



# TABLET COATING

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# PRECISE CONTROL ENSURES UNIFORM COATING

Tablet coating is a process that can be summarized as the application of an “edible paint” to the surface of a pharmaceutical dosage form. In the past, sugar coating was a common solution for coating tablets, but this process has many disadvantages. Modern tablet coatings are typically film coatings, flexible formulations that are applicable to a wide range of dosage forms (such as tablets, capsules, pellets, granules and drug crystals). The tablet coating process is complex, and involves parameters such as the spray pattern, drop size, and nozzle spacing (in addition to multiple other non-spray related parameters) which must all be precisely controlled in order to ensure uniform distribution of the coating material.

#### ONLINE RESOURCES

[Bulletin 684, A Guide to Spray Technology for Tablet Coating](#) ▶

[Bulletin 599C, Pharmaceutical & Biopharmaceutical Processing](#) ▶



### VMAU SPRAY SET-UPS

A spray set-up consists of a fluid tip and an air cap. Spray set-ups are interchangeable, but each set-up uses a different size needle. The VMAU can utilize a number of different spray set-ups depending on the desired performance. Reference the information below to determine the most appropriate spray set-up for your application.

### ANTI-BEARDING SET-UPS

Frequent shutdowns to clean coating material from air atomizing spray gun components have a serious impact on productivity. Anti-bearding spray set-ups can help to improve process quality, volume, and profitability in these situations.

### P-SERIES ANTI-BEARDING SET-UPS\*

The patent-pending P-Series Anti-Bearding Spray Set-Ups are designed to virtually eliminate nozzle build-up while greatly reducing product waste and maintenance downtime.

### PERFORMANCE DATA

Click on the link to view an interactive PDF with the following data for [VMAU Spray Set-Ups](#) ►



Anti-Bearding Set-Ups



[P-Series Anti-Bearding Set-Ups Bulletin 687B](#) ►

Data on Spray Set-Up(s)	Type of Data	Available Spraying Material(s) for Data Type
<b>SUVM113AAB</b> <b>SUVM113AABP*</b>	Coverage and Flow Rate	Water
	Drop Size Information	OPADRY®/ EUDRAGIT®
	Spray Velocity	OPADRY®/ EUDRAGIT®
<b>SUVM113AB</b> <b>SUVM113ABP*</b>	Coverage and Flow Rate	Water
	Drop Size Information	OPADRY®/ EUDRAGIT®
	Spray Velocity	OPADRY®/ EUDRAGIT®

\*P-Series anti-bearding spray set-ups are designated with a 'P' suffix. For the purposes of spray coverage, flow rate, drop size, and spray velocity, performance is approximately equivalent to anti-bearding spray set-ups. For performance data on other available spray set-ups not listed in this catalog, contact your local sales representative.

### SPRAY TIP: DRAMATICALLY REDUCE NOZZLE BUILD-UP

The patent-pending P-Series anti-bearding set-ups allow users to run their spray operations for up to two times as long as standard anti-bearding set-ups with minimal nozzle build-up, greatly reducing maintenance downtime due to cleaning or clogging.

Results after spraying OPADRY®. The P-Series cap is pictured after being sprayed for twice as long as the standard air cap.



Standard Air Cap

P-Series Air Cap

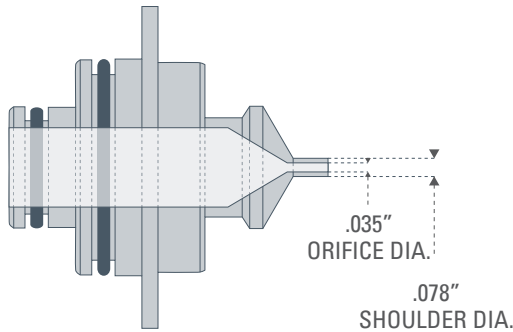
**DETERMINING SPRAY NOZZLE SET-UPS**

A VMAU spray set-up consists of a fluid tip and an air cap, each of which has its own part number consisting of several smaller numbers (as shown below) which correspond to basic characteristics, such as orifice size and diameter. Determining the correct size spray set-ups when placing an order is critical to ensure that you get exactly the performance you need from your spray nozzle. After viewing the example below, use the chart to choose the right spray set-up for your application.

VMAU Set-Up No.	Fluid Tip No.	Air Cap No.
<b>SUVM113AAB</b>	VMFAB3578	VMAAB113289-60
<b>SUVM113AB</b>	VMFAB4078	VMAAB113289-60

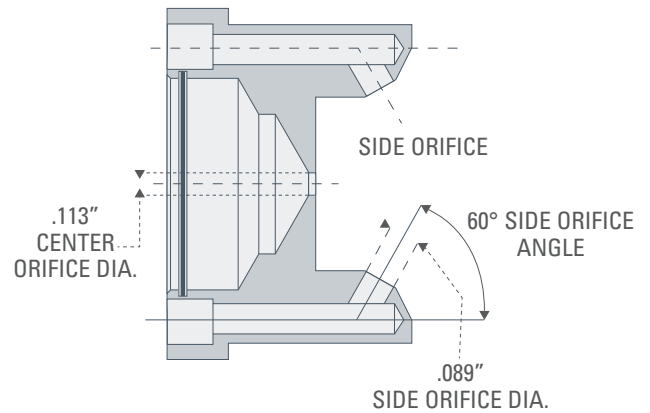
EXAMPLE: VMAU SET-UP NUMBER SUVM113AAB\*

Fluid Tip No. VMFAB3578



+

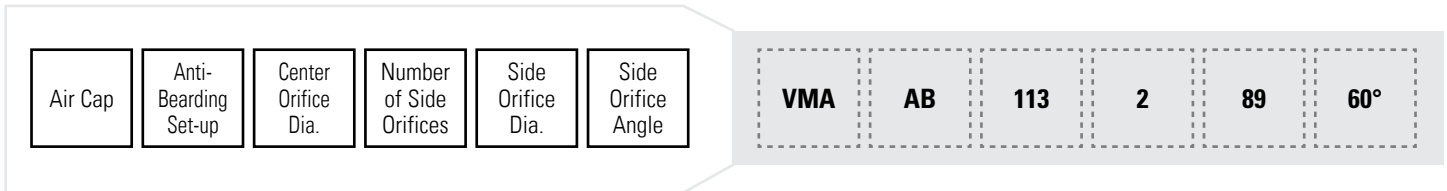
Air Cap No. VMAAB113289-60°



**FLUID TIP PART NUMBER EXAMPLE**



**AIR CAP PART NUMBER EXAMPLE**



\*Note: VMAU fluid caps have a prefix of "VMF" while air caps have a prefix of "VMA." Anti-bearding set-ups bear the additional prefix "AB," so for the anti-bearding spray set-up SUVM113AAB, the air cap would have a combined prefix of "VMAAB."

**ORDERING INFORMATION**

VMAU spray set-ups can be used for the VMAU spray nozzle (see p, the VMAU Lab Coater and the 54000 Modular Manifold. To determine which nozzle set-up is right for your nozzle, reference the performance data for [VMAU Spray Set-Ups](#) ►

## STANDARD AND SANITARY VMAU SPRAY NOZZLES

### PRODUCT OVERVIEW

The VMAU variable automatic spray nozzle is designed with modular components to provide solutions to even the most demanding spray application challenges.

### FEATURES AND BENEFITS

- Maximizes uniform spray distribution
- Modular design offers the flexibility to fit various unique spray applications
- Easy access dramatically cuts cleaning and maintenance downtime
- Threadless sanitary design with no internal threads in the liquid chamber
- Increases throughput with improved spray and product quality



Standard VMAU  
Spray Nozzle

Sanitary VMAU  
Spray Nozzle

### ONLINE RESOURCES

#### Literature

[Bulletin 558, VMAU Spray Nozzles](#) ▶

#### Performance Data

[VMAU Spray Set-Ups](#) ▶

#### 3D CAD Models

[Sanitary VMAU](#) ▶ [Standard VMAU](#) ▶

### SPRAY TIP: IMPROVE PERFORMANCE FOR AIR ATOMIZING SPRAY APPLICATIONS

In addition to tablet coating, VMAU nozzles are also suitable for use in a wide variety of other applications. With multiple body styles, actuator assemblies, and interchangeable spray set-ups available, VMAU spray nozzles are suited to virtually any air atomizing spray application.



**ORDERING INFORMATION – STANDARD AND SANITARY VMAU SPRAY NOZZLES**

To customize your VMAU nozzle, specify the following:

**BODY STYLE**

First, select either a standard or sanitary body with NPT or BSPT connections.

<b>Standard Body</b>	1/4VMAU-XX	1/4 NPT Connections
	B1/4VMAU-XX	1/4 BSPT Connections
<b>Sanitary Body</b>	S1/4VMAU-XX	Sanitary fluid connections and 1/4 NPT air connections
	SB1/4VMAU-XX	Sanitary fluid connections and 1/4 BSPT air connections

**Example**



**SPRAY SET-UP**

Next, choose from a wide range of spray set-ups to fit your application's needs.

Anti-Bearding Spray Set-Ups	P-Series Spray Set-Ups	Orifice Dia. in. (mm)
SUVM113AAB-XX	SUVM113AABP-XX	.035 (0.89)
SUVM113AB-XX	SUVM113ABP-XX	.040 (1.02)
SUVM128AB-XX	SUVM128ABP-XX	.060 (1.52)

**Example**

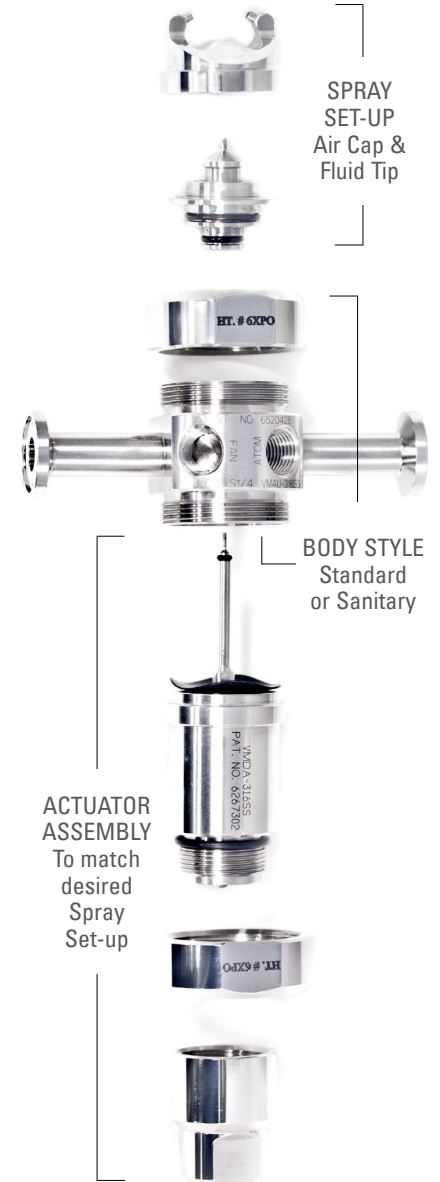


**ACTUATOR ASSEMBLY**

Last, choose an actuator assembly to match the desired spray set-up.

Single Action (52519)	NPT Style	BSPT Style	Corresponding Set-up
<b>Standard Spray</b>	004	104	SUVM 113A
	005	105	SUVM 113
	006	106	SUVM 128
<b>Anti-Bearding Spray</b>	404	504	SUVM 113A AB or ABP
	405	505	SUVM 113 AB or ABP
	406	506	SUVM 128 AB or ABP

**Example**



Material Code = XX  
 SS = 303 stainless steel  
 316SS = 316 stainless steel

## VMAU LAB COATER SPRAY NOZZLE

### PRODUCT OVERVIEW

The 54200 VMAU Lab Coater spray nozzle features a compact design and simple assembly ideal for your R&D/laboratory scale spray applications.

### FEATURES AND BENEFITS

- Maximizes uniform spray distribution
- Threadless sanitary design with no internal threads in the liquid chamber
- Increases throughput with improved spray and product quality
- 316 stainless steel nozzle and fittings for corrosion resistance
- Disassembles quickly
- Uses the same set-ups as our VMAU nozzle



VMAU Lab Coater  
Spray Nozzle

### ONLINE RESOURCES

#### Literature

[Bulletin 672, VMAU Spray Nozzles](#) ▶

#### Performance Data

[VMAU Spray Set-Ups](#) ▶

#### 3D CAD Models

[VMAU Lab Coater](#) ▶

#### Videos

[VMAU Lab Coater](#) ▶

### SPRAY TIP: SCALE UP YOUR R&D COATING APPLICATIONS WITH EASE

The spray set-up (fluid tip and air cap) on the 54200 VMAU Lab Coater is the same size as used for the 54000 Modular Air Atomizing Manifold, making it simple to scale up from smaller lab scale applications to full production.



**DIMENSIONS AND WEIGHTS – VMAU LAB COATER SPRAY NOZZLE**

	<b>Nozzle Type</b>	<b>A in. (mm)</b>	<b>B in. (mm)</b>	<b>C in. (mm)</b>	<b>D in. (mm)</b>	<b>Net Weight lbs (oz.)</b>
	54200	2.0 (50.8)	2.18 (55.5)	1.5 (38.1)	3.74 (95.1)	1.8 (0.82)

**ORDERING INFORMATION – VMAU LAB COATER SPRAY NOZZLE**

To order, specify body, spray set-up, needle assembly, and optional rod mount kit (28945-007-316SS).

**OPTIONS**

Spray Set-Ups	Orifice Dia. in. (mm)	Needle Assembly
SUVM113AABP-VIF	.035 (0.89)	54200-304-316VIF
SUVM113ABP-VIF	.040 (1.02)	54200-305-316VIF
SUVM128ABP-VIF	.060 (1.52)	54200-306-316VIF
SUVM113AABP-EPF	.035 (0.89)	54200-314-316EPF
SUVM113ABP-EPF	.040 (1.02)	54200-315-316EPF
SUVM128ABP-EPF	.060 (1.52)	54200-316-316EPF



SPRAY SET-UP  
Air Cap and  
Fluid Tip



BODY STYLE



NEEDLE  
ASSEMBLY  
To match  
desired Spray  
Set-up

**BODY STYLE**

**Example**



**SPRAY SET-UP**

**Example**



**NEEDLE ASSEMBLY**

**Example**



Material Code
SS= 303 stainless steel
316L= 316 stainless steel
316VIF = FDA Viton
316EPF = FDA EPDM



**JAU AND J-TYPE SPRAY SET-UPS**

Spray set-ups are interchangeable, but each set-up uses a different size needle. The JAU can utilize a number of different spray set-ups depending on the desired performance and nozzle configuration.

**1/4J SET-UPS**

The standard 1/4 JAU nozzle can utilize a number of different interchangeable spray set-ups available in standard and anti-bearding versions.

(Example: SUE15)



1/4J Set-Ups

**JAUSF SET-UPS\***

JAUSF set-ups are designed to fit the sanitary 54160-JAUSF spray nozzle and are available in anti-bearding versions.

(Example: SUE15ABP)



JAUSF Set-Ups

**53000 J-TYPE SET-UPS\***

53000 J-Type set-ups are specially designed to fit our 54000 modular manifolds, and are available in anti-bearding versions.

(Example: 53000-SUE15AB)

\*Performance for 53000 J-Type Set-Ups is approximately equivalent to JAUSF set-ups.

**PERFORMANCE DATA**

Click on the link to view an interactive PDF with the following data for [JAU Spray Set-Ups](#) ▶

Data on Spray Set-Up(s)	Type of Data	Available Spraying Material(s) for Data Type
<b>SUE15</b> (.028" / 0.7 mm Orifice)	Coverage and Flow Rate	Water / OPADRY®
	Drop Size Information	Water / OPADRY®
	Relative Span Factor	Water / OPADRY®
<b>SUE25B</b> (.035" / 0.9 mm Orifice)	Coverage and Flow Rate	Water / OPADRY®
	Drop Size Information	Water / OPADRY®
	Relative Span Factor	Water / OPADRY®
<b>SUE25A</b> (.040" / 1.0 mm Orifice)	Coverage and Flow Rate	Water / OPADRY®
	Drop Size Information	Water / OPADRY®
	Relative Span Factor	Water / OPADRY®
<b>53000-SUE15AB</b> <b>SUE15AB / SUE15ABP</b> (.028" / 0.7 mm Orifice)	Coverage and Flow Rate	Water / OPADRY®
	Drop Size Information	Water / OPADRY®
	Relative Span Factor	Water / OPADRY®
<b>53000-SUE25BAB</b> <b>SUE25BAB / SUE25BABP</b> (.035" / 0.9 mm Orifice)	Coverage and Flow Rate	Water / OPADRY®
	Drop Size Information	Water / OPADRY®
	Relative Span Factor	Water / OPADRY®
<b>53000-SUE25AAB</b> <b>SUE25AAB / SUE25AABP</b> (.040" / 1.0 mm Orifice)	Coverage and Flow Rate	Water / OPADRY®
	Drop Size Information	Water / OPADRY®
	Relative Span Factor	Water / OPADRY®

**DETERMINING SPRAY NOZZLE SET-UPS**

A JAU or J-Type spray set-up, like a VMAU set-up, consists of a fluid cap and an air cap, each of which has its own part number. A standard 1/4 J anti-bearding spray set-up is shown below. Our JAUSF nozzle uses a modified version of this set-up, as do our 54000 manifolds.

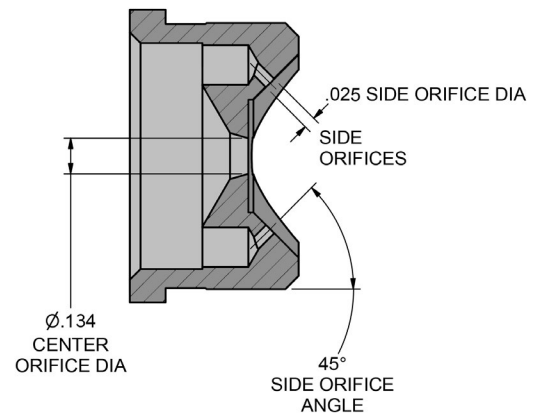
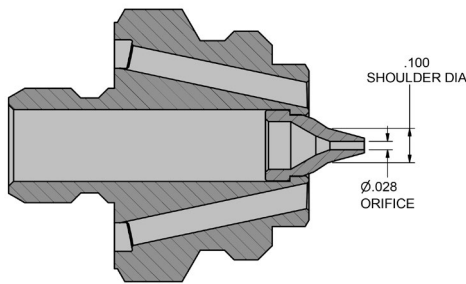
1/4J Set-Up No.	Fluid Cap No.	Air Cap No.
<b>SUE15AB</b>	PF28100AB	PA84228-45-C
<b>SUE25BAB</b>	PF35100AB	PA134225-45
<b>SUE25AAB</b>	PF40100AB	PA134225-45

EXAMPLE: JAU SET-UP NUMBER SUE25BAB

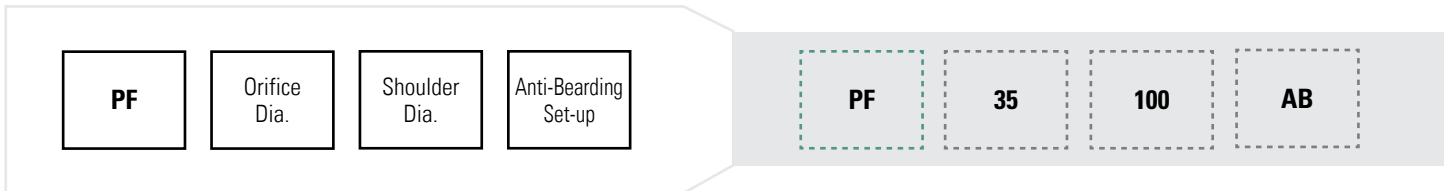
Fluid Cap No. PF35100AB

+

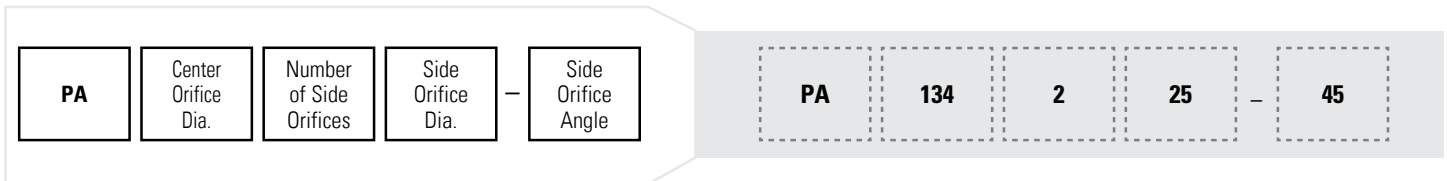
Air Cap No. PA134225-45



**FLUID CAP PART NUMBER EXAMPLE**



**AIR CAP PART NUMBER EXAMPLE**



\*Note that anti-bearding set-ups bear the additional prefix "AB."

**ORDERING INFORMATION**

JAU, JAUSF and 53000 J-Type spray set-ups can be used for either the standard 1/4 JAU spray nozzle, the JAUSF spray nozzle or the 54000 Modular Manifold.

To determine which nozzle set-up is right for your nozzle, reference the performance data for [JAU Spray Set-Ups](#) ►

## JAU SF SPRAY NOZZLE

### PRODUCT OVERVIEW

The new, sanitary 51460-JAUSF spray nozzle is an update to the popular JAU series of spray nozzles. Designed for sanitary applications, the nozzle features a simpler design for easier cleaning and a welded external mount configuration.

### FEATURES AND BENEFITS

- New, simpler design offers greatly improved cleanability
- Available in a wide variety of configurations
- Air atomizing nozzle helps achieve precise, consistent coating
- Offers similar performance to standard JAU
- No internal seals
- Features a pull-out needle for easy clean out
- Sanitary design features no internal threads in the liquid chamber



JAU SF Spray Nozzle

### ONLINE RESOURCES

Performance Data

[JAU Spray Set-Ups ▶](#)

3D CAD Models

[JAU SF Spray Nozzle ▶](#)

Video

[JAU SF Spray Nozzle ▶](#)

### SPRAY TIP: REPLACE OLDER NOZZLES FOR IMPROVED CLEANABILITY

The 51460-JAUSF uses the same orifice sizes as our standard 1/4JAU nozzle and provides similar performance with fewer components for improved cleanability. It can be used as a direct replacement for older style JAU nozzles without the need for revalidation.



**DIMENSIONS AND WEIGHTS – JAUSF SPRAY NOZZLE**

	Nozzle Type	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	Net Weight lbs (oz.)
	51460	3.25 (82.5)	4.44 (112.8)	1.50 (38.1)	3.74 (95.1)	1.6 (.72)

**ORDERING INFORMATION – JAUSF SPRAY NOZZLE**

To order, specify body, spray set-up and needle assembly.

**OPTIONS**

Spray Set-Ups	Orifice Dia. in. (mm)	Needle Assembly
SUE25AABP-XX	.040 (1.02)	54008-705-XX
SUE25BABP-XX	.035 (0.89)	54008-704-XX
SUE15ABP-XX	.028 (0.71)	54008-703-XX

**BODY STYLE**

**Example**

Model No.

–

Material Code

54160 – JAUSF

–

316L

\*Add B for BSPT connections, leave blank for NPT connections

**SPRAY SET-UP**

**Example**

Model No.

–

Material Code

SUE25AABP

–

316VIF

**NEEDLE ASSEMBLY**

**Example**

Model No.

–

Needle Assembly

–

Material Code

54008

–

705

–

316VIF

- Material Code = XX**
- SS = 303 stainless steel
  - 316L = 316L stainless steel
  - 316VIF = FDA Viton
  - 316EPF = FDA EPDM

## MODULAR AIR ATOMIZING MANIFOLDS

### PRODUCT OVERVIEW

54000 series modular manifolds are customizable, integrated coating systems designed to cut costs, simplify installation, and reduce maintenance. Each manifold consists of an end hub, connection hub, spacer blocks, and 2-12 spray nozzles – all configured to suit your process needs.

### FEATURES AND BENEFITS

- Superior surface finish reduces contamination risk
- Manufacturing environment exceeds industry standards for hygienic products
- Complete turnover package available with material test reports, welder certification and other relevant data
- Lightweight- half the weight of other manufacturers' designs
- Disassembles in seconds, saving time and money
- Polished 316/316L stainless steel and stain-resistant TecaPro® for easy cleaning
- Improved spray performance maximizes throughput and product quality
- Ideal for spraying viscous liquids
- Can be used in batch or continuous processes

### STANDARD 54000 MANIFOLD

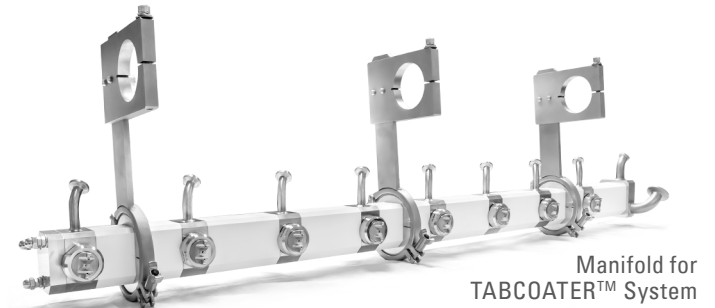
- For precision coating in batch coating applications
- Fully customizable, designed to meet your coater's exact specifications
- Houses up to 6 spray nozzles in a single manifold

### LARGE CAPACITY 54000-LC MANIFOLD

- Ideal for large scale batch or continuous coating applications
- Houses up to 12 spray nozzles in a single manifold

### INDIVIDUALLY FED 54000 MANIFOLD

- Ideal for large scale batch or continuous coating applications
- Houses up to 12 spray nozzles in a single manifold
- Patent-pending individually fed, internal-recirculating nozzles minimize clogging and enable highest precision of coating distribution for the most demanding coating applications



### ONLINE RESOURCES

#### Literature

- [Bulletin 562b, Modular Air Atomizing Manifolds ▶](#)
- [Bulletin FA107, TABCOATER ▶](#)

#### Performance Data\*

- [VMAU Spray Set-Ups ▶](#)
- [JAU Spray Set-Ups ▶](#)

#### Specification Sheets

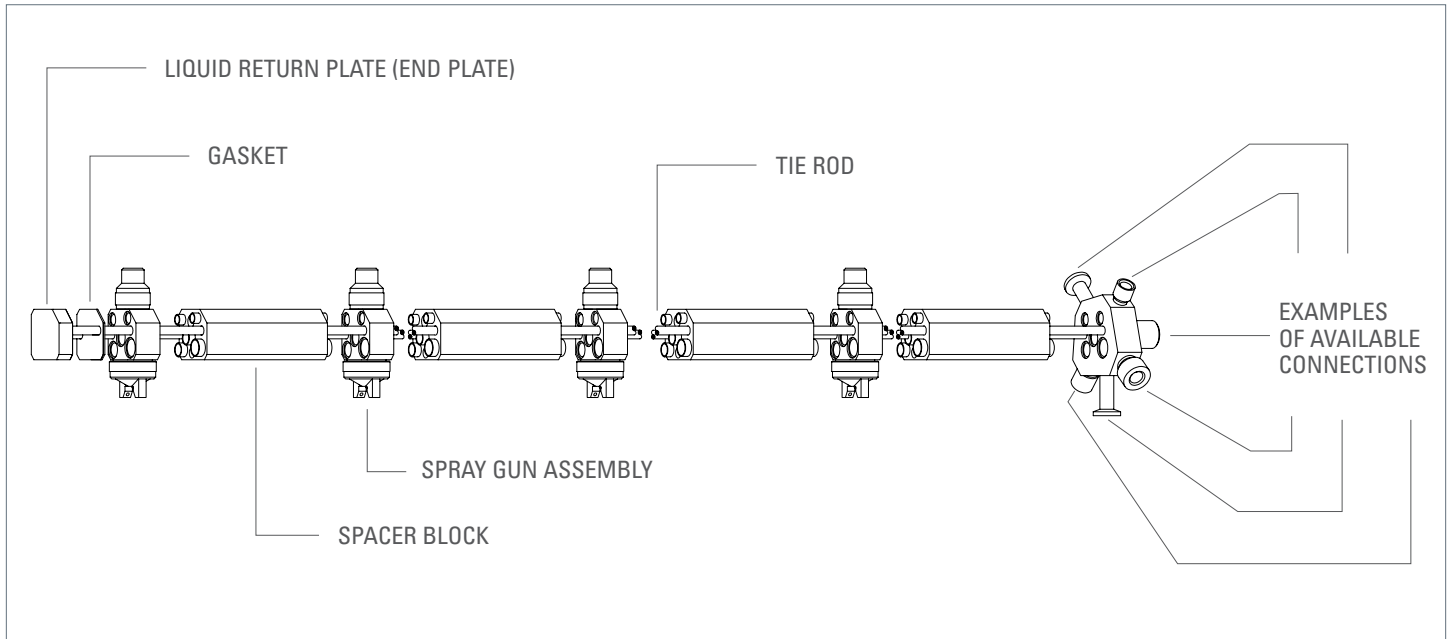
- [54000 Manifold ▶](#)
- [54000-LC Manifold ▶](#)
- [TABCOATER Manifold ▶](#)

#### Video

- [54000 Manifold ▶](#)

(\*54000 Manifolds use either VMAU or JAU spray set-ups)

MODULAR AIR ATOMIZING MANIFOLD ASSEMBLY



SAVE TIME WITH ADJUSTABLE SANITARY MOUNTING CLAMPS

All of the 54000 family manifolds are available with a patent-pending fully-adjustable sanitary mounting clamp which permits users to quickly and precisely rotate the manifold to the necessary spray angle – eliminating the hassle of trial-and-error positioning. The sanitary clamp can be customized to your coater's exact specifications and allows for easy installation of the manifold in a variety of different coating systems.

