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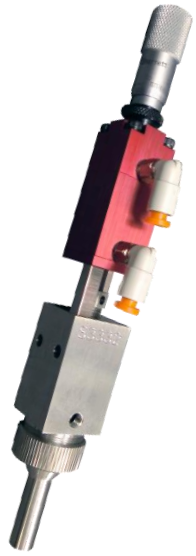

FCS300-ES-ND

FCS300-ES-UF

FCS300-ES

FCS300-F

FCS300-R

Front Closing Spray Valve

FCS300 Series Operation Manual

Rev F

Precision Valve & Automation
6 Corporate Drive
Halfmoon, NY 12065

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Introduction

Before you operate this valve, read the operation and setup manual. This will help you to become familiar with the product and ensure successful operation.

1. If any questions or problems arise, contact PVA's Technical Support department.

PVA Contact Information

1.1

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1.2

Document History

Revision	Revision Date	Reason for Changes
F	July 2023	Section 3.2 Part Reference Number Update
E	March 2023	Added Packing and Cleaning Bit to FCS300-ES-UF Spare Parts Kit
D	June 2020	Added Cleaning Bit to FCS300-ES-UF Bill of Materials
C	March 2020	Added FCS300-ES-UF Manual
B	2019	Combined FCS300-F, FCS300-R, FCS300-ES, FCS300-ES-ND Manuals
A	2012	Initial Release

Note: All photographs and CAD model representations in this document are a "general representation" of the system and its components. The actual appearance of the system and its components can differ based upon customer specific configuration.

System Description

This manual applies to the following Precision Valve & Automation, Inc. valves:

FCS300-F	Front Closing Stainless Steel Spray Valve, Flat Cap
FCS300-R	Front Closing Stainless Steel Spray Valve, Round Cp
FCS300-ES	Front Closing Stainless Steel Spray Valve, Extended Cap
FCS300-ES-ND	Front Closing Stainless Steel Spray Valve, Narrow Cap
FCS300-ES-UF	Front Closing Stainless Steel Spray Valve, Ultra Fine Cap

1.3

The valves above will be referred to as the FCS300 Series for the purpose of this manual. Any information relevant to a specific valve will be indicated.

Theory of Operation

1.4

The FCS300 Series is a low pressure, low volume, front closing stainless steel spray valve that uses air pressure to atomize fluids and transfer them to a substrate. This valve can be used in a wide variety of coating applications applying low to high viscosity fluids. The FCS300 Series has a divorced design comprising of two major sections. These include:

- **Air section** (red anodized portion)
- **Fluid section** (stainless steel portion)

1.4.1

Air Section

The air section is an aluminum body with a simple piston/cylinder combination used to open and close the valve. A micrometer adjustment in the upper air body controls how far the piston and needle assembly can retract thus regulating the rate of fluid flow. The micrometer will display a distance that the piston and needle will travel.

1.4.2

Fluid Section

The fluid section is a stainless steel body, which includes a needle and seat combination located at the end of the valve inside the atomizing air cap. Fluid flows through the seat orifice as the needle retracts out of the seat, then stops as the needle moves back into the seat. Atomizing air is applied when the needle is retracted to spray all fluid from the air cap.

The micrometer adjustment regulates the distance that the needle can retract out of the seat thus controlling the orifice size and rate of fluid flow. A precision air regulator is used to control a precise amount of atomizing air. Fluids can include but are not limited to solvents, conformal coatings, grease, etc. Wetted parts on the FCS300 Series include: 303, 304 stainless steel, Teflon®, and Kalrez®.

Safety

Due to material contents being under pressure, eye protection is required for operators. All spray valves should be used in a well-ventilated area. For additional precautions, refer to the MSDS sheet for the dispensed material.

2.

Setup

The FCS300 Series requires a 2-position, 4-way air solenoid valve to actuate the air section. The valve should be operated with clean, dry air between 60-100psi. Two #10-32 threaded air ports are located on the air section of the valve. The port located furthest from the midsection of the valve is air to close the valve. The port located closest to the mid-section of the valve is air to open the valve. Quick connect air fittings are typically supplied with the FCS300 Series to fit 5/32" tubing.

3.

Note: The valve should normally be in the closed position.

Atomizing air is connected to the #10-32 threaded port located on the fluid section. Quick connect air fittings are typically supplied to fit 5/32" tubing. Atomizing air should be connected such that it turns on only when the valve is cycled to the open position. There are two configurations that can be used to connect atomizing air. The first configuration uses a Single Solenoid with a one output used to simultaneously open the valve and pressurize the atomizing air regulator. The second option uses a Dual Solenoid configuration to allow independent control of the atomizing air.

Fluid is supplied to the FCS300 Series through the 1/8"fnpt port located on the stainless steel fluid section of the valve.

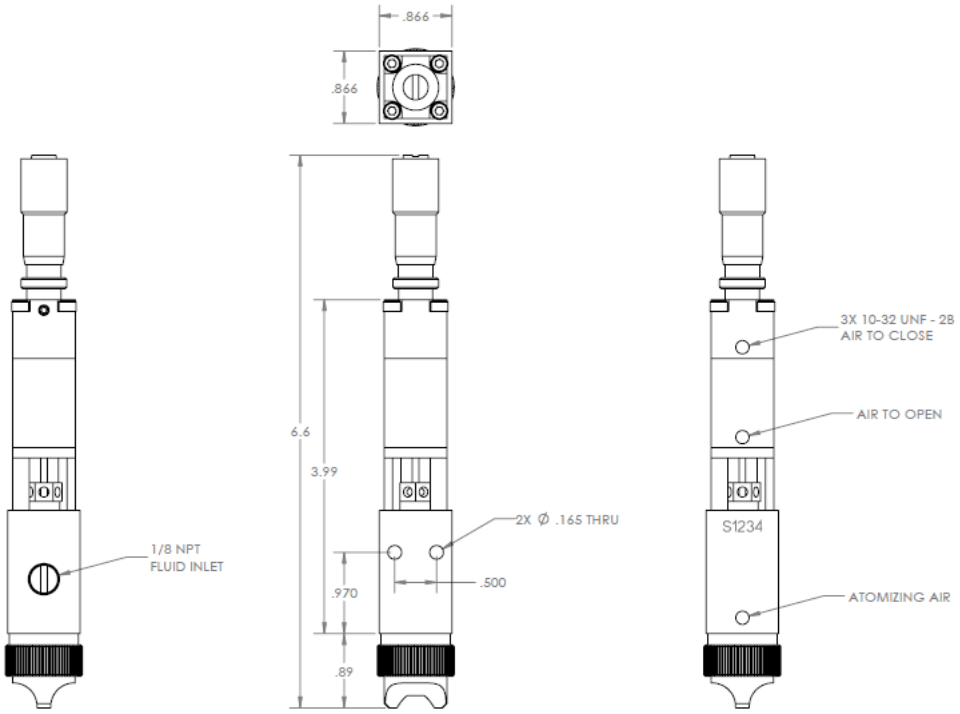

Figure 1: FCS300-F Diagram

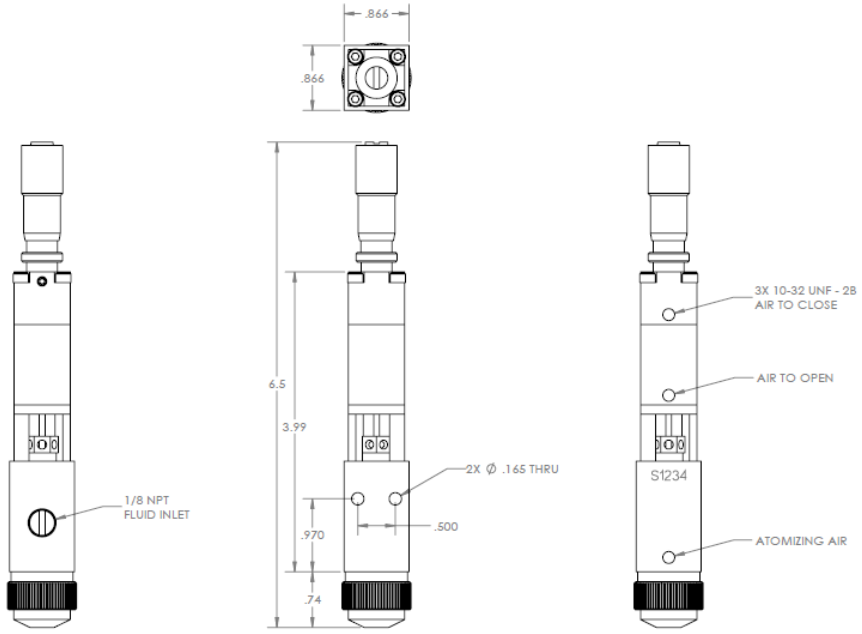

Figure 2: FCS300-R Diagram

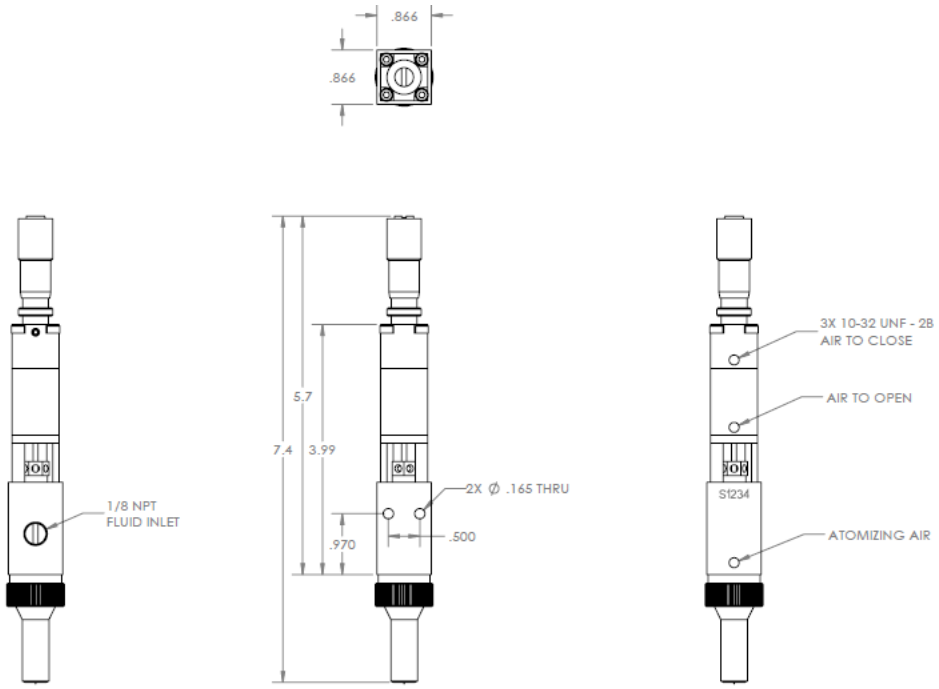

Figure 3: FCS300-ES Diagram

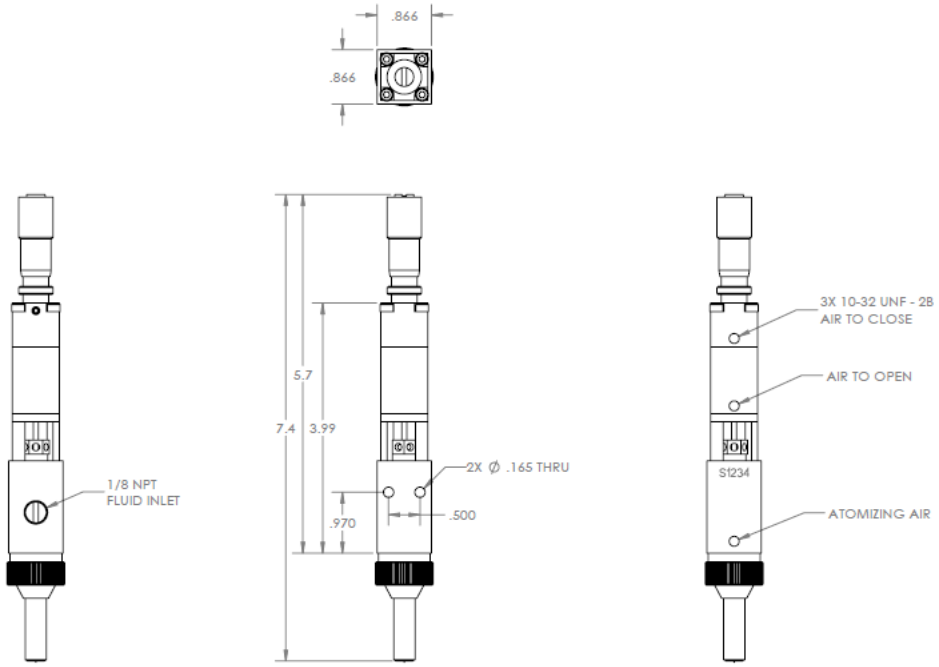

Figure 4: FCS300-ES-ND Diagram

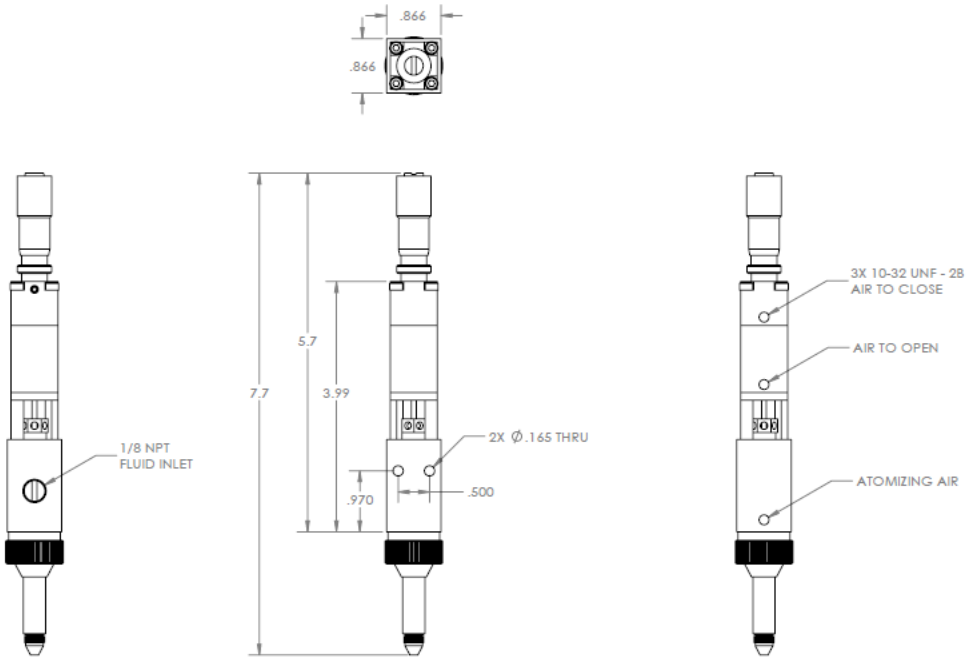

Figure 5: FCS300-ES-UF Diagram

Tool Kit

PVA offers standard tool kits for all dispensing valves.

FCS300-F and FCS300-R Tool Kit

3.1 The tool kit for the FCS300-F and FCS300-R is part number **B12-1989**, which includes all necessary tools and lubricating grease to perform maintenance on this spray valve.

B12-1989 Includes:

Qty	Part Number	Description
1	0266244	8” Adjustable wrench
2	26563	3/32” Allen Key
1	26561	5/64” Allen Key
1	26559	1/16” Allen Key
1	5516A18	Tweezers
1	B62-0752	Mineral Oil Lubrication Kit, 2.5cc
1	B62-2048	Silicone Lubricant for o-ring, 2.5cc
1	9570K71	Hook and Pick Set
1	0266255	Pliers
2	53085A61	Optional soft plastic covers for pliers
1	PB135/2	Flat Head Screw Driver for Micrometer
1	PT17184	Micrometer Adjustment Wrench
1	V319	Seat Wrench
1	MM115	Removable Threadlocker

Figure 6: FCS300-F and FCS300-R Tool Kit

FCS300-ES Tool Kit

The tool kit for the FCS300-ES is part number **B12-2011**, which includes all necessary tools and lubricating grease to perform maintenance on this spray valve.

B12-2011 Includes:

3.1.2

Qty	Part Number	Description
1	0266244	8” Adjustable wrench
2	26563	3/32” Allen Key
1	26561	5/64” Allen Key
1	26559	1/16” Allen Key
1	5516A18	Tweezers
1	B62-0752	Mineral Oil Lubrication Kit, 2.5cc
1	B62-2048	Silicone Lubricant for o-rings, 2.5cc
1	9570K71	Hook and Pick Set
1	0266255	Pliers
2	53085A61	Optional soft plastic covers for pliers
1	PB135/2	Flat Head Screw Driver for Micrometer
1	PT17184	Micrometer Adjustment Wrench
1	0216173	M7 Wrench
1	MM115	Removable Thread Locker

Figure 7: FCS300-ES Tool Kit

FCS300-ES-ND Tool Kit

The tool kit for the FCS300-ES-ND is part number **B12-1986**, which includes all necessary tools and lubricating grease to perform maintenance on this spray valve.

B12-1986 Includes:

3.1.3

Qty	Part Number	Description
2	0266244	8” Adjustable Wrench
2	26563	3/32” Allen Key
1	26561	5/64” Allen Key
1	26559	1/16” Allen Key
1	5516A18	Tweezers
1	B62-0752	2.5cc Mineral Oil Lubrication Kit
1	B62-2048	2.5cc Silicone Lubricant
1	9570K71	Hook and Pick Set
1	0266255	Pliers
2	53085A61	Soft Plastic Covers for Pliers
1	PB135/2	Micrometer Screw Driver, #2
1	PT17184	Micrometer Adjustment Wrench
1	MM115	Removable Thread Locker

Figure 8: FCS300-ES-ND Tool Kit

FCS300-ES-UF Tool Kit

The tool kit for the FCS300-ES-UF is part number **B12-1986**, which includes all necessary tools and lubricating grease to perform maintenance on this spray valve.

B12-1986 Includes:

3.1.1

Qty	Part Number	Description
2	0266244	8” Adjustable Wrench
2	26563	3/32” Allen Key
1	26561	5/64” Allen Key
1	26559	1/16” Allen Key
1	5516A18	Tweezers
1	B62-0752	2.5cc Mineral Oil Lubrication Kit
1	B62-2048	2.5cc Silicone Lubricant
1	9570K71	Hook and Pick Set
1	0266255	Pliers
2	53085A61	Soft Plastic Covers for Pliers
1	PB135/2	Micrometer Screw Driver, #2
1	PT17184	Micrometer Adjustment Wrench
1	MM115	Removable Thread Locker

Figure 9: FCS300-ES-UF Tool Kit

Part Reference Numbers

- **FCS300**: Refer to Drawing #**112-2195** for part reference numbers.
- **FCS300-ES**: Refer to Drawing #**112-2190** for part reference numbers.
- **FCS300-ES-ND**: Refer to Drawing #**112-2398** for part reference numbers.
- **FCS300-ES-UF**: Refer to Drawing #**612-9338-1** for part reference numbers.

3.2

Please refer to the part number reference key below when reviewing the operation instructions.

Bracket Used	Drawing and Valve Indicated
( )	Drawing #112-5955 *FCS300-F* Drawing #112-2195 *FCS300-R*
{ }	Drawing #112-2190 *FCS300-ES*
[ ]	Drawing #612-9338-1 *FCS300-ES-UF*
< >	Drawing #112-2398 *FC300-ES-ND*

Figure 10: Part Number Reference Key

3.3 Operation

1. Plumb up the valve as outlined above in the setup procedures.
2. Regulate the air pressure operating the valve between 60-100 psi.
3. Make sure that the valve is not aimed toward anyone. Cycle the valve several times. When the valve is cycling, the piston can be heard hitting the micrometer adjustment and the needle (1){1}[1]<3> can be seen going up and down in the center.
4. Adjust the atomizing air pressure regulator. Air should be felt flowing from the end of the valve when the valve cycles open. If the valve is not cycling properly, refer to the Troubleshooting section.
5. When the fluid delivery system is connected to the valve, pressurize the material to be dispensed.
6. Cycle the valve open to purge. Fluid should begin to spray from the tip of the air cap, continue cycling the valve until all air is removed from the fluid line and a steady spray pattern of material can be seen.
7. Adjust the atomizing air pressure to achieve proper spray of material. This pressure will vary due to the viscosity of the fluid.

8. Check the fluid connection and packing nut (15){15}[17]<16> for leaks. If the valve is leaking, refer to the Troubleshooting section.
9. Turn the micrometer adjustment (5){5}[7]<6> until the desired flow rate is achieved. Turning the adjustment clockwise toward zero will decrease the material flow rate and counterclockwise will increase the material flow rate. If the micrometer adjustment is turned all the way down to zero, it will stop fluid flow entirely.
10. Once the micrometer setting is determined, the collar (E) on the micrometer can be turned clockwise to lock the adjustment.

Note: Refer to Troubleshooting section for any problems.

Periodic Maintenance

3.4

1. Lubricate the packing (14){14}[16]<15> on the FCS300 Series valve every 200 hours by placing a few drops of mineral oil or other light oil inside the packing nut.

   Note: PVA offers a 10cc mineral oil lubrication kit; Part#: B62-0752
2. The packing nut (15){15}[17]<16> will require occasional tightening, as wear occurs in order to prevent leaks through the packing.

3.5 Routine Cleaning and Disassembly

Cleaning and rebuilding the valve will be required from time to time. A spare parts kit is available with all the normal wear parts included.

- **FCS300**: Part #FCS3-SP
- **FCS300-ES**: Part #FCS3-ES-SP
- **FCS300-ES-ND**: Part #FCS3-ES-ND-SP
- **FCS300-ES-UF**: Part #FCS3-ES-UF-SP

1. Begin disassembly by removing air and fluid pressure from the valve.
2. Remove all pneumatic tubing and fluid delivery fittings, hoses, etc. from the valve.
3. Using the tip of a 3/32” Allen key, loosen the packing nut (15){15}[17]<16>.
4. Using the same 3/32” Allen key, evenly remove the two machine screws (8){8}[10]<9> that are located on the same corners as the fluid section standoffs (3){3}[3]<5>.

Note: During removal that there is a spring (10){10}[11]<11> forcing the air section away from the fluid section.

5. Pull the air section (red anodized portion) away from the fluid section (stainless steel portion).
6. Clean off the tip of the stainless-steel needle (1){1}[1]<3>.
7. From the fluid section of the valve, unthread and remove the packing nut, and the packing (14){14}[16]<15>.
8. Unthread and remove the collar ring (16){16}[18]<17> followed by the air cap (17){18}[6]<2>.
9. Using the seat wrench, unthread and remove the seat (4){4}[4]<1> followed by the 007 Kalrez o-ring (20){21}[21]<20>.

Note: The teeth of the seat wrench are tapered so the wrench will only fit on one side.

10. Clean all of the wetted parts thoroughly with an appropriate solvent.
11. On the air section, use a standard 3/32" Allen key to evenly remove the two machine screws (7){7}[9]<8> that thread into the end cap (11){11}[13]<12>.

Note: During removal, the spring will force the air section apart.

12. Separate the upper air body (2){2}[2]<4> from the lower air body (12){12}[14]<13> to remove the spring then slide the end cap off the needle.
13. Holding the lower air body in one hand, grab the needle and push the needle and piston (13){13}[15]<14> assembly out of the lower air body.
14. Remove the 004 Buna o-ring (18){19}[19]<18> from the lower air body.
15. Hold the piston with an adjustable wrench then use a 5/64" Allen key to unthread and remove the set screw (9){9}[11]<10> to remove the needle then remove the 014 Buna o-ring (20){21}[22]<20> from the piston.
16. Remove the 014 Buna o-ring from the upper air body then use a 1/16" Allen key to remove the set screw.
17. Using soft tip pliers grip the collar (E) or midsection (D) of the micrometer (5){5}[7]<6> and turn counterclockwise to loosen then unthread and remove from the upper air body by hand.
18. Remove the 007 Buna o-ring (19){20}[20]<19> from the micrometer.
19. Replace components with spares provided in the spare parts kit.

Assembly Instructions

General

- All o-rings must be lubricated with a small amount of silicone grease.
- A small amount of removable thread locker should be applied to the set screw (9){9}[11]<10>.
- Assemble the air section and fluid section separately prior to connecting the assemblies.

Air Section

1. Mount one 007 Buna o-ring (19){20}[20]<19> on the end (F) of the micrometer (5){5}[7]<6> and slide it up to the threads.
2. Thread the micrometer into the upper air body (2){2}[2]<4> hand tight.
3. Holding the collar (E) of the micrometer turn the dial (C) counterclockwise until “5” can be seen on the midsection (D).
4. Using soft tip pliers grab the midsection (D) section of the micrometer and turn clockwise to snug it onto the upper air body.
5. Use a 1/16” Allen key to assemble the set screw (9){9}[11]<10> into the upper air body securing the micrometer in place.
6. Mount one 014 Buna o-ring (20){21}[22]<20> on the end of the upper air body.
7. Drop the needle into the piston (13){13}[15]<14> and assemble with the set screw using an adjustable wrench and 5/64” Allen key to tighten.
8. Mount the 014 Buna o-ring onto the piston.
9. Apply a small amount of silicone grease to the inside of the lower air body (12){12}[14]<13> then drop in the piston and needle assembly.
10. Mount the 004 Buna o-ring (18){19}[19]<18> on the end of the needle and slide it down into the groove in the end of the lower air body.
11. Slide the end cap (11){11}[13]<12> onto the needle up to the lower air body, place the spring (10){10}[11]<11> on top of the piston, and assemble the two air bodies using two machine screws (8){8}[9]<9> tightening with a 3/32” Allen key.

Note: Be sure the air holes are lined up on the same face and will align with the air hole on the fluid section (3){3}[3]<5>.

Fluid Section

1. Drop the packing (14){14}[16]<15> into the fluid section (3){3}[3]<5>, and screw in the packing nut (15){15}[17]<16> but leave finger tight until assembled with the air section.

3.6.3

2. Mount the 007 Kalrez o-ring (20){21}[21] on the seat (4){4}[4] and thread the seat into the fluid section. Tighten the two parts using an adjustable wrench on the fluid section and soft tip pliers on the seat.

    - **FCS300-ES-UF Only**: Thread the seat<4> into the fluid body[3] by installing the 007 Kalrez O-Ring[20] on the end of the seat[1]. Tighten into the fluid body with an adjustable wrench.

3. Place the air cap (17){18}[6]<2> onto the fluid section over the seat then secure it by threading the collar in place.

4. **FCS300-ES-UF Only**: Thread the atomizing air tips <5> on the air cap<6>.

Assemble Section

3.6.4

1. Be sure the micrometer adjustment {11}[12]<7> is backed out far enough so at least the number 1 can be seen on the midsection (D).

2. Apply a small amount of silicone grease to the end of the needle then insert it into the packing nut {6}[7]<16> and slide the two sections together.

3. Align the air holes of the air section on the same face as the atomizing air hole of the fluid section then connect the sections using the two machine screws, {21}[22]<10> tightening them down evenly using a 3/32” Allen key.

4. Using the tip of a 3/32” Allen key, tighten the packing nut.

3.6.5

Setting Micrometer to Zero

When assembling the valve it will be necessary to re-calibrate the micrometer adjust back to the zero position.

1. Using the micrometer wrench (A), insert the inside tip of the small end into the orifice of the midsection (D) and rotate it clockwise until the numbered centerline is displayed on a side that can most easily be viewed by an operator.

Note: Valves are supplied from the factory with the center line located 90’ left of the fluid inlet.

2. Turn the dial (C) clockwise until the end (F) hits the piston {9}[10].
3. Using soft tip pliers, hold the knurled end of the dial (C) tightly and loosen the screw (B) using a flat head screwdriver.

Note: Loosen the screw 3-4 turns only. It is not necessary to fully remove the screw.

4. Using a soft dead blow hammer, tap the dial (C) of the micrometer adjust to unlock it from the midsection (D). The dial will now spin freely.
5. Rotate the dial (C) to align the zero mark of the dial with the numbered centerline of the midsection (D) and press down firmly to secure the dial in place.
6. Hold the dial (C) securely in one hand maintaining alignment with the zero mark and numbered centerline, then carefully tighten the screw (B) using the flat head screwdriver to lock the micrometer in the zero position.

3.7 Spare Parts

PVA offers standard spare parts kits for all dispensing valves. These kits are stocked for immediate shipment and allow replacement of all wearable parts of the valve.

3.7.1 FCS300-F and FCS300-R Spare Parts Kit

The spare parts kit for this valve, product number **FCS3-SP,** includes the following components.

Qty	Part Number	Description
1	114-6997	Seat
1	114-5248	Needle
1	V305	Packing, Teflon
2	VLV-014B	O-ring, Buna
1	VLV-007B	O-ring, Buna
1	VLV-007K	O-ring, Kalrez
1	VLV-004B	O-ring, Buna
1	V319	Seat Wrench
1	PT17184	Micrometer Wrench

Figure 11: Contents of FCS300-F and FCS300-R Spare Parts Kit

FCS300-ES Spare Parts Kit

3.7.2

The spare parts kit for this valve, product number **FCS3-ES-SP,** includes the following components.

Qty	Part Number	Description
1	114-6937	Seat
1	114-5249	Needle
1	V305	Packing, Teflon®
2	VLV-014B	O-ring, Buna
1	VLV-007B	O-ring, Buna
1	VLV-004B	O-ring, Buna
1	VLV-007K	O-ring, Kalrez®
1	PT17184	Micrometer Wrench

Figure 12: Contents of FCS300-ES Spare Parts Kit

FCS300-ES-ND Spare Parts Kit

3.7.3

The spare parts kit for this valve, product number **FCS3-ES-ND-SP,** includes the following components.

Qty	Part Number	Description
1	114-2392	Seat
1	114-5249	Needle
1	V305	Packing, Teflon
2	VLV-014B	O-ring, Buna
1	VLV-007B	O-ring, Buna
1	VLV-004B	O-ring, Buna
1	VLV-007K	O-ring, Kalrez
1	PT17184	Micrometer Wrench

Figure 13: Contents of FCS300-ES-ND Spare Parts Kit

FCS300-ES-UF Spare Parts Kit

The spare parts kit for this valve, product number **612-9786-1,** includes the following components.

3.7.4

Qty	Part Number	Description
1	01868	Cleaning Drill Bit
1	V305	Packing
1	114-5249	Needle
1	VLV-007K	O-ring, Kalrez®
1	VLV-007B	O-ring, Buna
1	VLV-004B	O-ring, Buna
2	VLV-014B	O-ring, Buna
1	614-17136-1	Seat, ES-UF Extended Spray Ultra Fine

Figure 14: Contents of FCS300-ES-UF Spare Parts Kit

3.8 Micrometer Adjustment Breakdown

Reference Letter	Section Description
A	Micrometer Wrench
B	Top Screw
C	Dial
D	Micrometer Midsection
E	Collar
F	Micrometer End

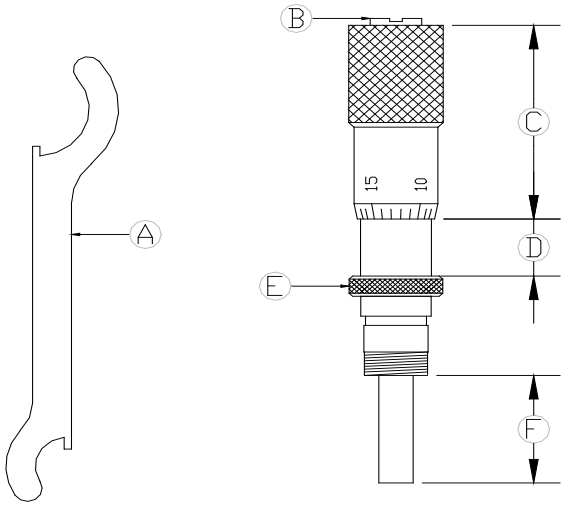

Figure 15: Micrometer Section Reference

Drawings

3.9

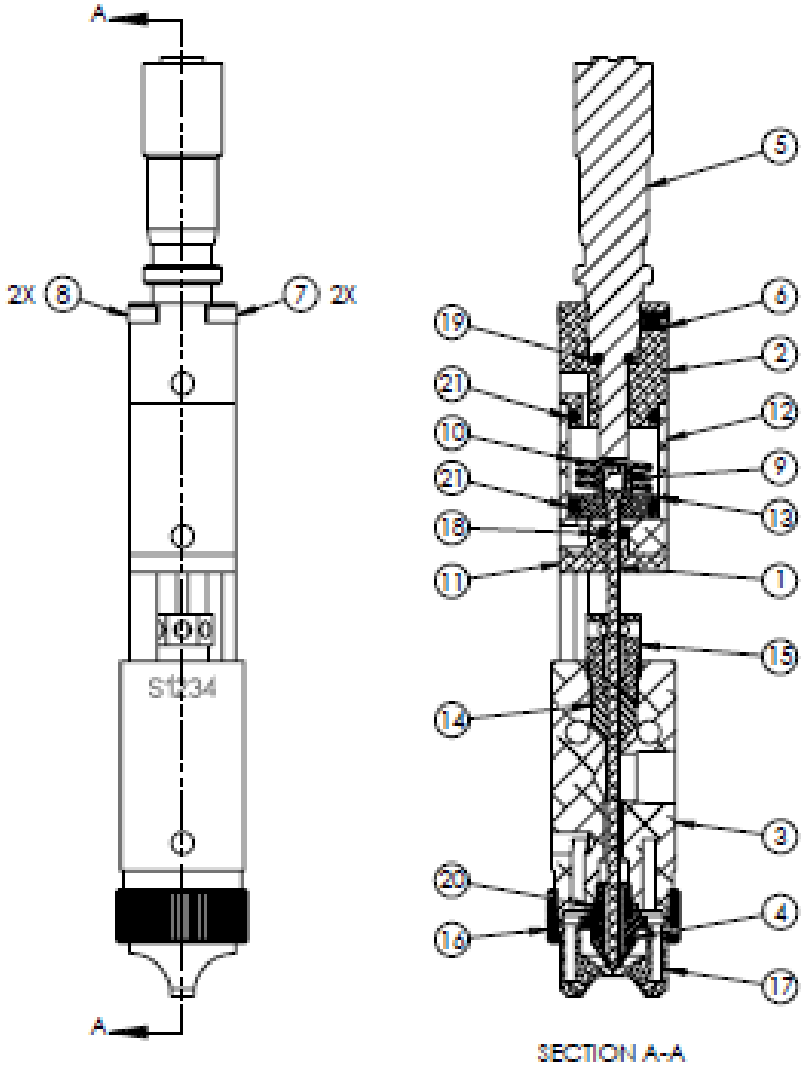

Figure 16: Drawing 112-5955 (FCS300-F)

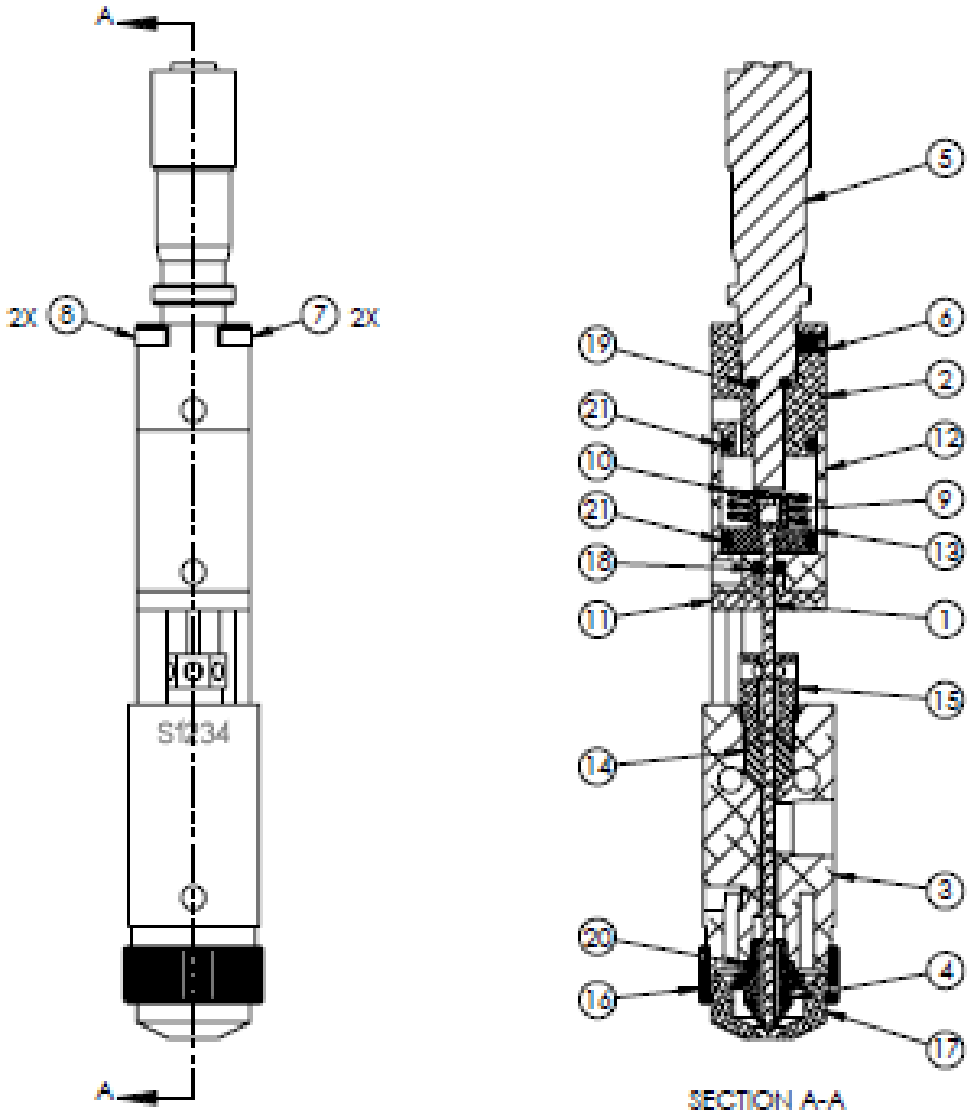

Figure 17: Drawing 112-2195 (FCS300-R)

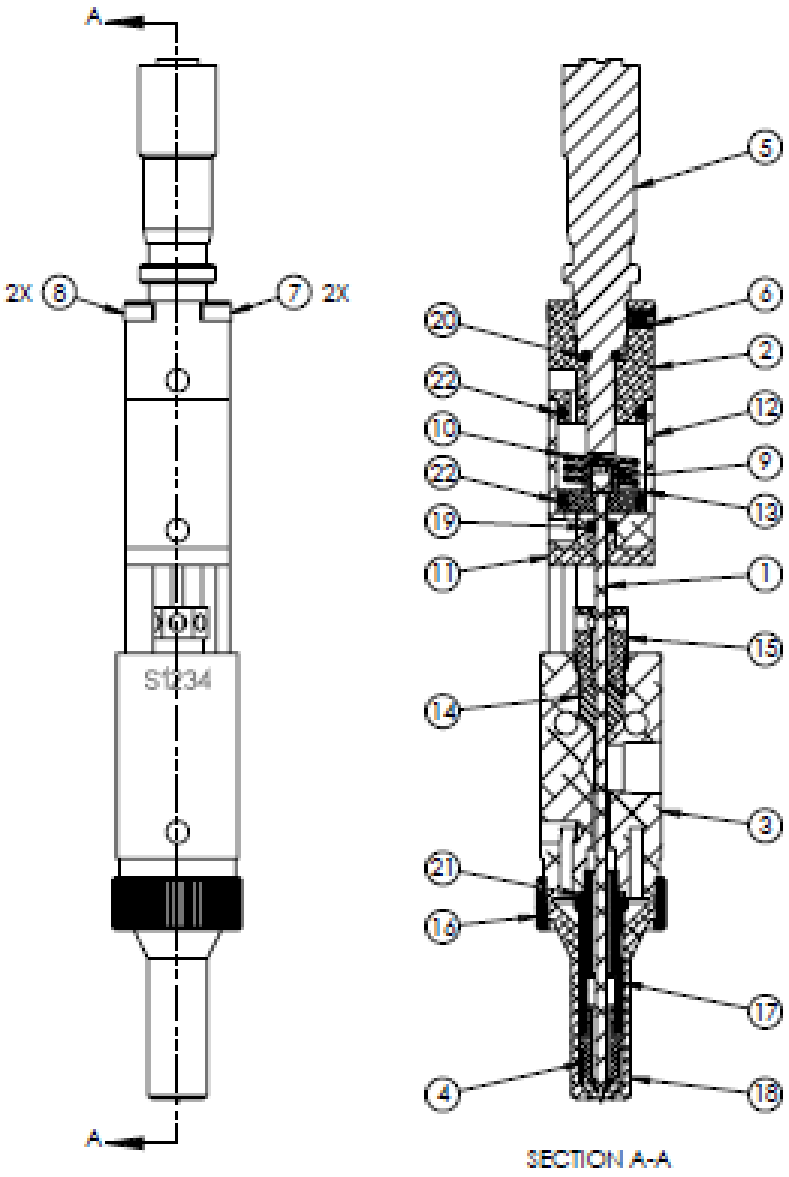

Figure 18: Drawing 112-2190 (FCS300-ES)

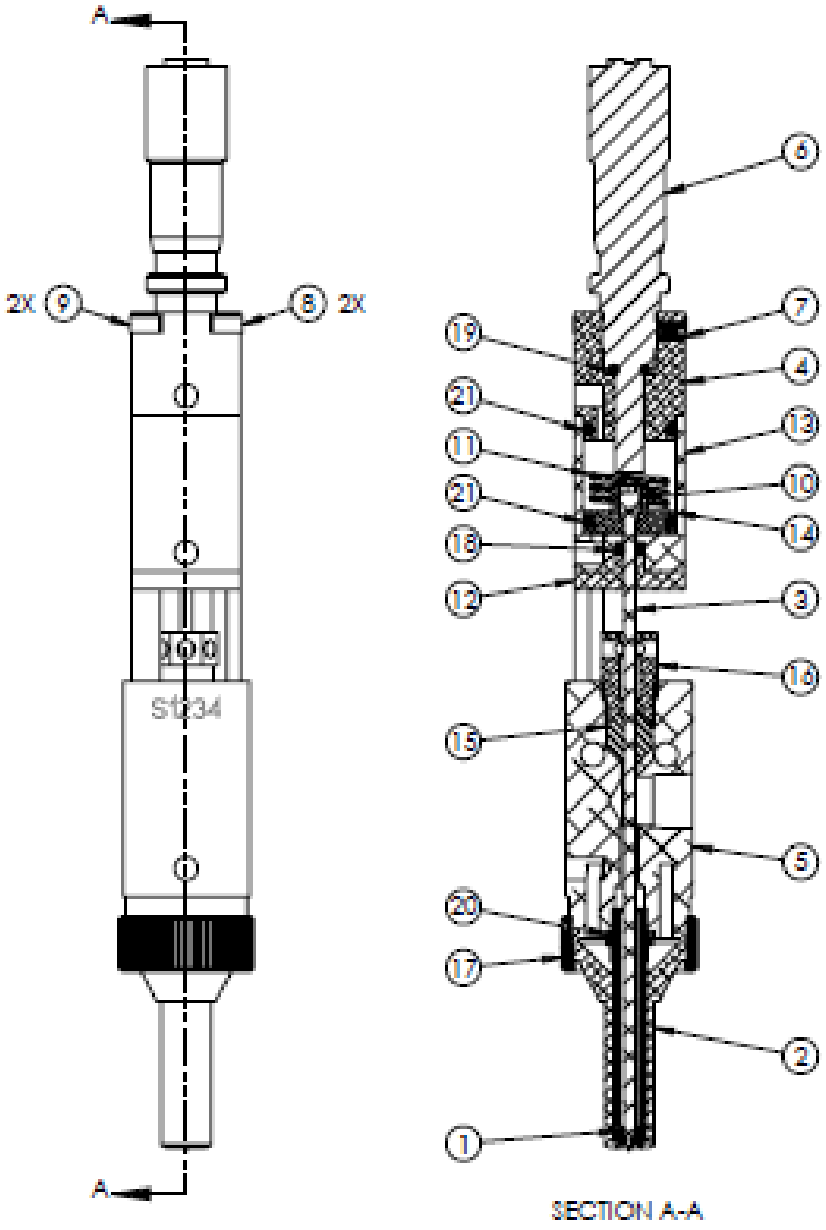

Figure 19: Drawing 112-2398 (FCS300-ES-ND)

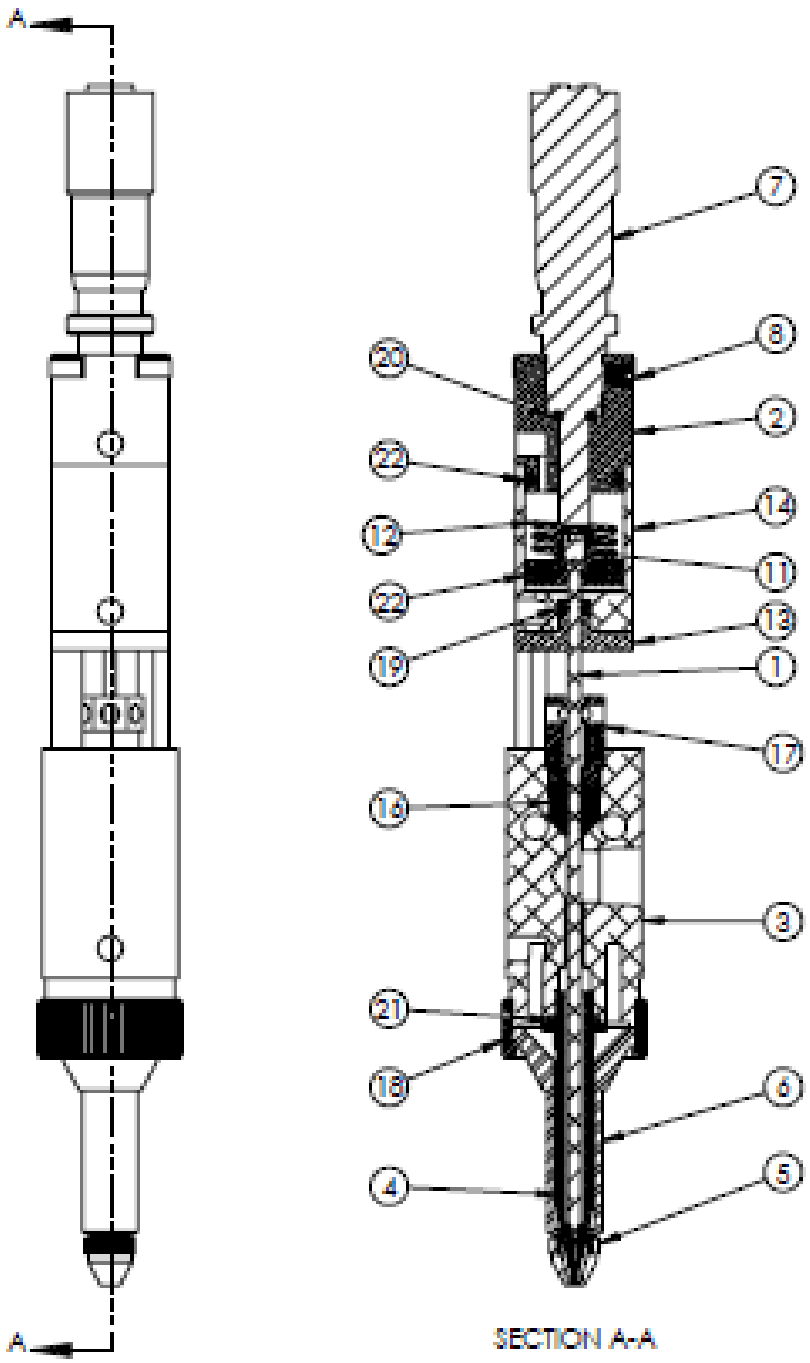

Figure 20: Drawing 612-9338-1 (FCS300-ES-UF)

Bill of Materials

FCS300-F (112-5955) and FSC300-R (112-2195)

3.10

3.10.1

ITEM	PART NUMBER	DESCRIPTION	QTY
1	114-5248	NEEDLE	1
2	114-6556	UPPER AIR BODY	1
3	114-6905	FLUID BODY	1
4	114-6997	SEAT	1
5	01423	MICROMETER HEAD	1
6	01469	SET SCREW, #5-40 x 3/16"	1
7	SHCS #5-40 X 1 3/4"	SOCKET HEAD CAP SCREW	2
8	SHCS #5-40 X 2"	SOCKET HEAD CAP SCREW	2
9	V001	SET SCREW	1
10	V050	SPRING	1
11	V200	END CAP	1
12	V201	LOWER AIR BODY	1
13	V202	PISTON	1
14	V305	PACKING	1
15	V306	PACKING NUT	1
16	V316	COLLAR RING	1
17	V317	AIR CAP, FLAT SPRAY	1
18	VLV-004B	O-RING, -004, BUNA-N	1
19	VLV-007B	O-RING, -007, BUNA-N	1
20	VLV-007K	O-RING, -007, KALREZ	1
21	VLV-014B	O-RING, -014, BUNA-N	2

Figure 21: Bill of Materials for FCS300-F and FSC300-R

FCS300-ES (112-2190)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	114-5249	NEEDLE	1
2	114-6556	UPPER AIR BODY	1
3	114-6905	FLUID BODY	1
4	114-6937	SEAT	1
5	01423	MICROMETER HEAD	1
6	01469	SET SCREW, #5-40 x 3/16"	1
7	SHCS #5-40 X 1 3/4"	SOCKET HEAD CAP SCREW	2
8	SHCS #5-40 X 2"	SOCKET HEAD CAP SCREW	2
9	V001	SET SCREW	1
10	V050	SPRING	1
11	V200	END CAP	1
12	V201	LOWER AIR BODY	1
13	V202	PISTON	1
14	V305	PACKING	1
15	V306	PACKING NUT	1
16	V316	COLLAR RING	1
17	V342	SEAT EXTENSION	1
18	V344	EXTENDED AIR CAP	1
19	VLV-004B	O-RING, -004, BUNA-N	1
20	VLV-007B	O-RING, -007, BUNA-N	1
21	VLV-007K	O-RING, -007, KALREZ	1
22	VLV-014B	O-RING, -014, BUNA-N	2

3.10.2

Figure 22: Bill of Materials for FCS300-ES

FCS300-ES-ND (112-2398)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	114-2392	SEAT, ES-ND	1
2	114-2393	NARROW DESIGN AIR CAP	1
3	114-5249	NEEDLE	1
4	114-6556	UPPER AIR BODY	1
5	114-6905	FLUID BODY	1
6	01423	MICROMETER HEAD	1
7	01469	SET SCREW, #5-40 x 3/16"	1
8	SHCS #5-40 X 1 3/4"	SOCKET HEAD CAP SCREW	2
9	SHCS #5-40 X 2"	SOCKET HEAD CAP SCREW	2
10	V001	SET SCREW	1
11	V050	SPRING	1
12	V200	END CAP	1
13	V201	LOWER AIR BODY	1
14	V202	PISTON	1
15	V305	PACKING	1
16	V306	PACKING NUT	1
17	V316	COLLAR RING	1
18	VLV-004B	O-RING, -004, BUNA-N	1
19	VLV-007B	O-RING, -007, BUNA-N	1
20	VLV-007K	O-RING, -007, KALREZ	1
21	VLV-014B	O-RING, -014, BUNA-N	2

Figure 23: Bill of Materials for FCS300-ES-ND

FCS300-ES-UF (612-9338-1)

Item	Part Number	Description	QTY
1	114-5249	NEEDLE	1
2	114-6556	UPPER AIR BODY	1
3 3.10.4	114-6905	FLUID BODY	1
4	614-17136-1	SEAT, ES-UF EXTENDED SPRAY ULTRA FINE	1
5	614-17260-1	ATOMIZING AIR TIP	1
6	614-17284-1	AIR CAP ULTRA FINE UF , INTEGRATED ATOM AIR HOLES	1
7	01423	MICROMETER HEAD	1
8	01469	SET SCREW, #5-40 x 3/16"	1
9	SHCS #5-40 X 1 3/4"	SOCKET HEAD CAP SCREW	2
10	SHCS #5-40 X 2"	SOCKET HEAD CAP SCREW	2
11	V001	SET SCREW	1
12	V050	SPRING	1
13	V200	END CAP	1
14	V201	LOWER AIR BODY	1
15	V202	PISTON	1
16	V305	PACKING	1
17	V306	PACKING NUT	1
18	V316	COLLAR RING	1
19	VLV-004B	O-RING, -004, BUNA-N	1
20	VLV-007B	O-RING, -007, BUNA-N	1
21	VLV-007K	O-RING, -007, KALREZ	1
22	VLV-014B	O-RING, -014, BUNA-N	2
23	01868	22 GAUGE CLEANING BIT	1

Figure 24: FCS300-ES-UF Bill of Materials

Note: A 22-gauge cleaning bit is included in the Bill of Materials. This should be used in the event of any clogging at the end of the FCS300-ES-UF nozzle.

Figure 25: 22 Gauge Cleaning Bit

Troubleshooting

4.

Problem	Possible Cause	Corrective Action
Valve does not cycle	• Air pressure to air section is too low • Packing nut is too tight • Micrometer adjustment is bottomed out • Material is cured in the valve • Valve was assembled without lubricating the O-ring seals	• Increase air pressure to 60-100 psi • Loosen packing nut until valve just begins to cycle, retighten • Back out micrometer adjustment by turning it counterclockwise • Disassemble and clean valve • Disassemble valve, lubricate seals and re-assemble
Material leaks from valve tip	• Packing nut is too tight • Needle and/or seat are worn • Seat is not tightened enough against fluid section	• Loosen packing nut • Replace parts as necessary • Use seat wrench to tighten seat onto fluid section (FCS300) • Use M7 wrench to tighten seat extension onto fluid section (FCS300-ES) • Use soft tip pliers to tighten seat onto fluid section (FCS300-ES-ND)
Valve leaks from mid-section	• Packing nut is loose • Packing is worn	• Tighten packing nut until snug • Replace packing
Valve does not spray anything	• Fluid pressure is too low • Material cured in fluid section • Micrometer adjustment bolt is set too close to zero	• Increase fluid pressure • Disassemble valve and clean • Back out micrometer adjustment by turning it counterclockwise
Air bubbles in fluid	• Valve not properly purged • Problem with fluid delivery system • Atomizing air pressure set too high	• Flip valve upside down and cycle until air bubbles are removed • Diagnose and repair • Reduce atomizing air pressure
Spray rate too fast	• Micrometer Adjustment is set out too far	• Turn micrometer adjustment bolt clockwise toward the zero mark
Spray rate too slow	• Micrometer Adjustment bolt is set too close to the zero mark	• Turn micrometer adjustment bolt counterclockwise
Poor spray pattern	• Dried material at tip of needle and seat • Dried material in air cap • Incorrect atomizing air pressure • Damaged needle and or seat	• Remove air cap and clean tip • Remove air cap and clean • Adjust atomizing air pressure • Replace parts as necessary
Cob webbing	• Atomizing air pressure is too high • Valve head is too close to substrate • Not enough solvent mix in coating	• Reduce atomizing air pressure • Move valve head from substrate • Re-examine solvent mix ratio

PVA Warranty Policy

PVA warrants the enclosed product against defects in material or workmanship on all components for one year from the date of shipment.

5. The warranty does not extend to components damaged due to misuse, negligence, or installation and operation that are not in accordance with the recommended factory instructions. Unauthorized repair or modification of the enclosed product, and/or the use of spare parts not directly obtained from PVA (or from factory authorized dealers) will void all warranties.

All PVA warranties extend only to the original purchaser. Third party warranty claims will not be honored at any time.

Prior to returning a product for a warranty claim, a return authorization must be obtained from PVA's Technical Support department. Authorization will be issued either via the telephone, facsimile, or in writing upon your request.

To qualify as a valid warranty claim, the defective product must be returned to the factory during the warranty period. Upon return, PVA will repair (or replace) all components found to be defective in material or workmanship.

(Retain this for your records)

Product Information:

PRODUCT: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____

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