Drum & Tote
DEF Closed Systems

Maintaining ISO 22241 DEF Purity From Fill to Dispense
Protecting SCR Technology

January 2010 EPA Mandate
- Reduce NOx Emissions
- New On-Road Diesel Medium & Heavy-Duty Vehicles

**DEF PURITY IS REQUIRED**
If Not Handled Properly...There Will Be Problems
- Detrimentally Affects SCR Performance
- Will Void Vehicle Warranties
- Causes Premature Catalyst Deactivation
- Fouling of Pre-filters & Injector Nozzles

Micro Matic offers the only proprietary 4 keyed, tamper-evident DEF Container Valve System that is Closed, Sealed & Secure from fill to dispense.

Stinger / Drum Pump
- OPEN

Probe / Dip Tube
- OPEN

Valve
- CLOSED

Contact Us For More Information
1-866-755-4477 • www.micromatic.com
To determine which packaging choice best suits your operating requirements you need to answer three simple questions:

1. What is the size of the fleet to be serviced, and how many truck miles driven?
2. What size package will deliver the greatest level of operating efficiency?
3. What is the most cost-effective distribution option, i.e. ONE-WAY, RETURNABLE or ON-SITE REFILLING?

**Distribution Options**

- **ONE-WAY** Fill – Transport – Dispense – Dispose / Recycle.
- **RETURNABLE / REFILLABLE** Fill – Transport – Dispense
  Return – Refill – Transport...
- **ON-SITE REFILLING** Fill - Transport - Dispense - Refill On-site
  Dispense - Refill On-Site...

**Container Size Options**

- **55 GALLON DRUM** supplies up to 11,000 miles*. Ideal for one or two trucks operations and can last several months.
- **275 GALLON IBC** supplies up to 55,000 miles*. IBC (Tote) is delivered by truck and requires unloading by forklift.
- **330 GALLON IBC** supplies up to 66,000 miles*. IBC (Tote) is delivered by truck and requires unloading by forklift.

*Above calculations based at 3% usage at average fuel economy of 6 miles per gallon. Container volume/mileage usage may vary depending on vehicle dosage rate.

**Solutions - EPV & RSV CLOSED SYSTEMS**

- Ensure ISO 22241
  DEF Purity
  CLOSED, SEALED & SECURE
  The Micro Matic CLOSED, SEALED & SECURE Container Valve Systems help maintain DEF purity from manufacturer to the end-user. Provides for tamper evidency and supports DEF Warranties.

For More Information 1.714.990.3940  
www.airbluefluids.com
EPV - Closed System

Economical Plastic Valve (EPV)

A tamper evident self-closing integrated container valve system that remains CLOSED, SEALED & SECURE throughout the service life of the container.

Upon disconnect, the container valve and coupler automatically seal closed to ensure DEF purity and packaging integrity.

The Micro Matic Difference

Low Cost
- Container Valve comprised of all plastic parts.
  - Eliminates dismantling time for disposal/recycling.

Durable & Reliable
Stainless steel dispense coupler construction provides many years of service life and protects your investment.

Extended warranty protects your investment:
- 3 Year Warranty - Dispense Couplers.

Quick & Easy to Use
- Simplified end-user working interface.
  - Connecting and disconnecting simple as "Turn, Click & Go".

Proprietary DEF Lock & Key System
- Connecting requires 3A Orange Pin Keyed Couplers and matching 3A Orange Cam Keyed Container Valve.
  - Controls and manages container access.

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Minimize Costs & Maximize Efficiencies

Keep Packaging Costs Low for Single Use Applications

The EPV Closed System is designed for ONE WAY/Single Use programs. Due to the service life of the container being single use, the container package consists of the lowest cost Closed System plastic container valve. At the fill station the end-user will be equipped with a robust stainless steel dispense coupler that can be used multiple times on many ONE WAY containers.

The EPV Closed System design will ultimately ensure a low cost packaging solution, and provide maximum efficiencies at the end-user location.

ONE WAY

![ONE WAY flowchart]

Fill - Transport - Dispense - Recycle/Dispose

When operations require the container package to be used once, emptied and disposed / recycled.

EPV Dispense Coupler - Instructions

**CONNECT**

1. Insert Coupler
2. Push Coupler Down
3. Turn Hose Clockwise
4. Coupler Clicks & Locks in Place

**DISCONNECT**

1. Pull up Lever on Side of Coupler
2. Turn Hose Counter-Clockwise
3. Pull Coupler up & Remove

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EPV Closed System

Dust Cover HDPE Plastic
Protect container valve from debris.

Tamper Evident Crimp-On Ring
Installed and secured over container valve and drum bung flange.
Protects from unauthorized removal of the Container Valve.

Dispense Coupler Stainless Steel
Liquid Outlet: 3/4" Barb attaches to dispense pump hose.
Stainless Steel #70 Micron Filter: Allows for displacement of air for dispensing and protect from particulates entering drum.
Keyed Connection: 3A Orange Male Key connects to 3A Orange Container Valve for dispensing.
For use by fill-station operator.

Container Valve Stainless Steel
Connects to Down Tube (#6) to create Container Valve Assembly.
Container Valve Assembly 2.5 x 5" buttress thread installs into Bung located over the Sump of the container.
Keyed Connection: Proprietary 3A Orange Female Key connects to 3A Orange Dispense Coupler to control and manage dispensing.

Down Tube Priming Tool Stainless Steel
Used to prime down tube before installing onto EPV container valve. See instructions on page 7.

Torque Wrench With 1/2" Drive
Connects to EPV Container Valve Installation / Removal Tool (#8). See Instructions on page 7.

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Container Valve - Installation Instructions

Create the EPV Container Valve Assembly

1. Priming Down Tube
Firmly insert Down Tube over Priming Tool until it touches the base and then remove.

2. Make the Connection
Firmly insert container valve bottom tube into Down Tube. Ensure Down Tube installs and touches base of container valve.

3. Check to Ensure Proper Assembly
Make sure that when inserting over container valve o-ring seal, the o-ring does not move out of groove and does not become compromised in the process.

Install & Secure EPV Container Valve Assembly into Container

1. Insert Container Valve to Container
Insert EPV Container Valve Assembly into a 2.5” x 5 buttress opening container. Firmly screw Container Valve hand-tight into container.

2. Check to Ensure Proper Down Tube Alignment to Bottom Sump
Drums: Use bung opening located directly above sump. IBC (Totes): Ensure Down Tube is positioned in the sump (bottom valve area of the tote).

3. Torque in Container Valve
Insert the EPV Container Valve Install / Removal Tool onto the 1/2” drive torque wrench and place into the EPV Container Valve. Torque clockwise to 12-15 ft./lbs.

4. Install Tamper Evidence
Place Tamper Evident Crimp-On Ring over Valve. Make sure it rests flat on the top surface of the container valve.

5. Secure Tamper Evidence
Place Crimp-On Tool over Crimp-On Ring and pull handles outward and down until handles stop.

6. Check to Ensure Proper Installation
Make sure Crimp-On Ring is secured over both the Container Valve and the Container bung molding.
**RSV - Closed System**

**Reusable Stainless Valve (RSV)**

A tamper evident self-closing spring actuated integrated container valve system that remains CLOSED, SEALED & SECURE throughout the service life of the container, from fill to dispense.

Upon disconnect, the container valve and coupler automatically seal closed to ensure DEF purity and packaging integrity.

**The Micro Matic Difference**

**Reusable (Reduces Costs)**
- Refill without cleaning or reconditioning.
  - When the container is emptied and all tamper evident seals are intact, the container package can be reused and refilled.
- Eliminates processing and cleaning time & cost.
- Increases operational efficiencies.

**Durable & Reliable**

Stainless steel construction provides many years of service life.

**Extended warranty protects your investment:**
- 5 Years - Container Valves.
- 3 Years - Dispense Couplers.
- 1 Year - Fill Couplers.

**Quick & Easy to Use**
- Simplified end-user working interface
  - Connecting and disconnecting simple as "Turn, Click & Go".

**Proprietary DEF Lock & Key System**
- Controls DEF dispense & fill access.
- Connecting requires 4 Pin Keyed Couplers and matching 4 Cam Keyed Container Valve.
  - Controls and manages container access.
Multi-Use

Distribution Options

Reduce & Reuse

Refill Without Cleaning or Reconditioning

The RSV Closed System is designed for Returnable/Refillable & On-Site Refilling programs. When the container is emptied and all tamper evident seals are intact, it can be reused and refilled without cleaning or reconditioning. This will ultimately reduce packaging, processing costs and increase efficiencies... the more you refill, the more you can save!

RETURNABLE / REFILLABLE

Install - Fill - Transport - Dispense - Return - Refill...

When your operations require the reuse, return and refilling at off-site locations.

ON-SITE REFILLING

Refill On-Site

When your operations require quick & easy on-site refilling via bulk delivery truck.

For More Information 1.714.990.3940
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RSV Closed System

**Key Elements**

**RSV Dispense Coupler**
For use by fill-station operator. Provides flow rate of 24 GPM.

- **Liquid Outlet:** 3/4" Barb attaches to dispense pump hose.
- **Keyed Connection:** 4 Pin Male Key connects to Container Valve for dispensing.

**RSV Fill Coupler**
For use by manufacturer and jobber to fill/refill from bulk and for on-site refilling in the field. Provides flow rate of 35 GPM.

- **Liquid Inlet:** 1" NPT Male Thread attaches to fill hose.
- **Vapor Recovery Outlet:** 1/4" NPT Female Thread attaches to hose from bulk tank to create a closed loop filling environment.
- **Keyed Connection:** 4 Pin Male Key connects to Container Valve for filling.

**RSV Container Valve**
Connects to Down Tube (#7) to create Container Valve Assembly.

- **Container Valve Assembly:** 2.5 x 5" buttress thread installs into center cap.
- **Keyed Connection:** 4 Cam Female Key connects to 4 Pin Couplers to control and manage filling & dispensing.

**Down Tube with Flex Bellows**
Located in IBC Sump for optimum product extraction. NOTE: Length varies based on size of container and installation type: 55 gallon drum, 275 & 330 gallon tote (center mount or top side mount installation).

**RSV Dust Cover**
Protects container valve from debris when dispense or fill coupler is not connected.

**RSV Tamper Evident Shipping Cap**
Protects container valve through transportation.

**Tamper-Evident Wire Seal**
Installed and secured through container valve eyelet, center cap and IBC eyelet. Protects from unauthorized removal of the Container Valve.

**RSV Container Valve Installation / Removal Tool**
Attaches to 1/2" Drive Torque Wrench to install the RSV Container Valve Assembly. Torques to 25 ft./lbs. For use by Installer only. See Instructions on page 11.

**Torque Wrench With 1/2" Drive**
Connects to RSV Container Valve Installation / Removal Tool #8. See Instructions on page 11.

**6" Center Cap Installation Tool**
Connects to Torque Wrench #9 to properly install 6" Center Cap. Torques to 55 ft./lbs. For use by installer only. See Instructions on page 11.

For More Information 1.714.990.3940
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RSV Closed System

Container Package Assembly

Container Valve - Installation Instructions

Create the RSV Container Valve Assembly

1. Before Installation
The Container Valve bottom tube contains Ridges, to ensure proper assembly the Down Tube Circlip must install over Ridges.

2. Make the Connection
Firmly insert container valve bottom tube into Down Tube. Ensure that the Circlip resides above the container valve bottom tube Ridges.

3. Check to Ensure Proper Assembly
Container Valve Assembly is properly installed when Down Tube is pressed against Container Valve Tube Base.

Install & Secure RSV Container Valve Assembly into Container

1. Insert Container Valve to Container
Before installing container valve, 6" center blue cap must be torqued to 55 ft. lbs. Next, insert RSV Container Valve Assembly into blue cap with 2.5 x 5 thread. Firmly screw Container Valve hand-tight.

2. Check to Ensure Proper Down Tube Alignment to Bottom Sump Drums: Use bung opening located directly above sump. IBC (Totes): Ensure Down Tube is positioned in the sump (bottom valve area of the tote).

3. Torque in Container Valve
Insert the RSV Container Valve Install / Removal Tool onto the 1/2" drive torque wrench and place into the RSV Container Valve. Torque clockwise to 25 ft./lbs.

4. Install Tamper Evidence
Insert 18" Tamper Evident Wire Seal through container valve, 6" Cap & Container eyelets.

5. Check to Ensure Proper Security
Double check to ensure all eyelets have been secured and pull wire tight.

6. Check to Ensure Proper Installation
Make sure Crimp-On Ring is secured over both the Container Valve and the Container bung molding.
RSV Closed System

Coupler Instructions

RSV Fill Coupler - Instructions

CONNECT

1. Insert Coupler
2. Turn Handle Clockwise
3. Push Down Handle
4. Handle Clicks, Locks & Remains Down

DISCONNECT

1. Pull Out Handle
2. Handle Unlocks & Releases Up
3. Turn Handle Counter-Clockwise
4. Pull up to Remove

RSV Dispense Coupler - Instructions

CONNECT

1. Insert Coupler
2. Turn Handle Clockwise
3. Push Down Handle
4. Handle Clicks, Locks & Remains Down

DISCONNECT

1. Push Down Handle Button with Thumb
2. Handle Unlocks & Releases Up
3. Turn Handle Counter-Clockwise
4. Pull up to Remove

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Returnable/Refillable - Inspection Procedures

- How To Ensure Container Packaging Integrity Before Refilling

Requirements for Refilling a Closed Returnable/Refillable Container Package

1. **Inspect Container**
   IBC/Tote and cage should be visually inspected for damage (punctures, leaks, forklift damage, etc.).

2. **Inspect Bottom Valve Handle**
   Ensure Bottom Valve Blue Handle is Closed as illustrated. Completely inspect for any leaks.

3. **Inspect Bottom Valve Tamper Evidence**
   Ensure tamper evident Mauser tape and Red Pin are intact. If compromised, unscrew black cap and check to ensure Foil completely covers outlet.

4. **Inspect Container Valve Tamper Evidence**
   Ensure tamper evident wire secures Container Valve, center blue cap and container eyelets.

5. **Check Tamper Evident Wire Serial Number**
   Registration number is required to match number on sales invoice. If it does not match or has been removed, the tote is viewed as contaminated and cannot be refilled.

6. **Inspect Container Valve**
   The RSV Container Valve should be inspected for dust and debris. If found, it should be removed with a clean cloth.
Now Online... DEF Closed Systems

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• Improve Operating Margins

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24/7 SUPPORT
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>> Go to www.micromatic.com
Click on Closed Chemical Systems to quickly find the information required to maintain DEF Purity, ensure Packaging Integrity and Maximize Operating Efficiencies throughout the entire supply chain...from fill to dispense.
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