

# Airlocks & Diverters



Reliability, Strength  
& Quality



## Airlock Knowledge Ensures Efficient and Effective Airlock Selection

MAC Equipment believes that the more knowledge the customer has, the more efficient and effective his airlock selection will be.

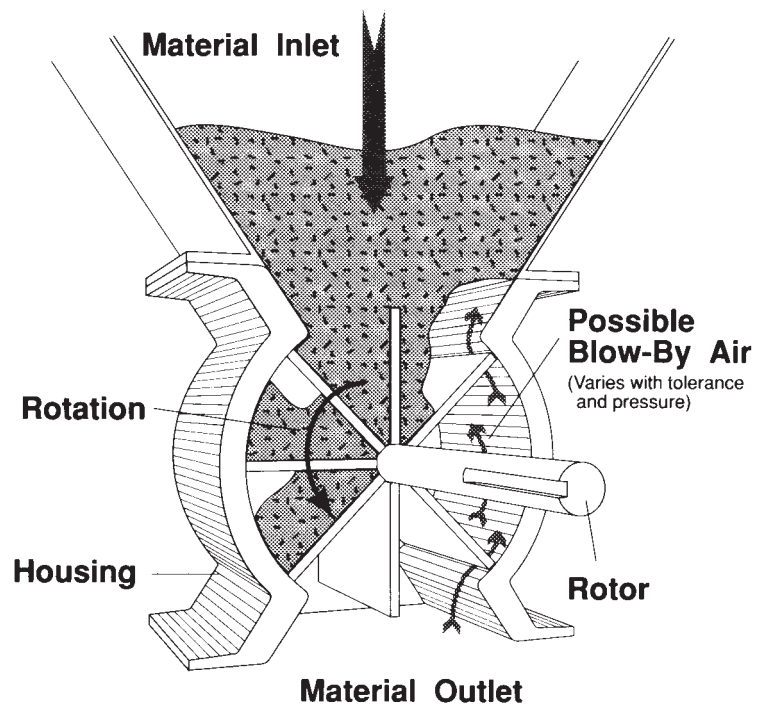
## What is a Rotary Airlock?

A rotary airlock (also known as a rotary feeder or valve) consists of a housing, a rotor and shaft assembly, two end plates, seals and bearings, a motor and drive assembly. The assembled rotary airlock acts as a rotating paddle wheel inside the housing, moving the dry bulk solid from the top of the rotation (inlet) to the bottom of the rotation (discharge).

An airlock literally acts as an air lock between its IN and OUT ports, impeding the flow of air through its vanes and pockets, while moving material in a continuous rotating motion.

Airlock performance relates directly to the material being handled and the applications. Our sales representatives and engineers are experienced at matching the right airlock to a specific application need.

Airlocks play an important role in material conveying and processing systems. An improperly applied airlock can lead to poor efficiency, extra maintenance and operator manpower, product degradation, equipment wear and replacement, and lost production due to process shutdowns. The annual cost of any of these problems can easily exceed the cost of the equipment.



## High Efficiency (HE) Airlocks

Engineered and manufactured to provide high-quality reliable service during continuous on-stream duty. Features angled cast inlets to reduce shear and distribute wear. Ideally suited for applications in which adjustable tip to bore tolerances need to be maintained and it is not convenient to remove the airlock from service. The removable inspection panel facilitates that requirement and allows easy access to the adjustable tips.



## Multi Duty (MD) Airlocks

A highly universal airlock designed for rugged service. Suitable for use in dilute phase vacuum, pressure or combination vacuum/pressure pneumatic conveying systems with a maximum differential pressure of 15 PSI. High temperature (up to 450° F) and wear resistance designs also available. Flange patterns of many competitive valves can be matched providing easy replacement. The MD40 through MD260 features a class 40 gray iron housing with 217 Brinell hardness for greater strength and wear resistance.

## TS4 Seal

MACT S4 Seals are designed to provide superior sealing capabilities even in severe operating conditions. They are available on the MD, RAM, HE and HD style airlocks.

Features:

- ▶ Requires no adjustments to maintain seal integrity
- ▶ Requires no maintenance
- ▶ Designed to last as long as the airlock bore
- ▶ Proven performance
- ▶ Air purging the seal is optional



## Round Airlock Multi-Duty (RAM)

The MAC RAM Airlock uses a lot of the same design features as the MD Airlock, but includes round, flanged inlet and outlet connections with 150# drilling. The basic valve is designed for 15 PSI differential pressure service and comes complete with a fabricated, machined, eight-vane open end rotor. The RAM is available in six sizes with a broad range of options and accessories to fit most any application including: closed end rotors, adjustable tip rotors, abrasion resistant coatings and elevated temperature service.



## MTA Airlocks

Heavy duty cast, precision-machined valves designed for applications requiring a valve capable of operating at differential pressures of up to 30 PSI. The design of the valve, complete with 150# drilling on the inlet and outlet connections, makes it the logical valve choice for high pressure conveying applications or CDP systems. The MTA is available in cast iron, anodized aluminum and stainless steel versions with a wide variety of options and accessories.

## High Pressure (HP) Airlocks

The HP is ideal for applications requiring a valve suited for operating in the range of 30-60 PSI. All HP airlocks are standard with machined tapered 316SS cast housing with ceramic bore and endplates. Rotor clearance is adjustable by sliding the tapered rotor into the tapered housing. HP08 - HP12 airlocks have 10-vane rotors; HP14-HP16 have 12-vane rotors. The HP features continuous product contact area welds, free of cracks and crevices.



## Heavy Duty (HD) Airlocks

MAC Heavy Duty Airlocks are used in pneumatic conveying systems and gravity discharge of filters, cyclones, storage tanks, and as volumetric feeders. HD Airlocks are available in 8 standard sizes, ranging from .175 CFR to 16.6 CFR. They are available in cast iron construction (HD8x6 through HD24x24) or fabricated carbon steel (HD30x30 and HD36x36). HD Airlocks are built rugged, but offer an economical solution to any rotary airlock need.

## Convey Heavy Duty (CHD) Airlocks

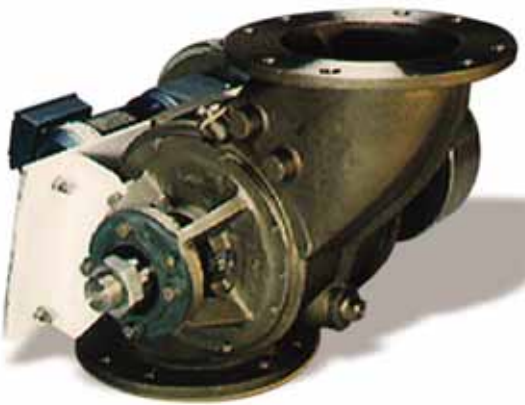
The MAC CHD (the "C" stands for conveying) Airlocks are designed for pressure or vacuum pneumatic conveying applications where the system requires very large conveying rates. Each CHD unit features a heavy-duty, 12-vane machined rotor, machined housing, oversized shaft and bearings to reduce shaft deflection at higher differential pressures. The CHD is available in several sizes with a wide range of options and accessories.





## FS and FR Airlocks

Fabricated Square and Fabricated Round Airlocks are equipped with flexible wiper blade rotors. These flexible blades provide superior handling for stringy or fibrous products. This design is used in applications where little or no pressure differential is present across the inlet or outlet ports. Standard units are designed for differential pressures of 20" WC and operating temperatures up to 185°F.



## SEA Airlock

The Side Entry Airlock contains offset inlet and outlet ports to reduce product shearing. It is used primarily with extremely hard pelletized or chip material. With the valve's side entry inlet and outlet ports, this airlock can work in situations where the typical drop-thru airlocks can not. The SEA valve is available in cast iron, stainless steel or anodized aluminum construction.

## CV Valve

The Conveying Valve blow-thru design allows the airlock to meter product from the rotating pockets directly into the conveying line. The CV is available in either baffled (style A) or non-baffled (style B) inlet arrangements. The CV valve is ideal in applications with limited head height, where a conventional drop-thru valve with blow-thru adapter will not fit.



## Quick Clean Airlock

These sanitary airlocks are designed for precise feeding in heavy, medium or light sanitary applications. USDA and FDA approved, these valves are ideal for regulated food and pharmaceutical processes. Easy to clean, the MAC drop-thru airlock is an excellent choice when a sanitary design is required.





## RV

The RV rotary valve is a high efficiency airlock with minimum leakage blow-back. Its inboard bearings provide the airlock with maximum shaft support and minimize rotor deflection. The RV features double opposed lip seals that protect the inboard bearings from product infiltration. The RV is designed for food applications in wash-down environments, but can be used in any other industrial application as well.

## OBRV Valves

The OBRV valve is a high efficiency airlock with minimum leakage blow-back. It is similar to the RV valve except with outboard bearings. The OBRV contains shaft braided packing seals that are most frequently used where product contact could damage the seals and cause bearing failure.



## WG Airlock

The WG Airlock is a fabricated wiper style airlock. It has a fabricated non-machined housing with a 6-vane urethane flex tip rotor. With a high capacity through-put, the WG is ideal for handling wood and grain dust from a dust collector hopper discharge.

## Airlock Drives

All MAC airlocks can be purchased with or without drives. MAC offers airlock drives as replacements or for use with bare MAC airlocks. There are two types of drives offered: right angle and parallel shaft.

### Right Angle

- ▶ Most commonly used
- ▶ Increases required headroom
- ▶ Less expensive than the Parallel Shaft arrangement

**For use on:** • MD • HD • HE • FS • WG  
• RAM • FR

### Parallel Shaft

- ▶ Motor sets parallel to rotor and housing
- ▶ More efficient than right angle drive
- ▶ Lower height restrictions
- ▶ Available on all MAC airlocks

**Standard on:** • RV • HP • OBRV • CV • MTA  
• Quick Clean

## Diverters

We also provide a versatile range of product and clean air diverters, which are available in 22.5 degree, 30 degree, 45 degree and 90 degree deflection angles for use in diverting air-conveyed or gravity-flow products into either of two destinations or from either of two sources to one destination.

## Product Diverters

### PT 45 Diverters

Features a tunnel that rotates 45 degrees port to port with no contamination. This valve includes a positive food grade rubber silicone seat at each port, and can be used in convey line applications operating at line pressure up to 5 Barg. Units are available in either aluminum or 315 stainless steel construction.



### PV Diverters

Are available in both 30 degree and 45 degree angles with port to port rotation of 150 degrees. Equipped with a plug, these diverters are designed for powder handling applications at line pressures up to 1 Barg. Plus they feature machined housings with Teflon packing gland seals, bronze shaft bushings and flanged PN10 or ASA 150 LB drilling inlet and outlet connections. Valves are available in aluminum or stainless steel construction.

### BV Diverters

Are available in both 30 degree and 45 degree angles with port to port rotation of 150 degrees. This valve is designed for pellet handling applications at line pressures up to 1 Barg and has a machined housing with Teflon packing gland seals, bronze shaft bushings and flanged 68 kg. drilling inlet and outlet connections. Valves are available in either aluminum or stainless steel construction.

## Sealed Blade Line Diverters

These valves divert product at a 30 degree angle. This valve features a heavy-duty wear blade with a synthetic polymer insert to seal against the valve and plates.



## SD Diverters

Discharge into scale hoppers and feature a stainless steel diverting blade and extended spout to minimize carry-over of product from the scale hopper. The valve includes a replaceable resilient urethane sleeve to provide a tight seat for the diverting blade.

## YV Diverters

These valves feature a stainless steel diverting blade that diverts at a 22.5 degree angle. The valve includes a replaceable resilient urethane sleeve to provide a tight seat for the diverting blade. Units are available in either cast iron, cast aluminum, or stainless steel and are designed for system operations up to 1 Barg.

## Air Diverters

### AD Air Diverters

The AD Air Diverter is designed to direct the flow of clean air from an air source to one of two use points. It can also be used for one of two air sources delivering to one use point.

### DV Dump Valves

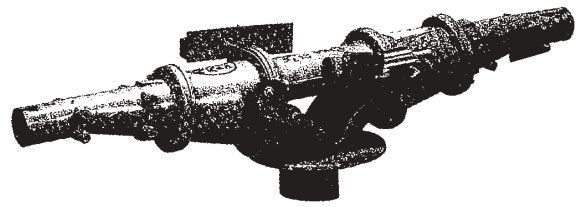
Designed to direct the flow of clean air from a vacuum filter receiver, or loader, to a vacuum source, the dump valve allows multiple vacuum receivers configured with the valve to share one common vacuum blower.



## Contact Us

To learn more about our range of pneumatic conveying and air filtration solutions, please contact us at:

**1-800-821-2476**



## Gravity Flow Diverters

Gravity Flow Diverters feature a urethane seal sandwiched between 3mm. plates and include flanges on all connections. Gravity flow diverters are for use in gravity-flow systems only, operating at pressures less than 50 mbar and temperatures less than 25 degrees C.

### GA Diverters

Designed to divert product flow from one source to two use points within a gravity system. The angle of each leg is 30 degrees off vertical center line.

### GY2 Diverters

Designed for gravity systems with one straight through leg and a second leg to divert product flow at 30 degrees.

### GY3 Diverters

Are three-way, gravity-flow product diverters.



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