

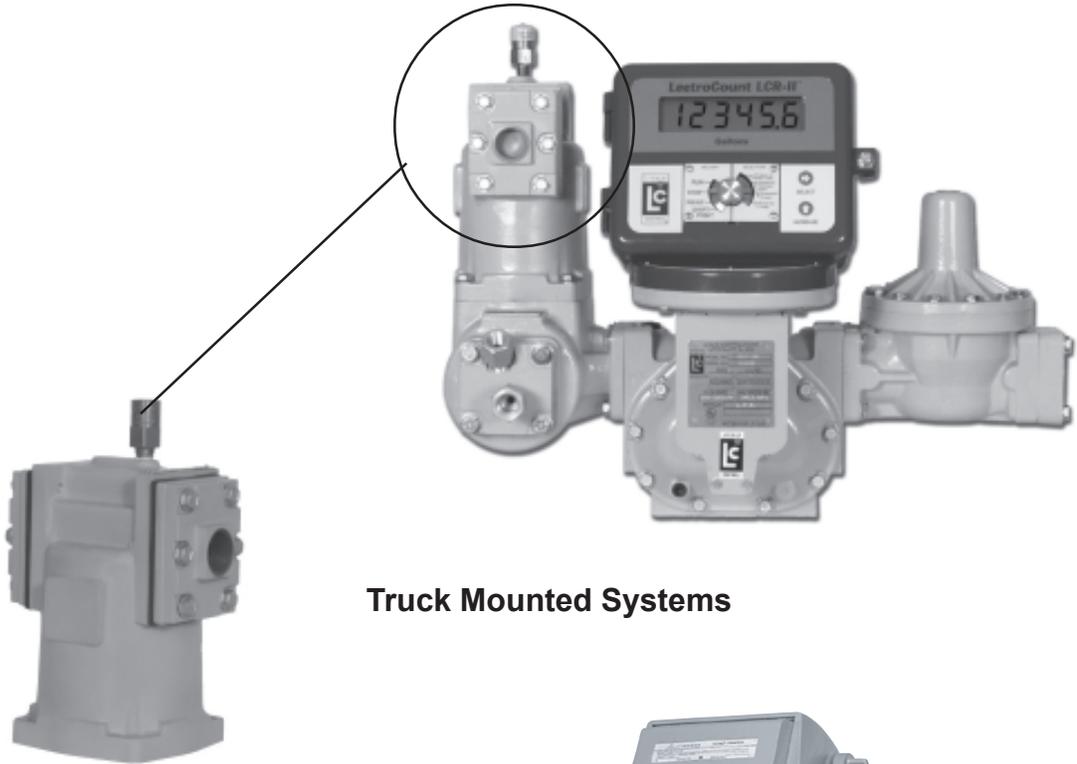


# Installation Manual

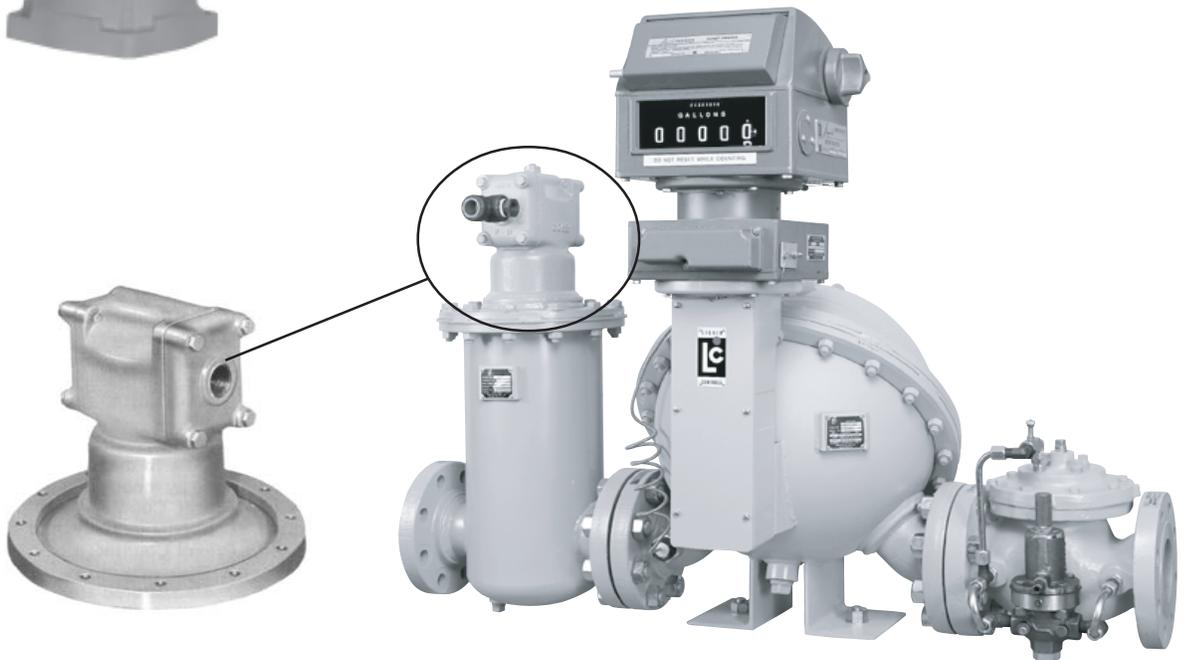
## Air & Vapor Eliminators

**LIQUID  
CONTROLS**  
A Unit of IDEX Corporation

**IDEX**  
IDEX CORPORATION



**Truck Mounted Systems**



**Load Rack or Bulk Plant Systems**

Installation: M300-10

[www.lcmeter.com](http://www.lcmeter.com)

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## Publication Updates and Translations

The most current English versions of all Liquid Controls publications are available on our website, [www.lcmeter.com](http://www.lcmeter.com). It is the responsibility of the Local Distributor to provide the most current version of LC Manuals, Instructions, and Specification Sheets in the required language of the country, or the language of the end user to which the products are shipping. If there are questions about the language of any LC Manuals, Instructions, or Specification Sheets, please contact your Local Distributor.

### **WARNING**

- Before using this product, read and understand the instructions.
- Save these instructions for future reference.
- All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of equipment and/or systems in accordance with all applicable codes and ordinances.
- Failure to follow the instructions set forth in this publication could result in property damage, personal injury, or death from fire and/or explosion, or other hazards that may be associated with this type of equipment.

# About LC Air and Vapor Eliminators

## What LC Air and Vapor Eliminators Do

The Liquid Control's vapor and air eliminators are designed to remove free air or vapor from the system before the air or vapor enters the measuring chamber. The combination of the vapor eliminator with the differential valve or with the air check valve assures that only liquid will flow through the metering system, thereby providing the most accurate liquid measurement.

The LC Air and Vapor Eliminators consist of a housing that contains a float assembly. The float assembly, in combination with flexible reed strips and two orifice plates

controls the elimination of free air and/or vapor through ports in the housing. Because of the design of the housing and its internal float assembly, the elimination of the free air and/or vapor occurs instantly and continuously as vapor or air enters the system. The following generic description explains how the air/vapor eliminators work. The specific shapes of the housings may vary depending on the specific model. For exact shapes and components, see the cross sectional diagram for your specific model.

## How LC Air and Vapor Eliminators Work

### The Housing

The housing is comprised of a chamber that is open at the base for product to enter. It has one small rectangular opening centered on each of two of the opposing sides. Covering each rectangular opening is a valve plate. The valve plate has a vent port in the center section of the plate. The vent port is either an oval or circular hole. The valve plate is sandwiched between the housing and the cover plate. The cover plate has a circular hole for connection to an external pipe for venting.

### The Float Assembly

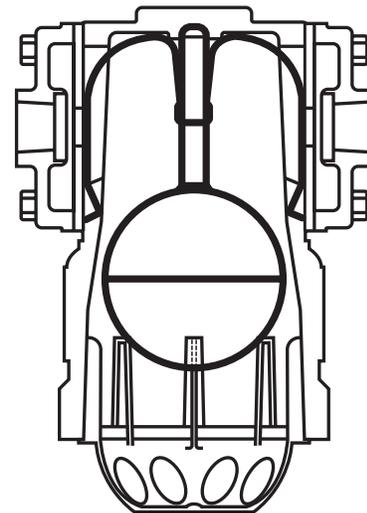
Inside the housing is the float assembly. The float assembly is made up of a float that has a stem assembly attached to its top. Attached to each of the two sides of the stem assembly is one stainless steel reed strip. Each reed strip is attached to the outside of the housing at the base of one of the rectangular openings.

### Eliminating the free air/vapor

Product is pumped through the system and enters the air/vapor eliminator. If free air/vapor is present, the pumping system moves the free air/vapor into the air/vapor eliminator. Once in the air/vapor eliminator, the air/vapor rises and vents from the center vent ports. Free air will continue to vent out from the vent ports due to the pressure created by the pumping system until product re-enters the air/vapor eliminator housing.

As the product enters, it displaces the air allowing the float to rise. As the float rises, the two reeds cover the vent ports. This stops the venting of air and prevents any product from leaking out through the vent ports. If free

air/vapor enters the system, it will rise and displace the liquid. As the liquid level drops, so will the float. As the float drops, the two reeds are drawn away from the center vent port and the free air/vapor vents from the system. This cycle repeats any time free air or vapor enters the metering system.



# About LC Air and Vapor Eliminators

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## Features

Liquid product entering a meter usually contains free or entrained air or vapor. The meter will measure both the liquid and the air or vapor, resulting in inaccuracies. An air or vapor eliminator is used to vent free air or vapor at the meter inlet allowing the meter to measure just liquid product.

### LC Air Eliminator advantages include:

- High venting capacity ... greater than the open area of a 3/4 inch pipe.
- Positive seal maintained at any pressure up to rated maximum for the system.
- No wearing parts, no wear on orifice seats, no need for complicated compound valve mechanisms.
- Valve will open against higher differential pressures than other manufacturers.
- Air eliminator response is instantaneous ... no lost motion.
- No critical adjustments to make ... may be serviced externally.

## Accessories

### Pipe Adapters:

Pipe adapters are used in the installation of aluminum and cast iron high mount air eliminators when a Liquid Controls strainer is not used. This option is not available for stainless steel air/vapor eliminators.

### Limited Bleed Tee:

The limited bleed tee is used for proper operation in systems that combine an air eliminator with an air check valve or a vapor eliminator with a differential valve. The Limited Bleed Tee must be used with the following equipment:

- Bulk plant air eliminators
- M-7 cast iron meters
- M-30 cast iron meters
- MS series meters (steel case)

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## Safety Procedure

### **WARNING**

Before disassembly of any meter or accessory component, **ALL INTERNAL PRESSURES MUST BE RELIEVED AND ALL LIQUID DRAINED FROM THE SYSTEM IN ACCORDANCE WITH ALL APPLICABLE PROCEDURES.** Pressure must be 0 (zero) psi. Close all liquid and vapor lines between the meter and liquid source.

For **Safety Rules Regarding LPG**, refer to **NFPA Pamphlet 58** and local authorities.

Failure to follow this warning could result in property damage, personal injury, or death from fire and/or explosion, or other hazards that may be associated with this type of equipment.

# The Line of LC Air Eliminators

## Truck Systems

### Aluminum High Mount Air and Vapor Eliminators

For use with M-5, M-7, M-10, M-15, M-25, M-30, M-40, M-60 and M-80 meters. Typically installed with F7, F15, and F30 strainers.

**Working Pressure:** 150 PSI



## Bulk Plant Systems

### Steel Air and Vapor Eliminators

For use with MS, MSAA, and MSA series steel case meters. Installed with FS, FSAA, and FSA series strainers.

**Working Pressure:** Three models available - 150 PSI, 275 PSI and 300 PSI



## High Pressure Aluminum Air and Vapor Eliminators

For use with MA-4, MA-5, and MA-7 and MA-15 meters. Typically installed with the FA7 strainer.

**Working Pressure:** 350 PSI



## Low Mount Bulk Plant Air Eliminators

For use with aluminum M or MS series meters.

Choices of 3, 4, 6 and 8 inch flanged connections. Offered in single and dual head models to provide high venting capacity for metering into storage systems.

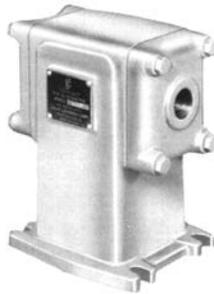
**Working Pressure:** 150 PSI



## Cast Iron High Mount Air Eliminators

For use with M-7 meters. Can be installed with F7 strainers.

**Working Pressure:** 150 PSI



## Industrial / Process Systems

### Stainless Steel High Mount Air Eliminators

For use with M-5 class 8 and M-7 class 8 meters. Installed with F7 class 8 strainers.

**Working Pressure:** 150 PSI



## Low Mount Air Eliminators

For use with customer's air elimination system, such as filter separator.

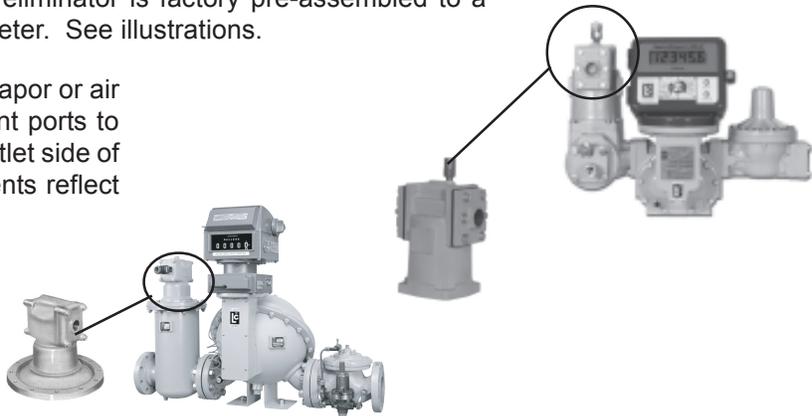
**Working Pressure:** 150 PSI



# Air Vapor Eliminator Field Piping

On many metering systems, the air/vapor eliminator is factory pre-assembled to a strainer assembly on the inlet side of the meter. See illustrations.

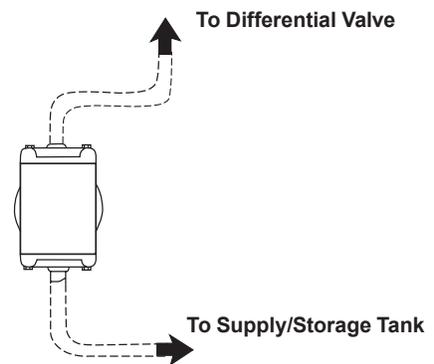
All that is required in the field is to make a vapor or air line connection from one or both of the vent ports to the storage/supply tank or a valve on the outlet side of the meter. The particular piping requirements reflect the specific system as described, below.



## Liquids Under Pressure (LPG and anhydrous ammonia)

For systems involving liquids under pressure, install field piping as follows:

- Pipe one vent port on the vapor eliminator to the bonnet on the differential valve, and
- Pipe the other vent port on the vapor eliminator back to the vapor space in the storage/supply tank (if this is not practical due to distance, contact the factory for recommendations).

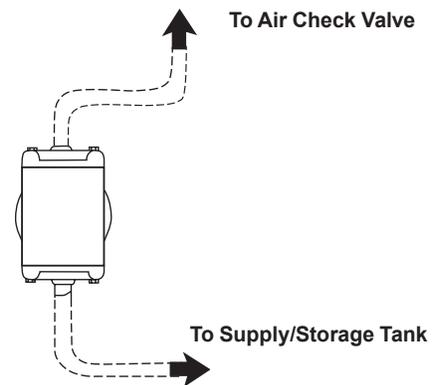


## Liquids at Atmospheric Pressure (Aluminum and Stainless Steel Hi-Mount Air Eliminators)

For Systems involving liquids not under pressure (such as fuel oil, gasoline, etc), install field piping as follows:

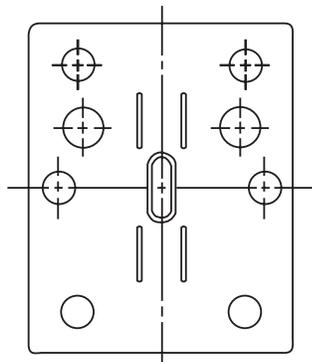
### Systems with Air Check Valve on the outlet side of the meter

- Pipe one vent port on the air eliminator to the air check valve
- Pipe the other vent port on the air eliminator to the air space in the storage/supply tank



NOTE: Aluminum and stainless steel high-mount air/vapor eliminators are supplied with a limited bleed valve plate on one side of the eliminator. An air/vapor eliminator can be identified as having a limited bleed valve plate by a notch in the top edge of the valve plate, as shown in the illustrations below.

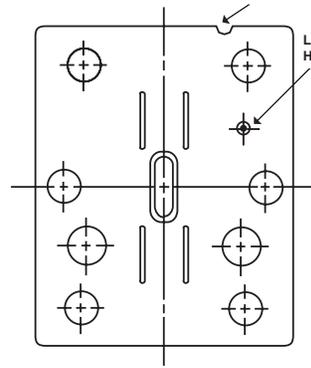
**STANDARD VALVE PLATE**  
(Buna, Viton or EPT Seals)



Identification Notch

Limited Bleed Hole

**STANDARD VALVE PLATE**  
(Buna, Viton or EPT Seals)



# Air Eliminator Field Piping

The limited bleed valve plate serves two purposes:

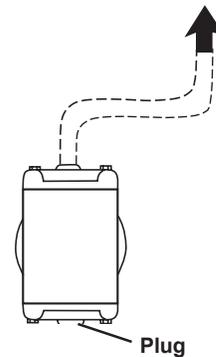
1. It allows the complete closure of the Air Check/Differential Valve. This is accomplished because the small size of the bleed hole (1/32") in the valve plate provides a restriction so that some of the system pressure is directed to the Air Check/Differential Valve to force closure.
2. It also allows for the slow controlled opening of the Air Check/Differential Valve. As liquid is reintroduced to the meter, the valve will start to open. The system pressure in the vent line will bleed off slowly through the limited bleed hole preventing the valve from opening abruptly.

Piping of limited bleed air/vapor eliminators:

Connections of the Air Check/Differential Valve to the Eliminator can normally be made to either vent port on the eliminator. **Exception:** Air Eliminators supplied with increased venting capacity valve plate. In this case, the vent line from the air check valve should be connected to the side of the Air Eliminator with a limited bleed valve plate (plate with the notch in this top). The increased venting side should then be piped back to storage.

## Systems without Air Check Valve on the outlet side of the meter

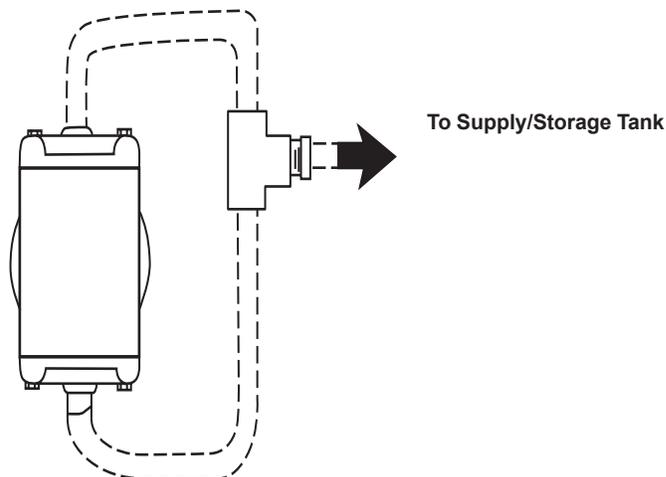
- Pipe one vent port on the air eliminator to the vapor space on the storage/supply tank
- Plug the other vent port on the air eliminator using a thread plug



## **Steel Low-Mount and Cast-Iron Hi-Mount Air Eliminators**

For systems with steel low-mount or cast-iron hi-mount air eliminators, install field piping as follows:

- Using a tee, pipe both vent ports on the air eliminator back to the storage/supply tank, as show in the illustration.



# Air Eliminator Maintenance

## **⚠ WARNING**

Before disassembly of any meter or accessory component, **ALL INTERNAL PRESSURES MUST BE RELIEVED AND ALL LIQUID DRAINED FROM THE SYSTEM IN ACCORDANCE WITH ALL APPLICABLE PROCEDURES.** Pressure must be 0 (zero) psi. Close all liquid and vapor lines between the meter and liquid source.

For **Safety Rules Regarding LPG**, refer to **NFPA Pamphlet 58** and local authorities.

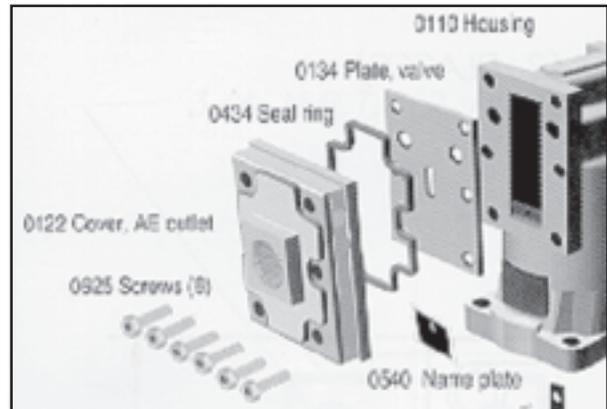
Failure to follow this warning could result in property damage, personal injury, or death from fire and/or explosion, or other hazards that may be associated with this type of equipment.



**To replace the valve plates and seal ring:** Remove the cover screws from the air eliminator cover with a 1/2 inch wrench or socket.

This action frees the cover, seal ring and valve plate from the housing.

Replace the seal ring and valve plate and reassemble. Tighten cover screws securely to a torque of x ft-lbs.



**To replace the valve reeds** the float and baffle cup disassemble as follows:

Remove the air eliminator from the strainer by removing the (4) screws and washers at the base.

Remove the baffle plate and the baffle cup (aluminum air eliminators only) from the housing 0110.



To release the air eliminator internals remove the screws with a standard screwdriver.

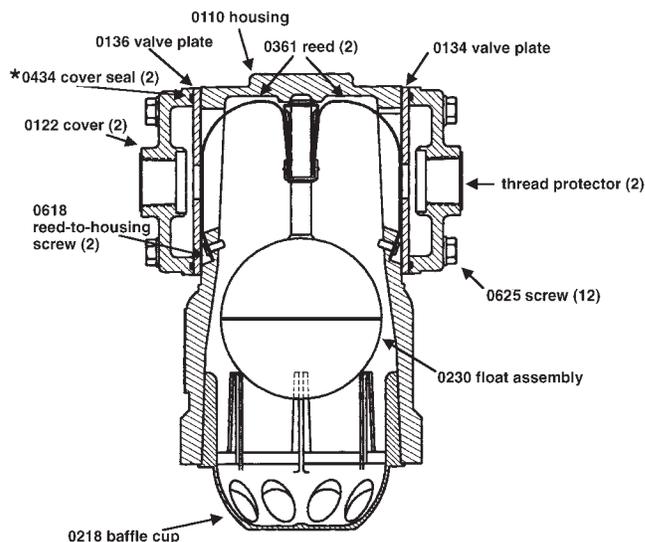
## Aluminum High Mount Air and Vapor Eliminators:

### A8180 Series

For use with F-7, F-15 and F-30 strainers and high capacity aluminum strainers. Typical products include Gasoline, Fuel Oil, etc.

High Pressure Aluminum Air and Vapor Eliminators:

For use with the FA-7 and FA-15 strainers. Typical products include LPG and Anhydrous Ammonia.



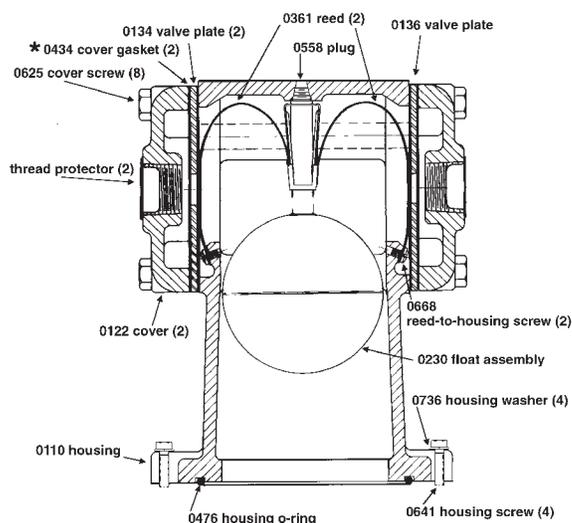
\* (4) required on air eliminators with kalrez seals

Item numbers shown. Refer to Bill of Material supplied with your meter / air eliminator for Part Numbers. Always use Part Numbers (not item numbers) when ordering replacement parts.

## Cast Iron High Mount Air and Vapor Eliminators:

### A8976 Series

For use with F-7 strainers and M-7 Class 7 meters. Typical products include Chlorinated Solvents.



\* (4) required on air eliminators with kalrez seals

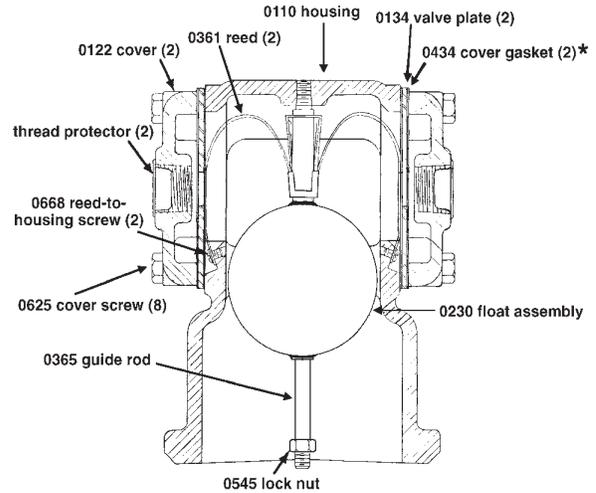
Item numbers shown. Refer to Bill of Material supplied with your meter / air eliminator for Part Numbers. Always use Part Numbers (not item numbers) when ordering replacement parts.

# Parts

## Stainless Steel High Mount Air Eliminators:

### A8985 Series

For use with F-7 stainless steel strainers and class 8 meters. Typical products include acidic solutions.



**\* (4) required on air eliminators with kalrez seals**

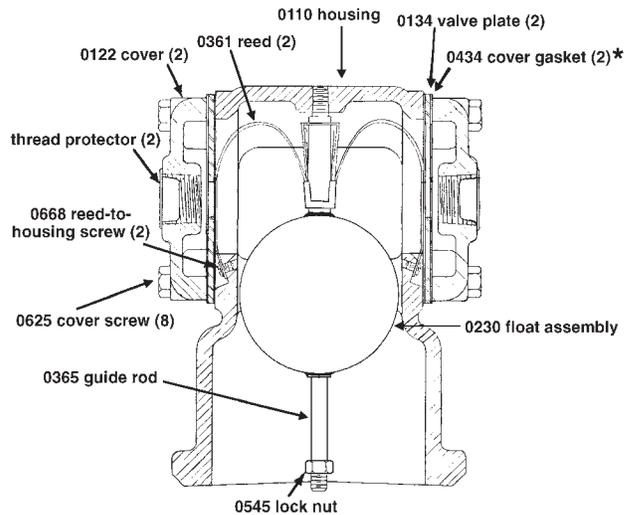
Item numbers shown. Refer to Bill of Material supplied with your meter / air eliminator for Part Numbers. Always use Part Numbers (not item numbers) when ordering replacement parts.

## Steel Air and Vapor Eliminators with Strainer Cover:

### A8930 Series

For use with FS, FSAA and FSA series strainers. Typical products include

Choice of 3" and 4" 150 lb flanges, and 3", 4" and 6" 300 lb flanges.



**\* (4) required on air eliminators with Kalrez seals**

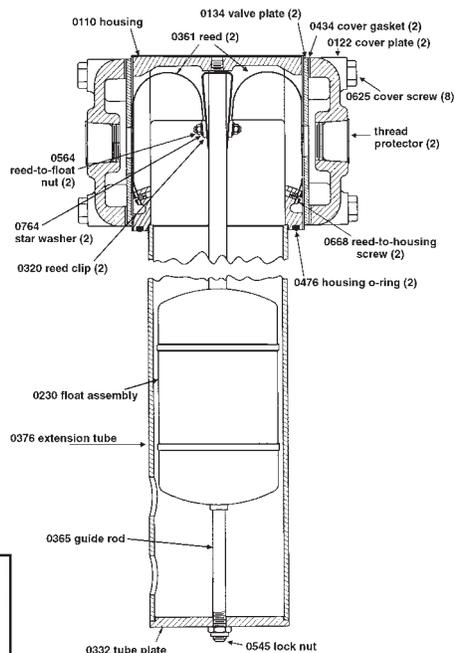
Item numbers shown. Refer to Bill of Material supplied with your meter / air eliminator for Part Numbers. Always use Part Numbers (not item numbers) when ordering replacement parts.

## Low Mount Bulk Plant Air Eliminators:

### A8950 Series

Offered in single and dual head models to provide high venting capacity for metering into storage.

Choice of 3, 4, 6 and 8 inch ANSI flanged connections.

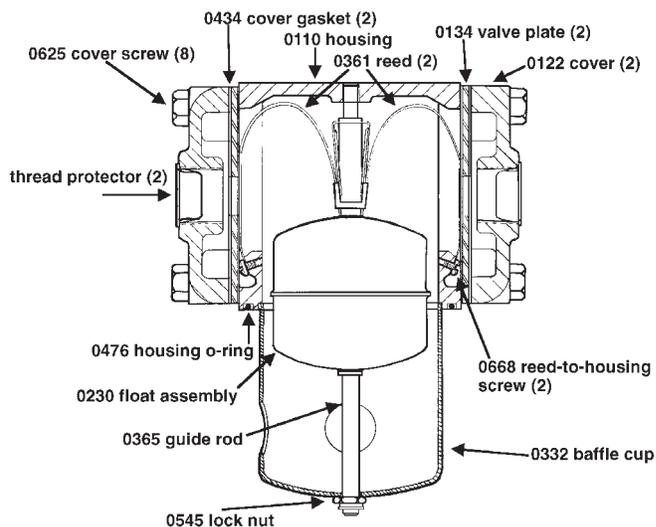


Item numbers shown. Refer to Bill of Material supplied with your meter / air eliminator for Part Numbers. Always use Part Numbers (not item numbers) when ordering replacement parts.

## Low Mount Bulk Plant Air Eliminators:

### A8175 Series

For use with the customer's air elimination system, such as a filter separator.



Item numbers shown. Refer to Bill of Material supplied with your meter / air eliminator for Part Numbers. Always use Part Numbers (not item numbers) when ordering replacement parts.



**Backed by our Worldwide reputation for  
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