

# H-Series – Hydraulic / Installation Manual



Design Code: \_\_\_\_\_

Stock Number: \_\_\_\_\_

Serial Number(s): \_\_\_\_\_



# Plattco Corporation

When your process is critical, when conditions are demanding,  
When your valve has to work, it has to be a **Plattco Valve**.

Plattco.com

e-mail: [info@Plattco.com](mailto:info@Plattco.com)

international calls: 1.518.563.4640

USA/domestic calls: 1.800.352.1731

7 White Street, Plattsburgh, NY USA 12901

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## History of Plattco

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### Plattco Corporation Over 100 Years of Innovation and Excellence

Plattco specializes in the design and manufacture of Double Flap Airlock<sup>®</sup> Valves and associated Multi-Purpose Slide Gates to solve solid material handling problems in a wide variety of industrial applications.

We began as a gray iron foundry in 1897 producing drainage castings, stock valves and other machined castings for the paper, mining, and other regional industries. Always a leader, Plattco became the first licensee for “white irons” (Ni-Hard, Hi-Chrome, Ni-Resist) patented by International Nickel in the 1930’s.

Our customers have always looked to us for solutions to their most difficult dry material handling issues. This problem-solving role led us to invent the first Double Flap Airlock<sup>®</sup> Valves in the early 1960s to eliminate leakage with sintering and pelletizing in the mining industry, and for the handling of cement clinker.

Since then, Plattco has engineered thousands of solutions, in dozens of industries, throughout the world. We have established an unmatched reputation for correcting process design problems in applications that involve high temperature, high pressure, and/or abrasive/corrosive materials.

Plattco is an integrated manufacturer, with our own engineering, pattern shop, foundry, and machine shop in Plattsburgh New York. The company owns several U.S. and International patents and is the premier innovator in the solid materials handling valve business.

Plattco is employee owned. Every employee is a stockholder and, thus, every employee has a direct interest in ensuring that our customers are delighted with our valves and continue to consider us the best company in our industry.

We are proud of our history and mindful of our responsibility to provide the very best solution to every material handling application we undertake.

# Plattco Contact List

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Contacts	Titles
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Roxanne Coleman Phone: 518-563-4640 ext. 125 E-mail: <a href="mailto:rcoleman@plattco.com">rcoleman@plattco.com</a>	Customer Service / Parts Sales
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## Introduction

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This manual contains instruction on how to assemble, install, operate, and service the Plattco Double Flap Airlock® Valve.

- Plattco Double Flap Airlock® Valves are designed for ease of installation and maintenance, and to give long, trouble free service.
- The valves will operate automatically with little maintenance required.

### Assembly

- Valves are normally shipped completely assembled and ready to install at the job site.
- Valves will be shipped disassembled only when transit conditions prevent the shipment of complete units.
- When shipped disassembled special instruction for assembly of the unit will be provided.
- Valves should be inspected when received to make sure no damage occurred during transit.
- Valves with standard flange patterns are shipped with top and bottom gaskets for mounting to above and below equipment.

## **Packaging / Storage**

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### Packaging

All flanges and unpainted surfaces of the valves are coated with a lightweight oil to help prevent corrosion. The unit is then wrapped in heavy plastic. Finally, it is placed and secured in a Plattco shipping container, along with the appropriate paperwork.

### Storage

Plattco recommends the unit be stored **un-stacked and upright** in a dry place until needed.

## Safety Precautions

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***Do not service Plattco Double Flap Airlock® Valves until:***

1. The valve has been locked out and tagged out following proper lock-out / tag-out procedures.



2. All power supplies have been disconnected.
3. All electrical current has been turned off.
4. Pressure inside the valve has been reduced to atmospheric.
5. Material above the valve has been removed or isolated.

Keep hands, feet, loose clothing, other equipment, or tools away from moving parts until the above steps have been taken to prevent possibility of bodily injury.

Failure to heed these warnings could result in an accident causing damage to equipment and / or severe personal injury.



# Installation

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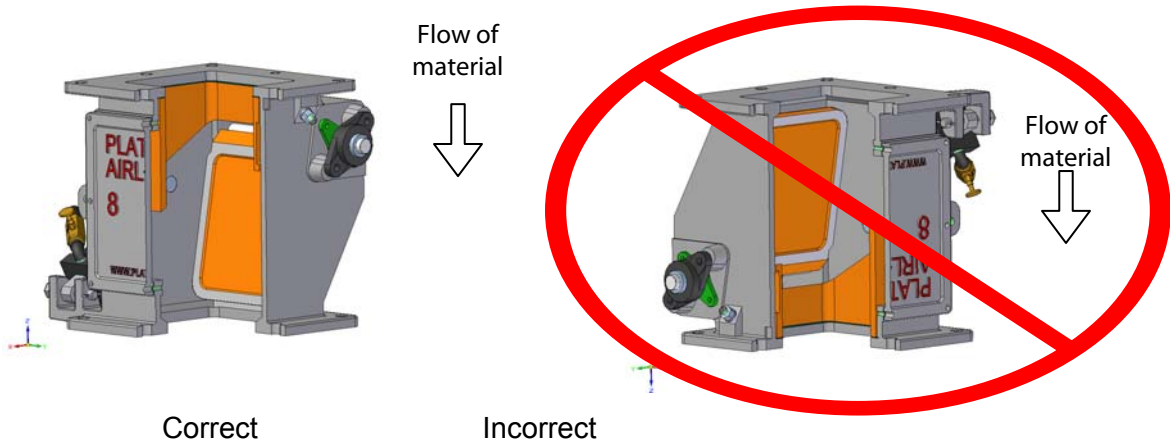
Hydraulically operated Plattco Double Flap Airlock® Valves are shipped ready for installation (unless otherwise noted). If disassembled, Plattco will furnish any mounting procedures required.

Plattco valves are made of one, two, or three completely interchangeable units, fastened to mating equipment with flange gaskets and bolts.

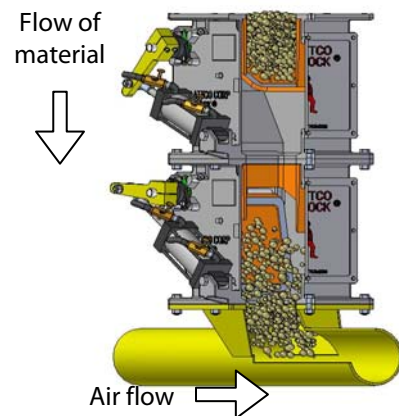
It is required that the duct work, piping, or feed opening directly above the valve be **not** larger than the valve inlet. If it is larger this may cause premature wear of the valve housing and/or seat and will void all warranties.

Before installation clean any oil from the seats and flappers to prevent material build up during operation.

During installation make sure the flappers are oriented in the correct position moving down and away from the seat. See illustration below.



When valves are being used in pneumatic conveying applications, make sure the flappers are oriented in the correct position so the material flow is consistent with the air flow. See illustration for correct orientation.





## Installation

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Make sure the valves are mounted so the access covers are easily accessible for removal and internal part access.

### Cylinder Supply

When installing Plattco Double Flap Airlock® Valves there are two (2) hookup options for the hydraulic supply to the cylinders:

- **Fail Safe Open (FSO)** – under power failure, valves will be fully open
- **Fail Safe Close (FSC)** – under power failure, valves will be fully closed.

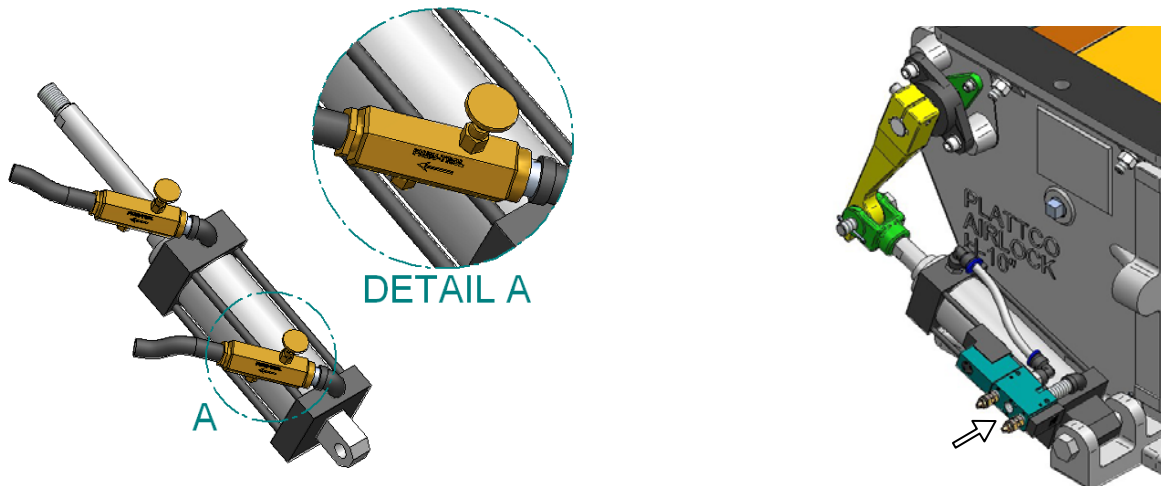
Plattco valves are designed to operate with a hydraulic supply no higher than 300 psig to the solenoid valves. Lower pressure could cause hesitation and failure to close, and higher pressure could cause internal part failure.

### Metering Valves

Metering valves meter the exhaust flow from the cylinders. The metering valves have an arrow stamped on them, at start-up and whenever installing new metering valves, be certain the arrow points away from the cylinder. See illustration below on left.

It is also critical the metering valves be set so the cylinders open and close moderately. Slamming the flappers open and closed can cause premature part failure and voids all warranties.

Cylinders supplied with the solenoid valves mounted on them are metered by the flow control silencers on the solenoid valves. See illustration below on right.



## Installation

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### Filter/Regulator/Lubricator (FRL)

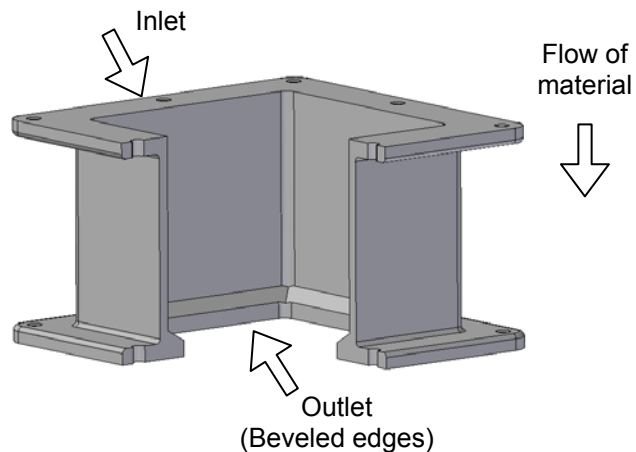
The filter/regulator/lubricator assembly is normally mounted as close to, and above the control valve (solenoid valve) and cylinders as practical.

Not all Plattco cylinders and solenoid valves require lubrication, however, if a lubricator is required, mounting above the valve and pitching the lines downward allows gravity to aid in the flow of the lubricant.

The filter must hang vertically in a place where it can be drained when required, and in line before the regulator.

### Dutchman

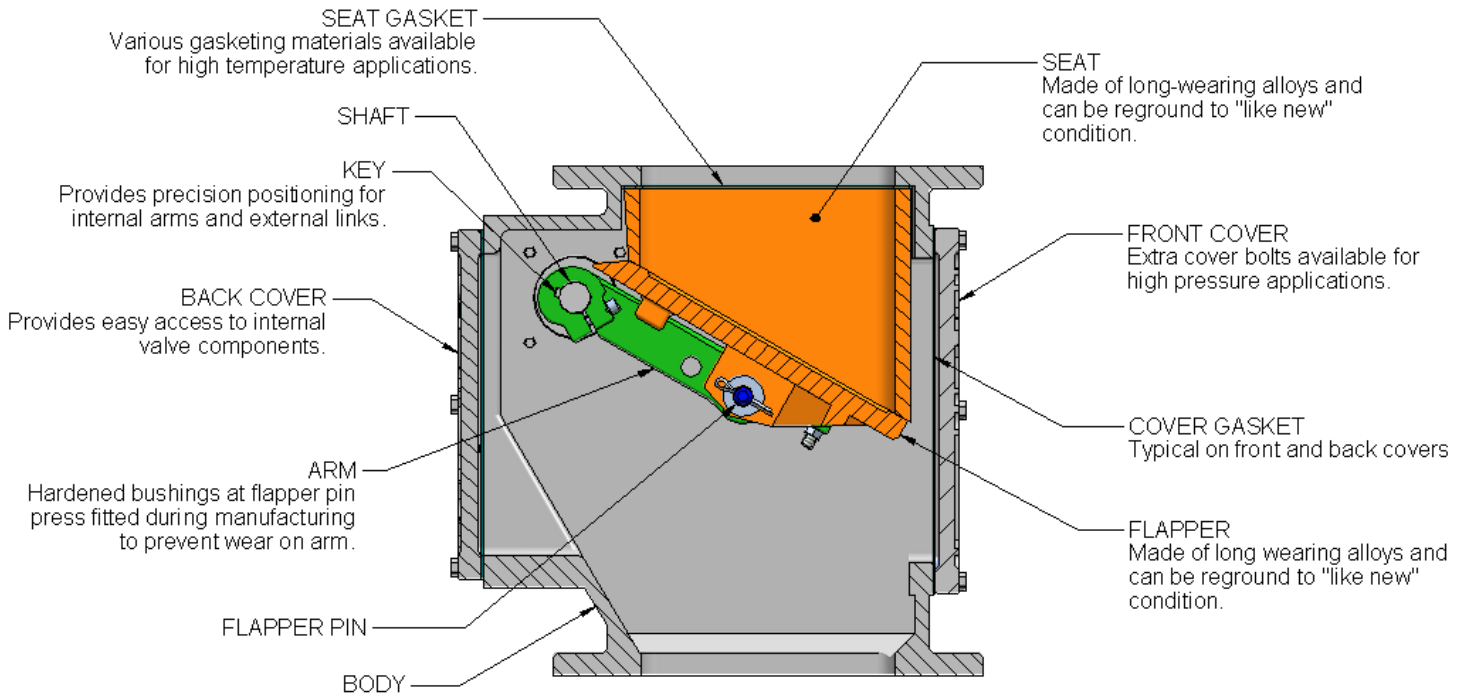
When installing a Dutchman (also referred to as a spool piece), normally the larger end is the inlet end and the smaller, beveled end, is the outlet end. Depending on the size Dutchman being installed it may have a straight opening in which case there is no difference between the inlet and outlet! See illustration below.



Dutchman section cut

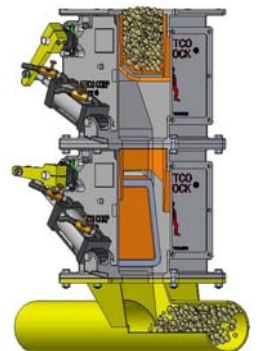
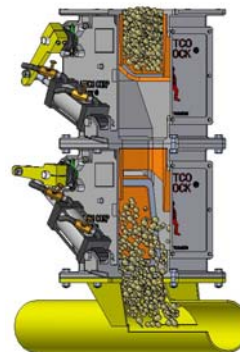
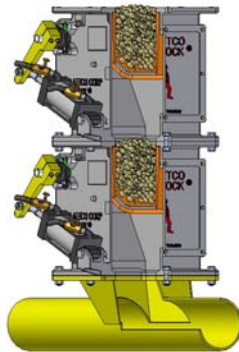
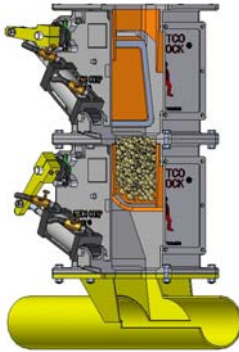
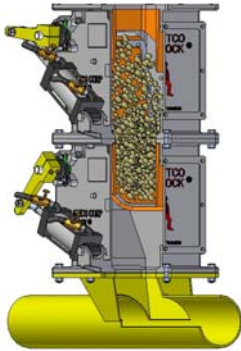
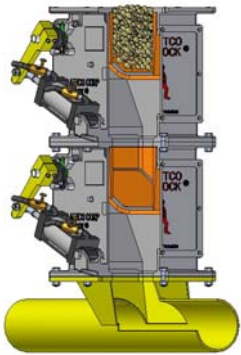
# Internal Parts

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# Operation

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- ❖ Throughout the valve sequence one flapper is always closed maintaining the integrity of the seal.

- ❖ The valve sequence is typically 10 seconds, but can be adjusted for different metering requirements.

- ❖ When the seats and flappers become worn, they can be replaced or reground to a “like new” condition and can be serviced or replaced in-line.

## Maintenance

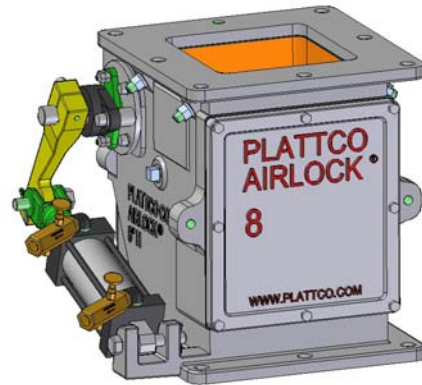
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The access covers on the Plattco Double Flap Airlock® Valves are designed to facilitate maintenance of the valve seats, flappers, and other internal parts. The following is a procedure for removing and reinstalling the seats and flappers.

***See Safety Precautions on Page 5 before performing any maintenance to the valves!***

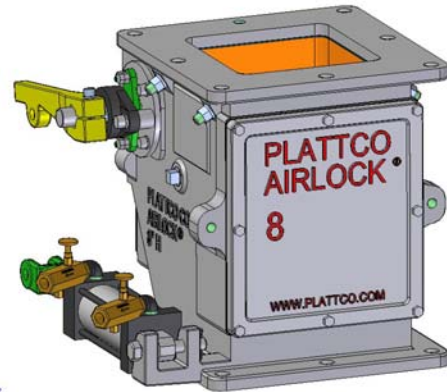
### Removing Seats and Flappers

1. Shut off hydraulic supply to cylinders and disconnect hoses.

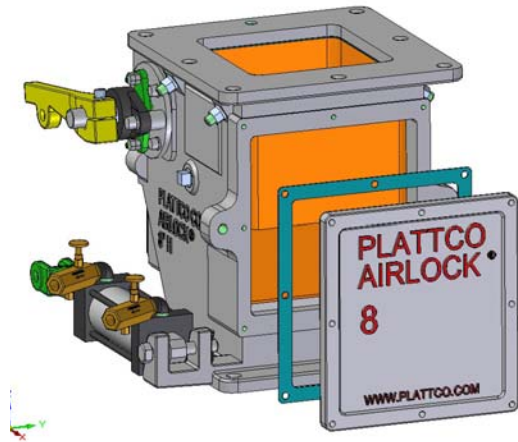


2. Disconnect the cylinder from the link.

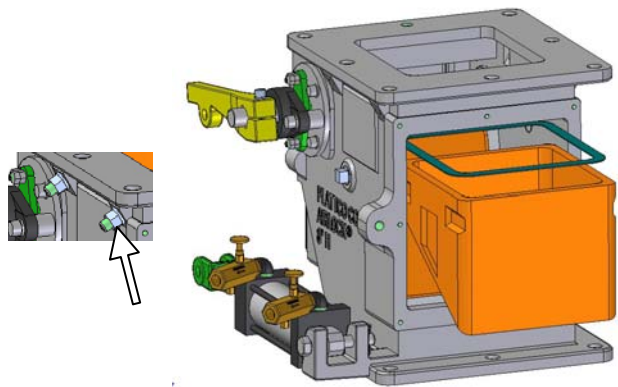
**WARNING** – once the cylinder is disconnected, the valve will open due to the weight of the flapper!



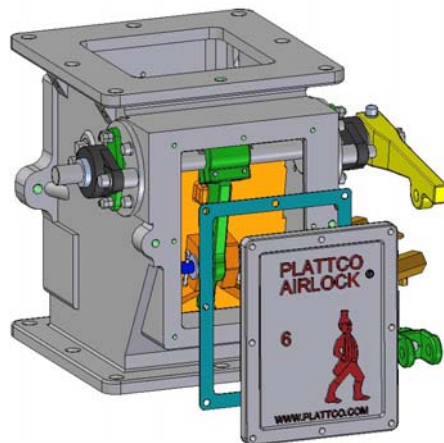
3. Remove the front cover and cover gasket.



4. Loosen seat screw nuts and remove seat screws. Then remove seat and seat gasket through the front cover.

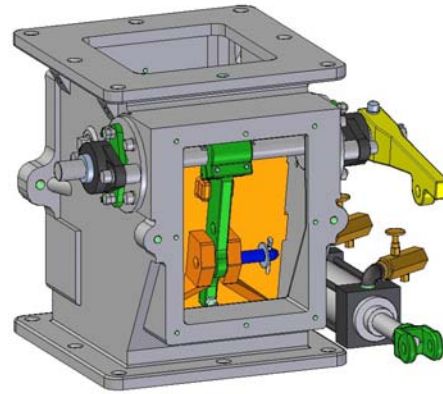


5. Remove the back cover and cover gasket.

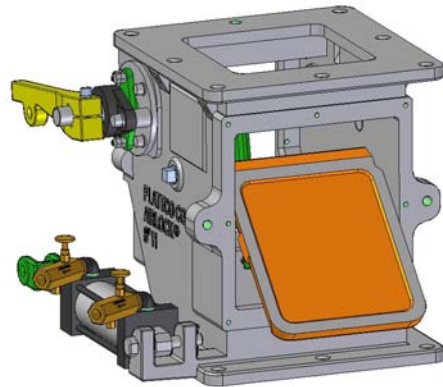


6. Remove the flapper pin cotter pins and washers, and then remove the flapper pin.

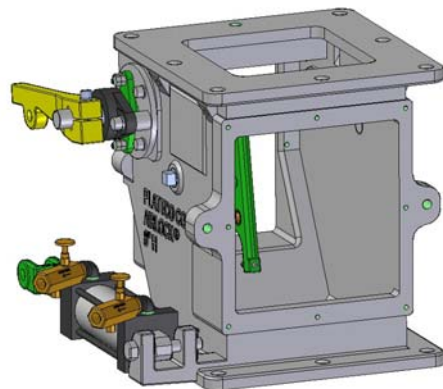
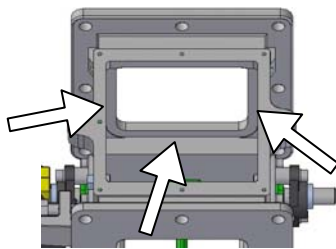
To assist in flapper pin removal remove pipe plug located on the side of the body.



7. Remove the flapper through the front cover.



8. **CRITICAL** - Thoroughly clean seat area of all matter.



## Maintenance

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### Reinstalling Seats and Flappers

1. Thoroughly clean all gasketing surfaces – seat(s) and cover(s).
2. Reverse the above procedure.
3. Install flapper.
  - Be sure flapper is properly oriented on arm.
  - Attach to arm with flapper pin, washers, and cotter pins.
4. Install seat gasket.
5. Install seat.
  - Equally tighten all seat screws and lock nuts - DO NOT over tighten – overtightening can cause the seat not to seal properly against the housing, or it can cause misalignment.
  - Make sure the seat is centered on the valve inlet.
6. Install flapper
  - Check the arm adjusting screw at the bottom of the arm to ensure there is 1/16" clearance between the screw and the flapper.
7. Close flapper against seat to ensure proper alignment.
8. Replace cover gaskets and covers.

#### NOTES:

- New seat gaskets must be used when valve seats are replaced.
- When reinstalling the seat, make sure it is securely in place against valve seating area.
- Seat screws should be checked two (2) days after start-up or after seats have been replaced to make sure the seat is secured and hasn't loosened.
- Seat screws are a special proprietary item – substitutes will cause premature failure.

Before starting or operating Plattco valves it is important that all fasteners be checked for tightness.

### Regrinding

Seats and flappers are designed to be reground to "like new" condition. For more information, or to send your seats and flappers to Plattco for inspection, please contact a Plattco representative.



## Maintenance

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### Lubrication

Always use a good grade bearing grease or high temperature grease in hot applications, equal to the following:

### Jet Lube AP-5

#### Lubrication Chart

Component	Actuating Shaft Bearings	Rod End Bearings	Cylinder Trunnion Brackets	Cylinders	4-way Solenoid Valves
<b>Lubricant</b>	Jet Lube AP-5 HT or equal	Jet Lube AP-5 HT or equal	Jet Lube AP-5 HT or equal	Marvel Mystery Oil	Marvel Mystery Oil
<b>Specifications</b>	NLG 1 Grade 2	NLG 1 Grade 2	NLG 1 Grade 2	non-detergent 10-20 weight	non-detergent 10-20 weight
<b>Initial Fill Qty.</b>	N/A	N/A N/A N/A 250			ml
<b>Frequency</b>	Once per month	Once per week	Once per week	1 drip per minute	1 drip per minute
<b>Quantity</b>	2 ml per bearing	1 ml per rod end	1 ml per bracket	As required	As required
<b>Total Qty Required per 1 year of operation</b>	416 ml per double Airlock®	208 ml per double Airlock®	208 ml per double Airlock®	As required	As required
<b>Comments</b>	Anti-friction, self-aligning	Self-aligning		<b>Plattco standard cylinders are self lubricating</b>	<b>Plattco standard solenoid valves are self lubricating</b>

#### NOTE:

- No lubrication points are provided for metric cylinder rod ends
- Plattco's standard cylinders and solenoid valves do not require lubrication. However, older and/or special cylinders and solenoid valves may require lubrication. Contact Plattco or component manufacturer for recommended lubrication procedures.
- If lubrication is applied to non-lube cylinders and/or solenoid valves they must continue to be lubricated.

## Troubleshooting

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Review this chart to find do-it-yourself solutions for minor performance problems. Any service needed, other than those described in this manual, should be performed by an authorized Plattco service representative.

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Valve hesitation or failure to close	<ol style="list-style-type: none"> <li>1 Low hydraulic pressure to cylinder</li> <li>2 Faulty metering valves</li> <li>3 Cylinder seal wear</li> <li>4 Restricted hydraulic supply</li> <li>5 Leaky/faulty hydraulic line</li> <li>6 Dirty/faulty solenoid valve</li> <li>7 Cylinder not stroking</li> </ol>	<ol style="list-style-type: none"> <li>1 Fluid pressure must be 80 psig</li> <li>2 Replace as needed</li> <li>3 Replace/rebuild as needed</li> <li>4 Fluid supply piping must be equal to or greater than solenoid/cylinder ports</li> <li>5 Replace/repair</li> <li>6 Replace/rebuild as needed</li> <li>7 Replace cylinder seals</li> </ol>
Rod/Piston seal wear	<ol style="list-style-type: none"> <li>1 Poor hydraulic fluid quality</li> <li>2 Not properly aligned</li> <li>3 Material adhering to cylinder rod</li> <li>4 Pitting cylinder rod</li> <li>5 Valve slamming</li> <li>6 Cylinder not stroking</li> </ol>	<ol style="list-style-type: none"> <li>1 Install/check filter/regulator</li> <li>2 Ensure no side load on cylinder</li> <li>3 Install rod boots</li> <li>4 Replace / install rod boots</li> <li>5 Adjust metering valves</li> <li>6 Replace/rebuild cylinder seals</li> </ol>
Shaft seal failure	<ol style="list-style-type: none"> <li>1 Loose seal retainer</li> <li>2 Seal break down</li> <li>3 Internal conveying pressure too high</li> <li>4 Misapplied</li> </ol>	<ol style="list-style-type: none"> <li>1 Take up on screws</li> <li>2 Replace seals</li> <li>3 Install high pressure shaft seals</li> <li>4 Contact Plattco</li> </ol>
Premature/excessive seat & flapper wear	<ol style="list-style-type: none"> <li>1 Valve slamming</li> <li>2 Misapplied</li> <li>3 Not installed properly</li> </ol>	<ol style="list-style-type: none"> <li>1 Adjust metering valves</li> <li>2 Contact Plattco</li> <li>3 Refer to page 11 of this manual</li> </ol>
Valve not sealing properly	<ol style="list-style-type: none"> <li>1 Moist sticky material</li> <li>2 Worn seat(s) and/or flapper(s)</li> <li>3 Seat(s) and/or flapper(s) not installed properly</li> </ol>	<ol style="list-style-type: none"> <li>1 Sharp edge seats (contact Plattco)</li> <li>2 Regrind/purchase new</li> <li>3 Refer to page 11 of this manual</li> </ol>

## **Troubleshooting**

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FOR TECHNICAL SUPPORT AND CUSTOMER SERVICE PLEASE CALL:

1-800-352-1731

(518) 563-4640

## Standard Paint Specification

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Supplier: Westfield Coatings

Product: Heat resistant aluminum 3 9-9SP3358

Type: Modified alkyd silicone

Viscosity: @ 75 degrees F 38-42 "z3

Sheen: Bright

Weight/gal: 8.10 lbs.

Solids/weight: 27.28 lbs.

Flash Point: 35 degrees F

For use on: Metal

Surface Prep: Clean and dry

## Valve Accessories and Options

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Accessory / Option	Function
Air cooling jets	Provides cooling for shafts and bearings in high temperature applications to prevent damage due to heat conditions.
Camlock cover conversion kits	Allows field conversion of standard bolted covers to “quick detach” camlock covers.
Cylinder heat shields	Protects air cylinders in high temperature applications to prevent damage due to heat conditions.
Cylinder rod boots	Protects air cylinder rods from pitting and corrosion, and prolongs rod seal life.
Drives	Air, gravity, electric (cam drive or direct drive), hydraulic, or manual.
Dust deflectors	Prevents wear of cover due to continuous exposure to the flow of material.
Dutchmen	Spool pieces mounted between valves to increase throughput.
Expansion joints	Connects valve assemblies with ductwork to minimize the effects of temperature expansion, vibrations, and torque.
Export crating	Secure crating to meet overseas transport requirements.
Flow controls	Provides air cylinder throttle control for valve opening and closing.
4-way solenoid valves	Controls air cylinders with pneumatic drives in conjunction with timers/PLCs.
Lantern rings	Shaft seals to prevent material leakage.
Mechanical shaft seals	Shaft seals for high pressure applications.
Mechanical limit switches	Senses the opening and closing of valves by means of mechanical contact.
NEMA enclosures	Dust tight, water tight, explosion proof enclosures available to suit customer requirements.
Proximity switches	Senses the opening and closing of valves by means of a non-contact magnetic field.
Rod end bearing seals	Prevents dirt from deteriorating rod end bearings.
Safety guards	OSHA approved for covering moving parts, mechanical linkages, air cylinders, and gates.
Timers	Solid-state drive control.

FOR TECHNICAL SUPPORT AND CUSTOMER SERVICE PLEASE CALL:  
 1-800-352-1731  
 (518) 563-4640

## Ordering Replacement Parts

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When ordering genuine Plattco replacement parts please have any, or all, of the following information available to insure the correct parts are ordered for your specific valve. This will also help in expediting your order.

- Part stock number (part number) – located on bill of materials supplied with valve when purchased.
- Serial number – located on the nameplate attached to the side of each valve.
- Valve bill of materials – supplied with valve when purchased.
- Valve assembly drawing – supplied with valve when purchased.
- Model number – located on the nameplate, valve assembly drawing, and bill of materials.
- Original purchase order, contract number, or Plattco order number.

### Returned Goods Policy

If Plattco Corporation has approved and issued a RGR authorization number to the original purchaser, parts and/or valves may be returned by the purchaser for credit within 90 days of Plattco Corporation's shipment. As long as the parts and/or valves were not custom designed, and they are returned in their original condition and packaging. Once returned and accepted, a credit will be issued for the original invoice price, less 25% restocking charge on complete valve assemblies and less 40% restocking charge on parts.

# APPENDIX

# Start-up Procedure

## APPENDIX A

### Valves with Standard Packing Shaft Seals

Plattco Double Flap Airlock® Valves are built to operate over 3,000,000 cycles per year. Simple maintenance procedures will result in long term, low cost performance.

- I. At Start-Up
  - a. Refer to APPENDIX C for airline & electrical layout.
  - b. Inspect and adjust air supply pressure regulator to maintain optimum 80 psig pressure.
  - c. Mount the FRL (Filter/Regulator/Lubricator assembly), if required, in a position above the valves as described on page 5 of this installation manual.
  - d. Make sure all fasteners are tight.
  - e. Make sure all lubrication points are adequately greased.
  - f. If shaft seal leakage is evident, take up on seal retainer. The first day is critical for proper shaft seal break-in.
  - g. Integrate a routine Plattco valve maintenance schedule with plant maintenance.
- II. After Start-Up
  - a. Weekly
    - i. Check lubricator oil level (if applicable).
    - ii. Lubricate grease fittings.
  - b. Monthly
    - i. Check fasteners for tightness.
    - ii. Check cylinders for leakage.
- III. General Maintenance
  - a. Whenever seats or covers are removed or replaced, gaskets should be replaced. Worn or torn gaskets should not be reused. Not using gaskets will void all warranties.



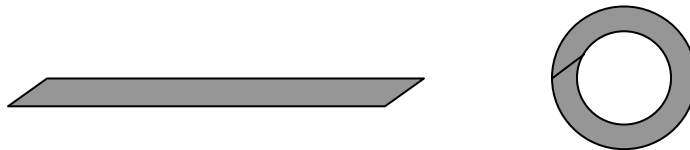
# Installing Shaft Seals

## APPENDIX B

### Standard Packing Shaft Seals

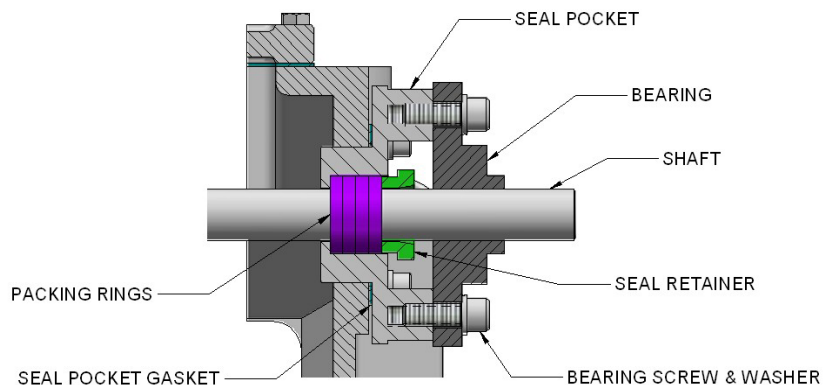
The importance of packing the valve correctly cannot be overemphasized. Many valve shaft seal leakage issues are due to incorrect packing installation.

1. Remove all existing packing.
2. Clean packing pocket and shaft thoroughly. Examine all parts for wear or scoring. Any parts with excessive wear should be replaced.
3. Be sure to use the correct size packing. If you are unsure of what size packing to use, contact Plattco Corporation.
4. If packing is not pre-cut, cut into separate rings – do not wind packing into the packing pocket. Packing rings should be cut with a skive joint, see illustration below.



Cut and test the first ring for fit – this can later be used as a template for additional rings. **HINT:** To cut packing that is soft, or has a tendency to fray; apply a small piece of tape where the cut is to be made.

5. Install packing one ring at a time. Skive joints must be staggered and be sure all packing is clean and has not picked up any dirt during handling.
6. Set packing. Slide a piece of pipe, or similar object, over the shaft and hit packing together.
7. Install seal retainers. Tighten seal retainer screws until to the point where heavy resistance to tightening is felt. During this time, manually open and close the valve to determine ease of opening. Do not tighten seal retainer screws to the point the valve won't open and close freely.
8. After the valve has operated a day or so tighten the seal retainer screws slightly. If leakage is occurring, tighten screws until leakage stops.
9. Safety wire all seal retainer screws after adjusting.



Typical valve seal section