlet and outlet are covered so that there is no chance for fingers and hands to get close to rotating blades.

WARNING! Disconnect Airlock Feeder motor from power source before attempting to make any repairs.

DANGER! Keep chain guard in place and keep both the inlet and outlet covered when the feeder is connected to a power source.

DO NOT TRY TO FORCE THE ROTOR TO TURN WITH YOUR HANDS!

After disconnecting power to Airlock, use a board between the blades or use a pipe wrench on the non-drive end of the rotor shaft in order to turn the Airlock rotor by hand. If the rotor does not turn relatively easy, look for the cause of the problem. Remember the Airlock is a precision piece of equipment and can be easily damaged if not handled properly by personnel trained to work on precision equipment. There are numerous reasons why the Airlock rotor could be binding. If you are unable to find the problem yourself, consult Magnum Systems trained factory personnel. It may be something that can be diagnosed over the phone. If not, you may have to send the Airlock to the Magnum Systems factory or obtain the services of a trained Magnum Systems technician.

CAUTION! All repairs, electrical or mechanical, should be attempted only by trained repairmen.

STAY ALERT! Watch what you are doing. Use common sense. Do not attempt to operate airlock feeder without the chain guard in place and without inlet and outlet covers in place.

THE PEOPLE, PARTS, AND SYSTEMS THAT KEEP THE LINE MOVING.



MAGNUM SYSTEMS AIRLOCK LONG TERM STORAGE INSTRUCTIONS.

Rotary Valve Airlocks should be stored Indoors, in a dry ambient facility.

They should be stored on a pallet with the inlet and outlets covered.

Do not place valves where any other moisture can enter into the valve.

For long-term storage over 30 days, it is recommended that the internal carbon steel surfaces be sprayed with a rust preventative coating, such as, vegetable oil to prevent internal rust from forming.

Magnum Systems also recommends

The rotor should be turned every 30 days while in storage. Please refer to the IO&M instructions for the proper and safe method for turning the rotor.

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**AIRLOCK FEEDER
INSTALLATION & MAINTENANCE INSTRUCTIONS
CAVITY AIR PURGE (CAP)
Ref. Dwg. # 53-1**

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- I. INSTALL CAP TUBE LINE AND FITTINGS**
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- III. DRY RUN START UP**
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- V. GENERAL INFORMATION**

I. INSTALL CAP TUBE LINE AND FITTINGS

- 1. Install the tee, detl #4 (normally supplied by Magnum Systems), in the convey air line running from the pressure blower to the Airlock equipped with CAP. Make sure the orifice, detl #5, supplied by Magnum Systems is on the down stream side of the tee. This places the orifice on the Airlock side of the tee rather than on the blower side of the tee.
- 2. Assemble the Air Purge fittings, detl #8, to the CAP Magnum Systems Airlock using the compression couplings supplied if the fittings supplied are not already assembled to the Airlock.
- 3. Assemble the Air Purge Air Line, detl #3, from the tee in the Clean Air Convey line to the tee on the CAP Airlock. This Air Purge Air Line must be as large or larger than the line which tee's off from the Clean Air Convey line (from pressure blower). This is very important. It is also very important that there be no air leaks in the Air Purge Air line. Make very sure that all the compression couplings are installed properly so that there is no air leaks from that source.

II. INSTALL DeltaP GAUGE and GAUGE FILTER: (refer to Dwg 53-1)

- 1. The DeltaP gauge, detl #6 (differential pressure gauge), is usually shipped loose so that it will not be damaged in shipment. Install the gauge with screws, nuts, & washers provided. Install the gauge 1/4-inch hose lines, detl #'s 9 & 10, and the gauge filters, detl #7, using the hose and push on hose fittings provided. Again it is very important that there are no leaks in the gauge lines or where the fittings screw into the gauges, gauge filter, Airlock, and etc.
- 2. Be sure the high pressure port of the differential gauge is connected to the gauge filter on the air purge line tee with 1/4" hose, detl # 9; and the low pressure port on the differential gauge is connected to the gauge filter on the clean air inlet side of the Airlock discharge adapter with 1/4" hose, detl # 10. It is important to properly install the gauge filters so as to protect the gauge in the event of a line pluggage in the convey line.



III. DRY RUN START UP

1. Check and make sure everything is installed correctly up to this point.
2. If the Airlock conveys more than one product or there are diverter valves in the convey line, set up the CAP system so the Airlock will be operating at that set of conditions which produces the greatest convey pressure.
3. Without starting the Airlock; start the pressure blower. Check the DeltaP gauge on the Airlock. It should be reading 20 or more or maybe even be pegged out against the maximum pressure gauge peg. Nothing is wrong if the gauge needle is pegged out against the maximum pressure gauge peg but the gauge 1/4" high/low pressure lines are probably reversed if the gauge needle is pegged out against the zero gauge peg.

IV. CONVEYING PRODUCT STARTUP

1. After the "dry run startup" checks out it is time to turn on the Airlock. Be sure to turn on the blower first. When convey line pressure is reached the gauge should be in the positive zone and under ideal conditions should read approximately 15 to 20 inches if water. No damage is caused however if the gauge is pegged out against the peg on the high-pressure side (clockwise side). It means that the orifice is smaller in diameter than it needs to be, but it is much better to be a little to small than a little to large, or, there is a leak in the low pressure side of the 1/4 inch gauge line (detl #10) around one or more of the fittings. Check to see if there is a leak and fix it if there is.
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V. GENERAL INFORMATION

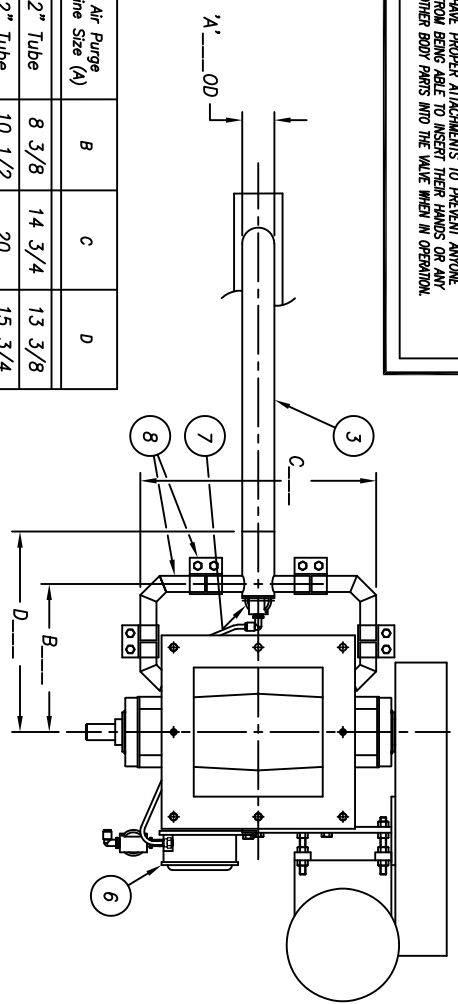
1. A CAP orifice is machined to diameter for a specific set of conveying conditions, mainly blower scfm and conveying pressure. If either one of these parameters are different than what we were given or are changed at a latter date it will cause the CAP orifice to operate at a different set point than originally intended. It could still be within acceptable limits however since the CAP design is rather tolerant with regard to the scfm and conveying pressure being different than what the orifice plate was originally calculated for except that a CAP equipped Airlock should not operate at less than 10 inches of water reading on the deltaP gauge.



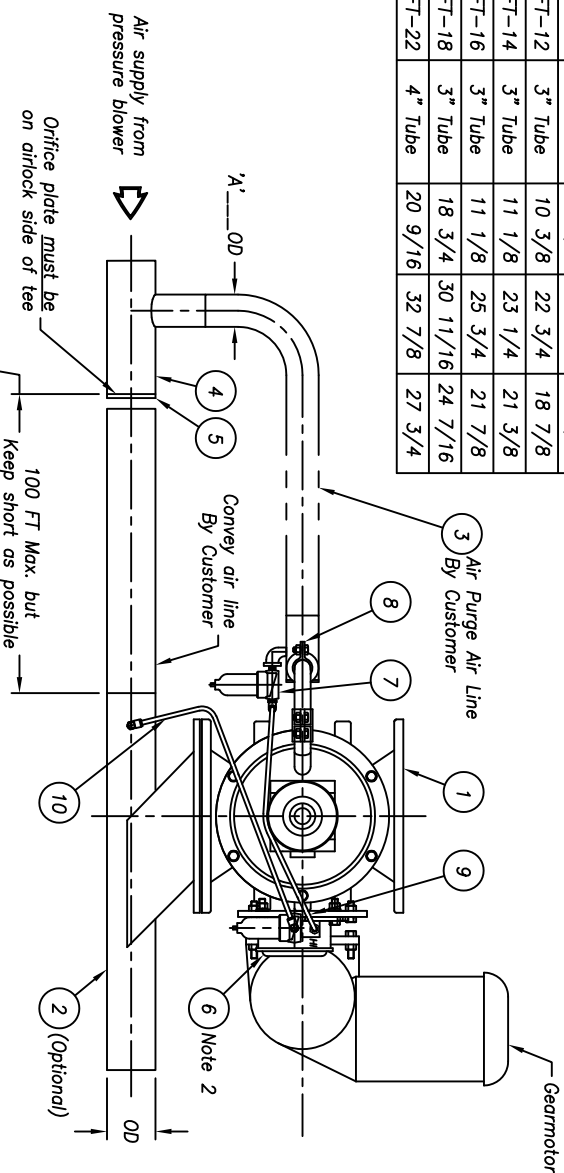
However the CAP design IS NOT TOLERANT of leaks in the gauge lines or leaks in the Air Purge Air Line from the Tee in the clean air convey line to the Airlock End Plates.

2. More than one Airlock with CAP can be connected up to an orifice and tee but the exact conditions must be known and the design based on these known conditions. In some instances a second or more CAP Airlock can be added in the field after the fact but some changes will probably have to be made. Consult Magnum Systems if you would like to add CAP Airlocks to an existing system, which already has one or more CAP Airlocks.

WARNING
 DESIGN ENGINEERS, TECHNICIANS & INSTALLERS
 THE INLET AND OUTLET OF THE ROTARY VALVE MUST
 HAVE PROPER ALIGNMENTS TO PREVENT ANYONE
 FROM BEING ABLE TO INSERT THEIR HANDS OR ANY
 OTHER BODY PARTS INTO THE VALVE WHEN IN OPERATION.



Feeder Size	Air Purge Line Size (A)	B	C	D
FT-9	2" Tube	8 3/8	14 3/4	13 3/8
FT-11	2" Tube	10 1/2	20	15 3/4
FT-12	3" Tube	10 3/8	22 3/4	18 7/8
FT-14	3" Tube	11 1/8	23 1/4	21 3/8
FT-16	3" Tube	11 1/8	25 3/4	21 7/8
FT-18	3" Tube	18 3/4	30 11/16	24 7/16
FT-22	4" Tube	20 9/16	32 7/8	27 3/4



Air supply from pressure blower

Orifice plate must be on airlock side of tee

100 FT Max. but keep short as possible

Consult Smoot if dimension requirements are greater than 100Ft.

1. Consult Smoot Engineering when the installation involves two or more airlocks with Cavity Air Purge in the same convey line.
 2. The purpose of the Differential pressure gauge is to indicate that LoPress Air Purge is functioning properly. There is no maximum gauge reading. If the gauge reading gets below 5" of water, corrective action should be taken. Failure to correct the problem will cause accelerated aversive wear of Airlock and premature failure.
- Possible causes of a low gauge reading are leakage or breaks in the Air Purge line and fittings, faulty gauge, orifice diameter too large, or worn Airlock.
3. The discharge adapter will be provided with a 1/4" tapped hole for connection of low pressure CAP gauge line. If customer supplies his own discharge adapter, customer must tap a 1/4" NPT hole into side of discharge adapter.

DETAIL NO.	NO. REQ.	DESCRIPTION
10	1	1/4" LoPress-Side Gauge Line
9	1	1/4" HiPress-Side Gauge Line
8	4	Air Purge Fittings
7	2	Differential Pressure Gauge Filter
6	1	Differential Pressure Gauge
5	1	Orifice Plate
4	1	Convey Line Tee
3	AR	Air Purge Manifold Piping (By Customer)
2	1	Feeder Discharge Adapter (Optional)
1	1	Rotary Airlock Feeder

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Patent #:
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FT9 THRU 22 ROTARY AIRLOCK FEEDER
 CAVITY LOPRESS AIR PURGE
 CUSTOMER DRAWING

CF# 10.3.1-4-A
 REV. 6 05/16/03
 PAGE 1 OF 1

DATE 11/15/91
 DWG. BY NRS
 SCALE 1 1/2"=1'-0"

DWG. NO. 53-1
 APPROVED



TROUBLE SHOOTING COMMON ISSUES

PROBLEM	SOLUTION
System Plugs Up	<ol style="list-style-type: none"> 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. 6. Outlet gate valve too far open.
Excessive Grain Damage	<ol style="list-style-type: none"> 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 or by opening gate valve. 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. 5. Airlock shear protector installed wrong.
Airlock Stops or Noisy	<ol style="list-style-type: none"> 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. Check clearance at both ends of rotor and center in housing by loosening the set screws in the bearings on both ends of the rotor shaft and moving rotor. Tighten set screws after repositioning. 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. !!CAUTION!! – <i>The worm drive gearbox cannot be driven in reverse and can be damaged. Remove the airlock drive chain before attempting to turn the airlock by hand.</i> 6. “U” cup packings on rotor too tight (Contact Factory)

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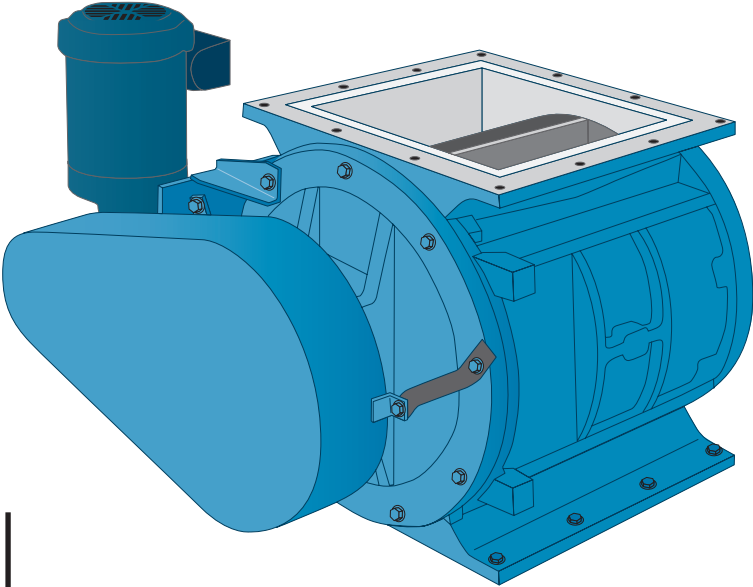
SAFETY FIRST

ROTARY
AIRLOCK

SAFETY

ROTARY AIRLOCK SAFETY PROCEDURES

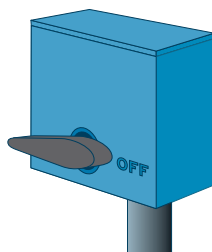
Prevent damage to yourself and your new Rotary Airlock by following these simple safety procedures.





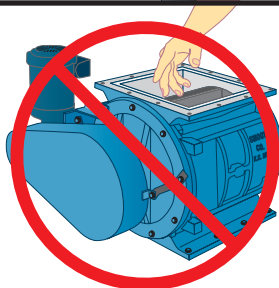
ALWAYS

DISCONNECT power and remove the roller chain BEFORE working on the valve.



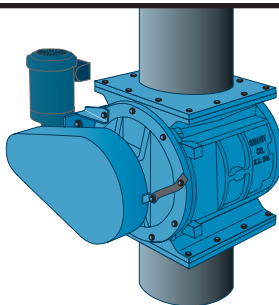
NEVER

Put HANDS into the inlet or outlet openings of the valve.



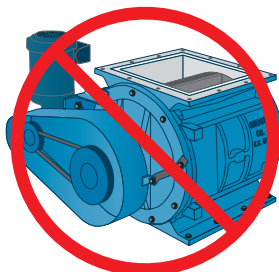
ALWAYS

Have inlet and outlet PROPERLY COVERED when operating valve.



NEVER

Operate the valve WITHOUT chain guard in place.



SAFETY FIRST

Rotary Airlocks are powerful and can be dangerous if you do not follow procedures. Prevent damage to yourself and your new Rotary Airlock by following these simple safety procedures.

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