



SwathPRO™

Spray Application

For Air Tractor

Installation Guide

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Change Log

Revision	Pages	Description	Date
A	All	Initial Release of the SwathPRO™ Installation Manual for Air Tractor aircraft	9/8/2021
B	11 19, 34-36 38, 43 47	Added Prerequisite modifications for Air Tractor AT-602 and AT-802 aircraft. Added bushing sleeve installation to the boom hanger installation procedure and update part number for kit Added Gateway hub mounting location for the AT-802/802A on the top of the luggage compartment Electrical main power revision. Changes to the breaker power harness connection.	3/23/2022
C	vi 17-18 19, 53 19, 64 20-24 44	Fixed Part Number error in References Table Fixed System layout list. Added part numbers to description list. Changed part number for the pressure sensor. Added Ag-Nav Servo/Flow Control Valve Harness Removed the Alternate part for the Valve Assemblies. Fixed a typo on the Servo and Flowmeter port.	10/20/2022
D	8, 23, 58, 59, 62 34 57	Removed part number 320015-096. Added qty 2 to part number 320015-097. Added caution statement for hanger mounting hole locations Fixed shutoff kit schematic.	11/18/2022
E	33 64 81	Updated Figure 11 Updated rate controller text Added procedure for inputting number of nozzles into CapView.	12/22/2022
F	24, 58, 61- 63 45	Correction to solder sleeve terminology Ring terminal part number and description correction	3/3/2023

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References

This is a list of external documents for the SwathPRO™ system installation.

Table 1: Reference List

Title	Part Number	Description
Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for SwathPRO™	320700-001	System operation information
Instructions for Continued Airworthiness for the SwathPRO™ System	320700-005	Maintenance information
ProMaker User Guide	320700-002	Computer software manual to make profiles
Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair	AC 43.13-1B	Aircraft inspection and repair information

Table 2: AN Part Numbers and Torque Specifications

CapstanAG Part Number	Description	AN Part Number	Torque Specification
713600-012	Washer, Mil-Spec, 1/4, Cad Plated	AN960C416L	
713600-010	Washer, Mil-Spec, 5/16, Cad Plated	AN960-516L	
713501-527	Nut, Hex, Nylok, 5/16-24, Cad Plated	AN365-524A	100-140 in/lbs
713501-526	Nut, Stop, Hex, Thin, 6-32, Cad Plated	AN364-632A	11-13 in/lbs
713501-525	Nut, Stop, Hex, Thin, 1/4-28, Cad Plated	AN364-428A	30-40 in/lbs
713501-419	Bolt, Mil-Spec 5/16-24 x 31/32, Cad Plated	AN5-7A	
713501-454	Bolt, Hex 10-32 x 21/32 Cad Plated	AN3-5A	
713501-531	Nut, Hex Elastic Stop, 10-32 Cad Plated	AN365-1032A	20-25 in/lbs
713600-013	Washer, Flat, #10 Cad Plated	AN960-10	
713501-427	Bolt, Hex 3/8-24 x 31/32 Cad Plated	AN6-7A	
713501-521	Nut, Hex Elastic Stop, 3/8-24 Cad Plated	AN365-624A	160-190 in/lbs
713501-014	Washer, Flat, 3/8 Cad Plated	AN960-616L	
713501-428	Screw, 4-40 x 3/4" Cad Plated	MS35206-219	
713501-522	Nut, 4-40, thin, Cad Plated	AN364-440A	3-4 in/lbs
713600-015	Washer, 4-40, Cad Plated	AN960-4L	
713501-417	Screw, 1/4-28 x 5/8" Cad Plated	MS35207-280	
<p>The published torque values do not include the rotational drag of the elastic stop nuts (AN365). Standard maintenance practice dictates that mechanics add this value to the specified torque. A random sample of new and used AN365-4, and -5 nuts shows that the torque required to turn AN4 (1/4") nuts varied between 15-19 in/lbs. The torque required on AN5 (5/16") nuts varied between 18-22 in/lbs. This value must be added to the torque value.</p>			

Table 3: Acronym List

Acronym	Description
DPST	Double Pole Single Throw
SPST	Single Pole Single Throw
VCM	Valve Control Module
SDS	Safety Data Sheet
PPE	Personal Protective Equipment
DTM	Deutsch Mini
DT	Deutsch
PWM	Pulse Width Modulation
LED	Light Emitting Diode
CAN	Controller Area Network
CB	Circuit Breaker

Section 1: Introduction

Topics:

- [This Manual](#)
- [Applicable Aircraft Models](#)
- [Prerequisite Modifications](#)
- [Required and Special Tools](#)

This Manual

This manual includes installation information for the SwathPRO™ system you purchased.

Make sure that all personnel have read this manual and that they thoroughly understand the safe and correct installation procedures. Failure to do so could result in personal injury or equipment damage.

Right and left sides of the system are determined by facing the direction of forward travel of the aircraft on which the system is installed.

This manual contains important information on how to safely and correctly install the SwathPRO™ system. These instructions will help keep personnel safe, reduce downtime, and increase the reliability and life of the equipment, its components, and related systems.

Review the safety information in the manual(s) listed in the reference section of this manual. For more information, go to [References](#).

Follow the instructions (in this manual) and in the other referenced manual(s) for each step, to make sure that work conditions in and around the aircraft are safe.

Note: Graphics in this document are representative but may not match the instructions. Follow the instructions if there is a discrepancy with the graphics.

It is important for all individuals working with chemicals to understand the potential risks, necessary safety precautions, and proper response in the event of accidental contact. Reference the specific chemical manuals for safety information.

Read, understand, and review the procedures in this manual and other referenced documents. Use the Safety Data Sheets (SDS) and the required Personal Protective Equipment (PPE) for hazardous chemicals.

If you do not understand the installation of the SwathPRO™ system after reading this manual and referenced documentation, please obtain the proper training before installing the system, to make sure that your own safety, as well as your co-workers' safety, is maintained.

Applicable Aircraft Models

See the STC AML for applicable aircraft models.

Prerequisite Modifications

For Air Tractor AT-602 and AT-802 aircraft, the OEM generator ram air cooling scoop must be installed to allow for the full 250-amp rating of the aircraft generator.

Required and Special Tools

Tool Description	Where Used
Adjustable Stands	For the Install the Booms and Boom Hangers
Clamps	For the Install the Booms and Boom Hangers
Drill	For the Install the Booms and Boom Hangers Install the Gateway Hub On the Back of the Luggage Compartment For the Install the Gateway Hub Inside the Luggage Compartment For the Install the Boom Shutoff Kit
5 psi water line and a camlock fitting on the end of a boom	For the Do the Key Fob Boom Wet Test
Heat Gun	For the microswitch in the Install the Boom Shutoff Kit For the Install the Fan Brake Relay Signal Harness (Optional)
Alodine	For the Install the Booms and Boom Hangers

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Section 2: Safety

Topics:

- [Signal Words](#)
- [Emergency Safety](#)
- [Personal Protective Equipment](#)
- [Pressurized Fluid Lines](#)
- [Chemical Safety](#)

Signal Words



DANGER: Indicates an imminent hazard which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for aircraft components that, for functional purposes, cannot be guarded.



Warning: Indicates a potential hazard which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION: Indicates a potential hazard which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Important: This is used to draw attention to specific information that is necessary for the operation, setup, or service of the system.

Note: This is used for additional information that can help understand or operate the system.

Emergency Safety

Fire extinguishing systems must meet the applicable OSHA requirements, and all users of portable/ fixed fire suppression equipment must know the types, limitations, and proper uses of this equipment; including hazards involved with incipient stage firefighting.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

Know the location of fire extinguishers and first aid kits and how to use them.

Examine the fire extinguisher and service the fire extinguisher regularly.

Follow the recommendations on the instructions plate.

Very small fires can be put out (extinguished) with a fire extinguisher. Use an appropriate method to extinguish a fire (water for paper fires, and chemical extinguishers for electrical or chemical fires).

Personal Protective Equipment

Wear close-fitting clothing and the correct personal protective equipment (PPE) for the job. See the specific chemical manufacturer documentation or other information for correct PPE.

Pressurized Fluid Lines

Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can accidentally burst when too much heat is present.

Chemical Safety

Chemicals used in agricultural applications can be harmful to your health and/or the environment if not used correctly. Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Section 3: Installation

Topics:

- [Prepare for Installation and Setup](#)
- [System Layout](#)
- [Parts List](#)
- [Before Installation of the CapstanAG™ System](#)
- [Install the Booms and Boom Hangers](#)
- [Gateway Hub Mounting Location Options](#)
- [Install the Circuit Breakers and Power Harnesses](#)
- [Install the Pressure Sensor](#)
- [Install the Gateway Boom Extension Harnesses](#)
- [Boom Shutoff Kit Schematic](#)
- [Install the Servo/Flow Control Valve Harness](#)
- [Install the GPS Receiver](#)
- [Install the CapView](#)
- [Install the Maneuvering Speed Placard Decal](#)
- [Install the Parts to the Center Boom](#)
- [Install the Nozzle Tips](#)
- [Post-install Checklist](#)
- [Electrical Loads](#)
- [Weight and Balance Information](#)
- [Return to Service](#)

Prepare for Installation and Setup



CAUTION: Before installation or service to the system, read and understand the aircraft installation and maintenance manuals. Chemical residue may be present on/in the equipment. Use the correct personal protective equipment.

Important: Before installation, make sure that all parts are included in the shipping boxes. Make sure that the parts match the list of parts for your aircraft that is included in the shipping boxes.

Important: Do not attach the harnesses to the aircraft or components with cable ties until the dry test of the system is complete.

Do a check of the system layout and parts list in this manual.

Support harnesses and wiring using the provided cable ties as required to prevent chafing and damage every 24 inches at a minimum. Make sure that the harnesses and wiring does not interfere with flight control cables or other moving parts.

See [Table 2: AN Part Numbers and Torque Specifications](#) for all required torque specifications.

System Layout

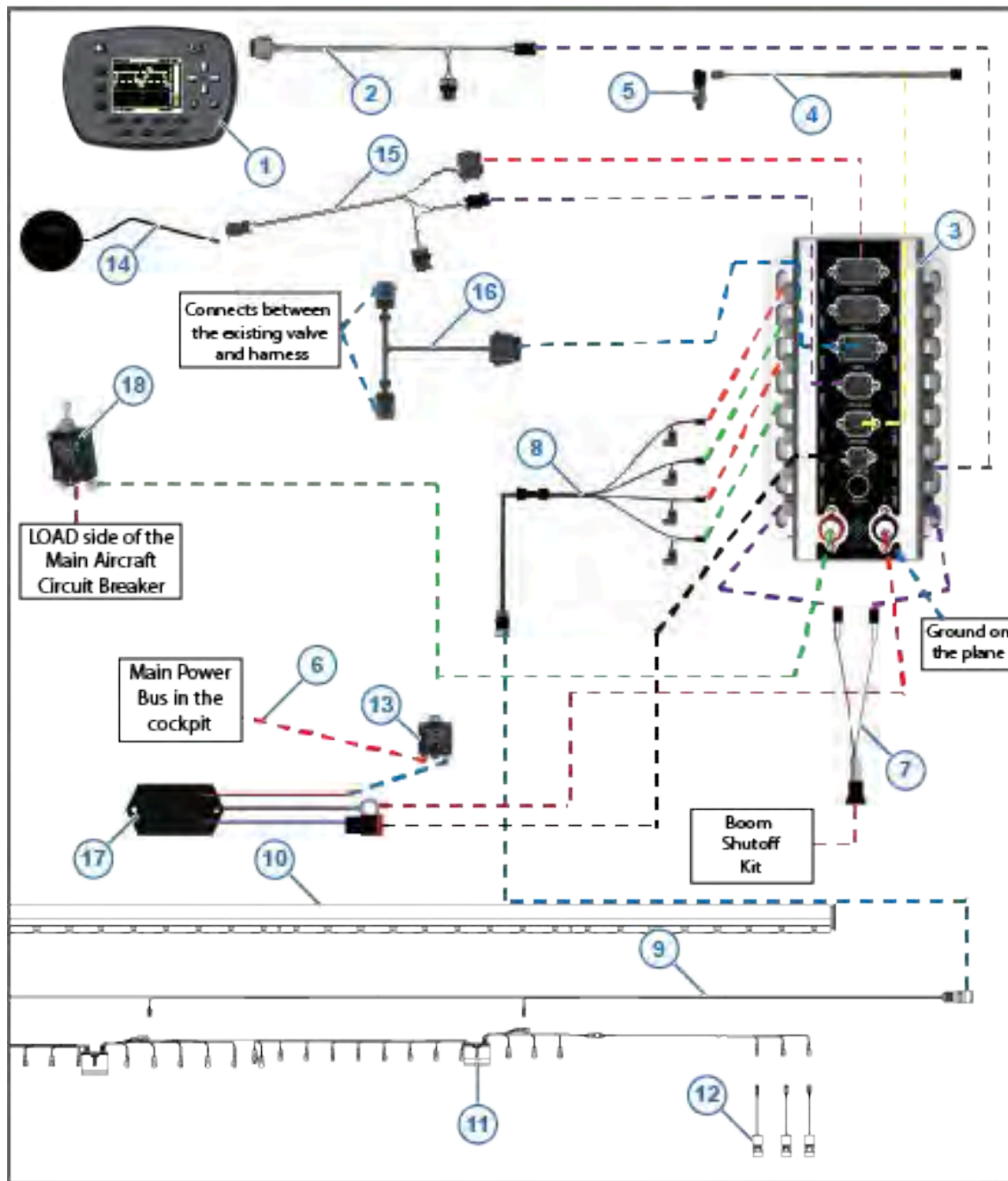


Figure 1: System Layout

Figure 1 is an example of the system layout. Not all of the parts are shown in this graphic. The right side of the system is not shown in this graphic.

See the [Parts List](#) for more parts information.

Table 4: System Layout Part Descriptions

Item	Part Number	Description	Field Serviceable
1	320200-300	CapView	No
2	320124-352	CapView Harness	Yes
3	320200-100	Gateway Hub	No
4	320124-009	Pressure Sensor Extension Harness	Yes
5	116301-015	Pressure Sensor	Yes
6	320124-016	Key Switch Power Harness	Yes
7	320124-008-7	12-pin Shutoff Harness	Yes
8	320124-347	Boom Control Extension Harness	No
9	320124-345 / 320124-346	Boom Control Harness	No
10	17' Boom - 320150-017-4 19' Boom - 320150-019-4	Boom	No
11	Main VCM - 320125-099 Center VCM - 320125-102	VCM	No
12	Main Assy - 320015-108 Center Assy - 320015-107	Valve Assembly	Yes
13	320015-088	7 Amp Circuit Breaker	No
14	320015-020	GPS Receiver	No
15	320124-355	GPS-Hub Adapter Harness	Yes
16	Satloc 320124-014 Insero 320124-015 Ag-Nav 320124-025	Servo/Flow Control Valve Harness	Yes
17	320015-092	Power Supply	No
18	W31-X2M1G-50	50 Amp Circuit Breaker Switch	No

Parts List

System Kits List

Description	Total Qty	802 Part Number	602 Part Number	502 Part Number	402 Part Number
Boom Hanger, Left	3	320100-802-L (Qty of 1) 320101-802-L (Qty of 2)	320100-502/602-L		320100-402-L
Boom Hanger, Right	3	320100-802-R (Qty of 1) 320101-802-R (Qty of 2)	320100-502/602-R		320100-402-R
Kit, Boom Hanger, Bushing and Sleeve		320150-007 (Qty of 6)	320150-007 (Qty of 2)	N/A	
Decal, Maneuvering Speed, SwathPRO	1	320015-030	N/A		
Adapter, Pipe, 1/4 - 1/8	6	N/A	716008-330	N/A	
Kit, Fuselage, SwathPRO	1	320150-001			
Kit, Boom Hanger, SwathPRO	1	320150-002			
Kit, Flange	1	320150-004		320150-003	
Kit, Boom	1	320150-019-4		320150-017-4	
Kit, Shutoff, SwathPRO	1	320124-008			
Kit, Spare Parts, SwathPRO	1	320150-005			
Servo Harness (By Brand)	1	Insero—320124-015			
		Satloc—320124-014			
		Ag-Nav—320124-025			

Fuselage Kit: 320150-001—Models: 802/602/502/402

Part Number	Description	Qty
116301-015	Pressure Sensor, 100 PSI	1
118603-113	Ram Mount Ball, 1"	2
118603-114	Ram Arm, Medium, B Size	1
118640-040	Key Fob	1
120100-010	Installation Kit PinPoint (Kit, Cable Ties)	1
120015-001	Thumb Drive	1
320100-031	Bracket, Boom Extension, Gateway	2

Part Number	Description	Qty
320100-032	U-Bolt, 1/4-20 x 1", 304 SS, 425 Lb Cap	2
320124-009	Harness, Pressure Sensor Extension	1
320124-347	Harness, Boom Control Extension	2
320124-352	Harness, Capview, 10Ft	1
320124-354	Harness, Power, 8Ga.	1
320200-100	Assembly, Gateway Hub, SwathPRO	1
320200-300	Display, Capview, SwathPRO	1
320700-001	Manual, Pilot's Operating Handbook for SwathPRO	1
320700-002	Manual, Operators, ProMaker Software	1
320700-007	Manual, Install Guide, SwathPRO	1
320700-005	Manual, Instructions for Continued Airworthiness for SwathPRO	1
706530-260	Dust Cap, Receptical, 24 Shell	2
706530-348	Dust Plug, 6 Pin	4
706530-349	Dust Plug, 8 Pin	1
706530-356	Dust Plug, 12 Pin	2
W31-X2M1G-50	Circuit Breaker, 50 Amp Switch	1
716008-329	Tee Street, 1/4" NPT	1
320124-231	Harness, Boom, Center, 4 Space, Right	1
320124-232	Harness, Boom, Center, 4 Space, Left	1
320015-108	Assembly, 7W, Stainless, Center w/Check Valve	6
713501-454	Bolt, Hex 10-32 x 21/32 Cad Plated	4
713600-013	Washer, Flat, #10 Cad Plated	4
713501-531	Nut, Hex Elastic Stop, 10-32 Cad Plated	4
320015-015	Decal, Page, Fuselage Decals	1
713501-427	Bolt, Hex 3/8-24 x 31/32 Cad Plated	6
713501-521	Nut, Hex 3/8-24 Stop, Cad Plated	6
713600-014	Washer, Flat, 3/8, Cad Plated	12
320015-018	Mount, Gateway	2
716023-112	Pop Rivet, 1/8" Aluminum (CherryMax)	6
320015-020	Assembly, GPS, Hub 5Hz, Aerial	1
320124-355	Harness, Adapter, GPS - Hub	1

Part Number	Description	Qty
320015-088	7 Amp Circuit Breaker	1
320124-016	Circuit Breaker Keyswitch Harness	1
320015-092	Power Supply Assembly, 24V to 19V	1

Boom Hanger Kit: 320150-002—Models: 802/602/502/402

Part Number	Description	Qty
320100-008	Boom Hanger Tab, Front Mnt, Bottom Right	6
320100-009	Boom Hanger Tab, Front Mnt, Top Left	6
320100-010	Boom Hanger Tab, Front Mnt, Bottom Left	6
713501-417	Screw, 1/4-28 x 5/8" Cad Plated	12
713501-419	Bolt, Mil-Spec 5/16-24 x 31/32 Cad Plated	6
713501-420	Screw, Mach, Flt Hd, 100 deg, 1/4-28 x 1, Cad Plated	24
713501-452	Screw, Pan Head Philips, 6-32 x 1/2 Cad Plated	6
713501-525	Nut, Stop, Hex, Thin, 1/4-28 Cad Plated	36
713501-526	Nut, Stop, Hex, Thin, 6-32 Cad Plated	6
713501-527	Nut, Hex, Nylok, 5/16-24, Cad Plated	6
713600-010	Washer, Mil-Spec, 5/16, Cad Plated	12
320100-014	Centering Plate, Plastic	6
713600-012	Washer, Mil-Spec, 1/4 Stainless	24

2 inch Flange Kit: 320150-004—Models: 802/602

Part Number	Description	Qty
2084T25	Hose Coupling, 2"	2
FC220	Flange Clamp, 2" Full Port	4
TKM220MPTSS	Flange Adapter, 2" Full Port, 2" MPT, SS	2
M221G	Flange Gasket, 2" Full Port, Banjo	4
CFGLP150CAP	Cap, Cam Lock 1.5"	2
320015-014	220 Flange 1" NPT 150A Camlock	2
Note: The flange kit comes installed on the boom assembly. Individual part numbers may not be called out specifically in the installation guide.		

1.5 in Flange Kit: 320150-003—Models: 502/402

Part Number	Description	Qty
2084T24	Hose Coupling, 1.5"	2
FC220	Flange Clamp, 2" Full Port	4
TKM220150MPTSS	Flange Adapter, 2" Full Port, 1-1/2 MPT, SS	2
M221G	Flange Gasket, 2" Full Port, Banjo	4
716008-330	Adapter, Pipe, 1/4 - 1/8	6
CFGLP150CAP	Cap, Cam Lock 1.5"	2
320015-014	220 Flange 1" NPT 150A Camlock	2
Note: The flange kit comes installed on the boom assembly. Individual part numbers may not be called out specifically in the installation guide.		

19 ft 4 inch Spacing Boom Kit:320150-019-4—Models: 802/602

Part Number	Description	Qty
320100-019-4	Boom, 19Ft, 4" Spacing	2
320015-107	Assembly, Stainless Valve, 7 W, w/Check Valve	106
320100-051	Dzus, Lion, Receptical, Clip On	228
320100-056	Clip, Cable Holder	56
709031-506	Screw, 8-32 x 1/2", Nylon	56
320125-099	Assembly, VCM, 4" Spacing	6
320124-346	Harness, Boom Control, 4" Spacing, 19Ft	2
706530-259	Dust Cap Plug, Circular, 24 Shell	2
716008-328	Plug, Countersunk, Brass 1/4" NPT	8
320102-016	Assembly, Boom Shell, No Slot	106
320102-018	Assembly, Shell, VCM	8
320125-102	Assembly, VCM, 4" Spacing, Center	2
320101-020	Shell End Cap	2
709031-509	Screw, Sheet Metal, #8 x 1/2 SS	4
320015-006	Dust Plug, Aerial, VCM Harnesses	8
Note: The boom kit comes assembled. Individual part numbers may not be called out specifically in the installation guide.		

17 ft 4 inch Spacing Boom Kit: 320150-017-4— Models:502/402

Part Number	Description	Qty
320100-017-4	Boom, 17Ft, 4" Spacing	2
320015-107	Assembly, Stainless Valve, 7 W, w/Check Valve	94
320100-051	Dzus, Lion, Receptical, Clip On	204
320100-056	Clip, Cable Holder	50
709031-506	Screw, 8-32 x 1/2", Nylon	50
320125-099	Assembly, VCM, 4" Spacing	6
320124-345	Harness, Boom Control, 4" Spacing, 17Ft	2
706530-259	Dust Cap Plug, Circular, 24 Shell Deutsch	2
716008-328	Plug, Countersunk, Brass 1/4" NPT	8
320102-016	Assembly, Boom Shell, No Slot	94
320102-018	Assembly, Shell, VCM	8
320125-102	Assembly, VCM, 4" Spacing, Center	2
320101-020	Shell End Cap	2
709031-509	Screw, Sheet Metal, #8 x 1/2 SS	4
320015-006	Dust Plug, Aerial, VCM Harnesses	24
Note: The boom kit comes assembled. Individual part numbers may not be called out specifically in the installation guide.		

SwathPRO Shutoff Kit: 320124-008—Models: 802/602/502/402

Part Number	Description	Qty
320015-097	Toggle Switch, DPST	2
320015-098	Toggle Switch, SPST	1
320015-099	Micro Switch	1
703500-151	Relay, SPDT, 20A, 24V	1
320124-008-1	Harness, Shutoff, Power, MicroSW	1
320124-008-2	Harness, SPST Switch	2
320124-008-3	Harness, Shutoff, Gateway, Pigtail	1
320124-008-7	Harness, Shutoff, 12 Pin Gateway	1

Part Number	Description	Qty
320124-008-8	Harness, Fan Brake Relay, Ground	1
320124-008-9	Harness, Fan Brake Relay, Signal	1
320124-008-10	Harness, Microswitch to Relay	1
715005-156	Sleeve, Solder 14-16Ga.	3
320015-019	Bracket, Microswitch Mount	1
713501-428	Screw 4-40 x 3/4 Cad Plated	2
713600-015	Washer, Flat, #4, Cad Plated	2
713501-522	Nut, 4-40 Thin, Cad Plated	2
716023-112	Rivet, 1/8 Dia, Aluminum	2

Spare Parts: 320150-005—Models: 802/602/502/402

Part Number	Description	Qty
706530-425	Plug, Dust, 6 Pin DTM	2
705725-137	Fuse, 15A, Type ATO/ATC	4
320102-016	Assy, Boom Shell, No Clip	4
320100-051	Clip On Receptical	8
320015-108	Assembly, 7W, Stainless, Center w/Check Valve	1
320015-107	Assembly, Stainless Valve, 7 W, w/Check Valve	4
320025-001	Tool, T35, Valve Body Removal	1

Before Installation of the CapstanAG™ System

If the SwathPRO™ system has not been installed on your aircraft before, continue to use this installation guide for correct installation procedures.

If the SwathPRO™ booms have been removed and you are installing the booms again, see the SwathPRO™ Instructions for Continued Airworthiness (ICA) manual for the correct installation procedures.

1. Make sure that the aircraft key is off.
2. Empty the hopper and clean the spray system and aircraft.
3. Make sure that the aircraft is on a solid, level surface, with the wheels chocked.
4. Remove access shields from the fuselage of the aircraft.

Remove the Factory Spray System

1. Record how many washers and/or spacers are on each boom hanger bolt.
This hardware will be used to install and shim the SwathPRO™ booms the same way as the existing booms.
2. Remove the existing booms and boom hangers from the aircraft.
3. Keep the spacers and washers used on the boom hangers.

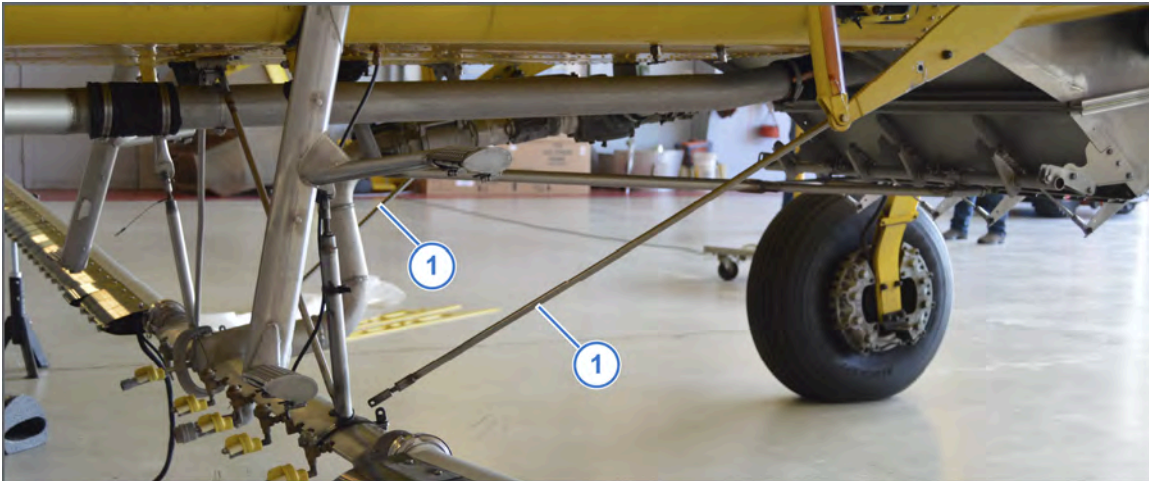


Figure 2: Disconnect the Support Tube Assemblies

4. If installed, disconnect the forward-facing support tubes ([Figure 2](#), Item 1) on the center boom.

Install the Booms and Boom Hangers

Note: All match drilling of holes shall be in accordance with AC 43.13-1B Chapter 4, Section 4.

1. Make sure that you have completed the procedures in [Before Installation of the CapstanAG™ System](#).



Figure 3: Centering Plate Installation

2. Install the plastic centering plate ([Figure 3](#), Item 1) onto the SwathPRO™ boom hangers ([Figure 3](#), Item 2).
 - a) Install and tighten the 1/4-28 x 1 machine screws ([Figure 3](#), Item 3) through the countersink holes and then through the plastic centering plate.
 - b) Attach and tighten the screws to the boom and centering plate with the 1/4 inch washers ([Figure 3](#), Item 4) and 1/4-28 thin stop nuts ([Figure 3](#), Item 5).

Table 5: Parts for the Centering Plate Installation

Parts from the Boom Hanger Kit

See [Figure 3](#)

Item	Part Number	Description	Qty
1	320100-014	Centering Plate, Plastic	6
2	Varies by aircraft See the Parts List for correct part number	Boom Hanger, Left	3
		Boom Hanger, Right	3
3	713501-420	Screw, Machine, 100 Deg, 1/4-28 X 1, Cad Plated	24
4	713600-012	Washer, Mil-Spec, 1/4, Cad Plated	24
5	713501-525	Nut, Stop, Hex, Thin, 1/4-28 Cad Plated	24



Figure 4: Boom and Boom Hanger Prep for Installation

3. Put two adjustable stands (Figure 4, Item 1) on a solid, level surface below each wing of the aircraft.
4. Put both of the booms (Figure 4, Item 2) onto the adjustable stands.

Table 6: Boom Part Numbers

Parts from the Boom Kit

See Figure 4

Item	Part Number	Description	Aircraft Models	Qty
1	320150-019-4	19 ft 4 inch Spacing Boom Kit	802/602	2
	320150-017-4	17 ft 4 inch Spacing Boom Kit	502/402	

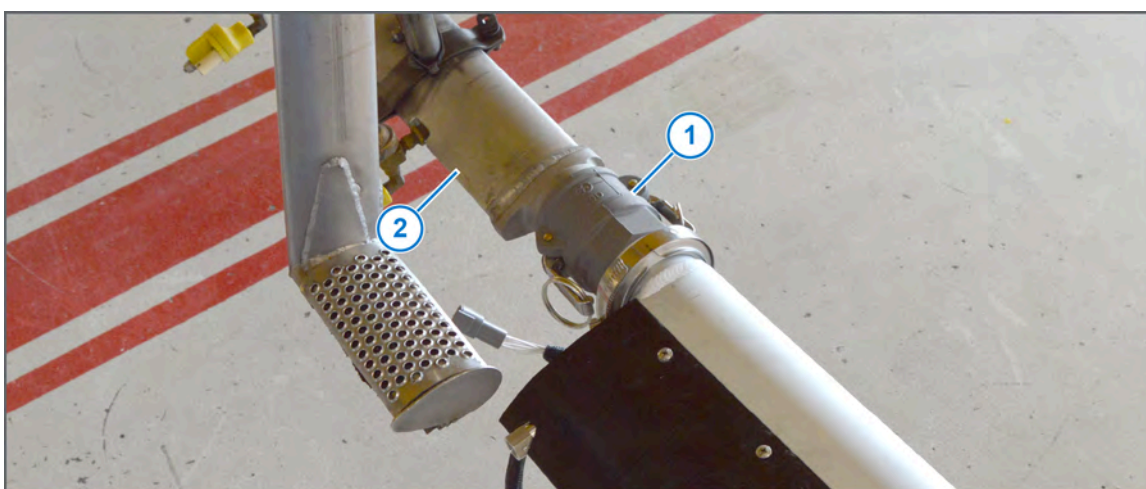


Figure 5: Adjustment to get the Boom Connectors to the Center Boom

5. Adjust the stands vertically, forward/aft, and left/right until the camlock fittings (Figure 5, Item 1) can correctly connect on each boom and the center boom (Figure 5, Item 2).

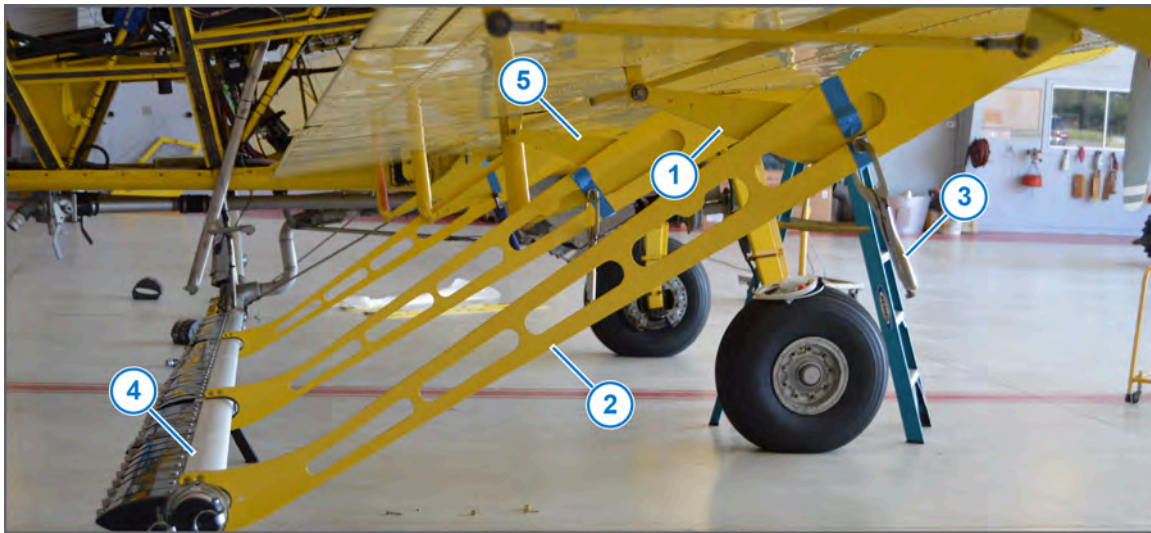



Figure 6: Outermost and Middle Boom Hanger Positions

6. Go to the outermost boom hanger position (Figure 6, Item 1) and temporarily attach the SwathPRO™ boom hanger (Figure 6, Item 2) in the same position as the factory boom hanger using clamps (Figure 6, Item 3).

Table 7: Outermost Boom Hanger Parts

Parts from the Boom Hanger Kit

See [Figure 6](#)

Item	Part Number	Description	Qty
2	Varies by aircraft	Boom Hanger, Left	1
	See Parts List for the correct part number	Boom Hanger, Right	1
	 Attention: For 802 aircraft, use part number 320100-802-R and 320100-802-L for the outermost boom hanger. The hangers have five slots cut into them.		

Make sure the countersunk side of the boom hanger is facing outward, away from the aircraft.

7. Slide the boom (Figure 6, Item 4) into the SwathPRO™ boom hanger.
You may need to wiggle the hanger onto the boom.
8. Make sure that you have not moved the boom out of position.
 - a) As necessary, adjust the stands vertically, fore/aft, and left/right until the boom hanger is in the correct position, the boom is straight, and the camlock fittings can correctly connect on each boom and the center boom.

The boom hanger should be parallel with the direction of flight. The top of the boom hanger should be parallel to the bottom of the wing to keep the entire boom parallel to the wing. If the boom is not level with the bottom of the wing, it will cause the boom to act as its own wing, creating lift or downforce that is different than the opposite side of the aircraft.


9. After the outermost boom hanger is clamped into place, go to the location of the middle boom hanger (Figure 6, Item 5).

The boom hanger is only clamped into place and not fully installed yet. Later in the procedure, the installation of the boom hangers will be completed.

Table 8: Middle Boom Hanger Parts

Parts from the Boom Hanger Kit

See [Figure 6](#)

Item	Part Number	Description	Qty
5	Varies by aircraft See Parts List for correct part number  Attention: For 802 aircraft, use part number 320101-802-R and 320101-802-L for the middle boom hanger. The hangers have four slots cut into them.	Boom Hanger, Left	1
		Boom Hanger, Right	1

10. Slide the middle boom hanger onto the boom, then clamp it into place.

Make sure that the countersunk side of the hanger is facing outward.

11. Make sure that you have not moved the boom out of position.

- a) As necessary, adjust the stands vertically, fore/aft, and left/right until the boom hanger is in the correct position, the boom is straight, and the camlock fittings can correctly connect on each boom and the center boom.

The boom hanger should be parallel with the direction of flight. The top of the boom hanger should be parallel to the bottom of the wing to keep the entire boom parallel to the wing. If the boom is not level with the bottom of the wing, it will cause the boom to act as its own wing, creating lift or downforce that is different than the opposite side of the aircraft.

12. After the middle boom hanger is clamped, go to the innermost boom hanger.

The boom hanger is only clamped into place and not fully installed yet. Later in the procedure, the installation of the boom hangers will be completed.



Figure 7: Innermost Boom Hanger Position


13. Slide the innermost boom hanger (Figure 7, Item 1) onto the boom (Figure 7, Item 2), then clamp it into place.

The boom hanger is only clamped into place and not fully installed yet. Later in the procedure, the installation of the boom hangers will be completed.

Table 9: Innermost Boom Hanger Parts

Parts from the Boom Hanger Kit

See [Figure 7](#)

Item	Part Number	Description	Qty
1	Varies by aircraft See Parts List for correct part number	Boom Hanger, Left	1
		Boom Hanger, Right	1
	 Attention: For 802 aircraft, use part number 320101-802-R and 320101-802-L for the innermost boom hanger. The hangers have four slots cut into them.		

14. Make sure that you have not moved the boom out of position.
 - a) As necessary, adjust the stands vertically, fore/aft, and left/right until the boom hanger is in the correct position, the boom is straight, and the camlock fittings can correctly connect on each boom and the center boom.

The boom hanger should be parallel with the direction of flight. The top of the boom hanger should be parallel to the bottom of the wing to keep the entire boom parallel to the wing. If the boom is not level with the bottom of the wing, it will cause the boom to act as its own wing, creating lift or downforce that is different than the opposite side of the aircraft.

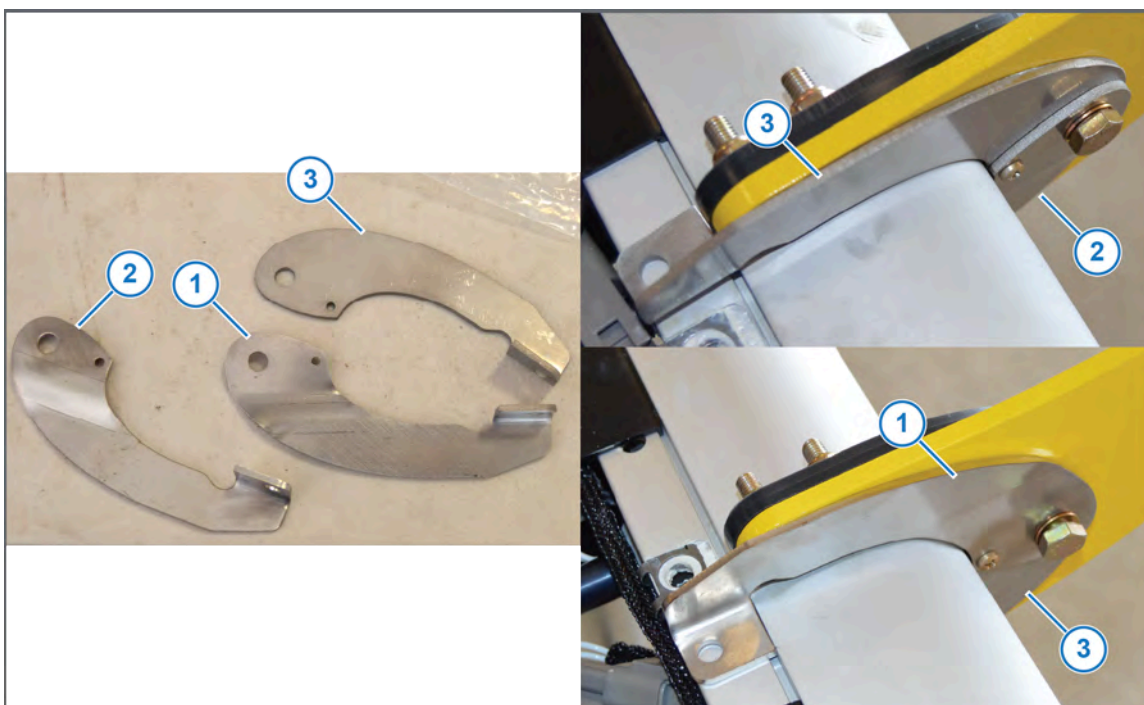


Figure 8: Boom Hanger Tabs

15. There are two curved boom hanger tabs supplied, determine which you need:

- Boom Hanger Tab—Right (Figure 8, Item 1)
- Boom Hanger Tab—Left (Figure 8, Item 2)

Make sure that each boom hanger tab assembly has a straight piece (Figure 8, Item 3), and a curved piece.

Make sure that the tabs do not interfere with the 1/4-turn holes on the booms and that the bracket ears are facing the same direction. Use the curved pieces to remove the interference.

The straight piece must be installed tight against the boom hanger and can be on the top or bottom of the hanger. The curved boom hanger tabs should be used to keep from interfering with the 1/4-turn holes on the booms.

Table 10: Boom Hanger Tab Parts List

Parts from the Boom Hanger Kit

See Figure 8

Item	Part Number	Description	Text Description	Qty
1	320100-008	Boom Hanger Tab, Front Mnt, Bottom Right	Curved Hanger Tab	6
2	320100-010	Boom Hanger Tab, Front Mnt, Bottom Left	Curved Hanger Tab	6
3	320100-009	Boom Hanger Tab, Front Mnt, Top Left	Straight Hanger Tab	6

Note: There are three boom hangers per side of the aircraft. You will have extra curved boom hanger tabs after the installation.

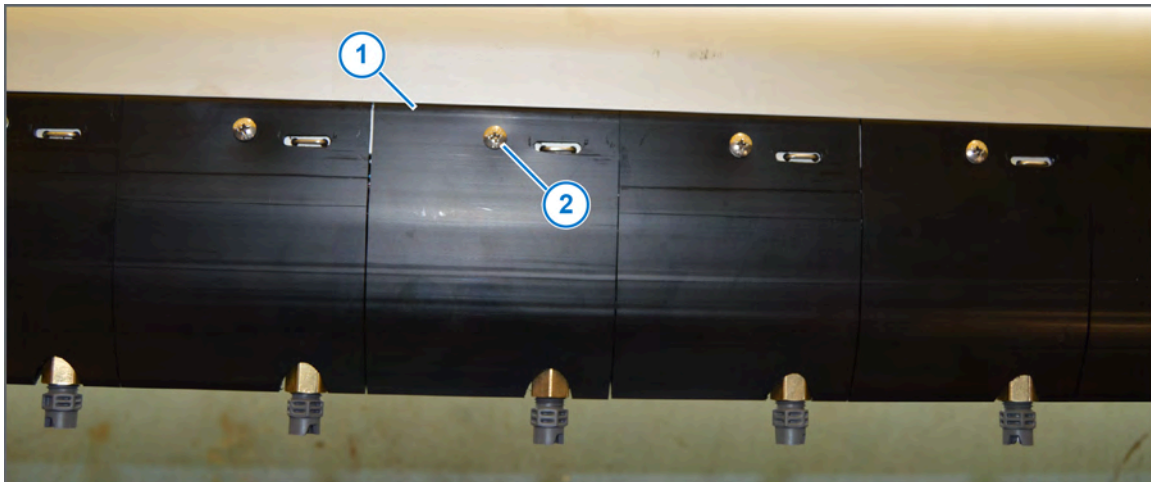


Figure 9: Remove the Shells

16. On the shell(s) (Figure 9, Item 1), where the boom hangers will attach to the booms, loosen the quarter-turn fasteners (Figure 9, Item 2) on both the top and bottom of the shell(s).
17. Remove the shell(s).
18. Make sure that the boom is as far forward in the boom hanger as possible.
19. Test fit the tabs to make sure that there is no interference and that the tabs fit correctly.

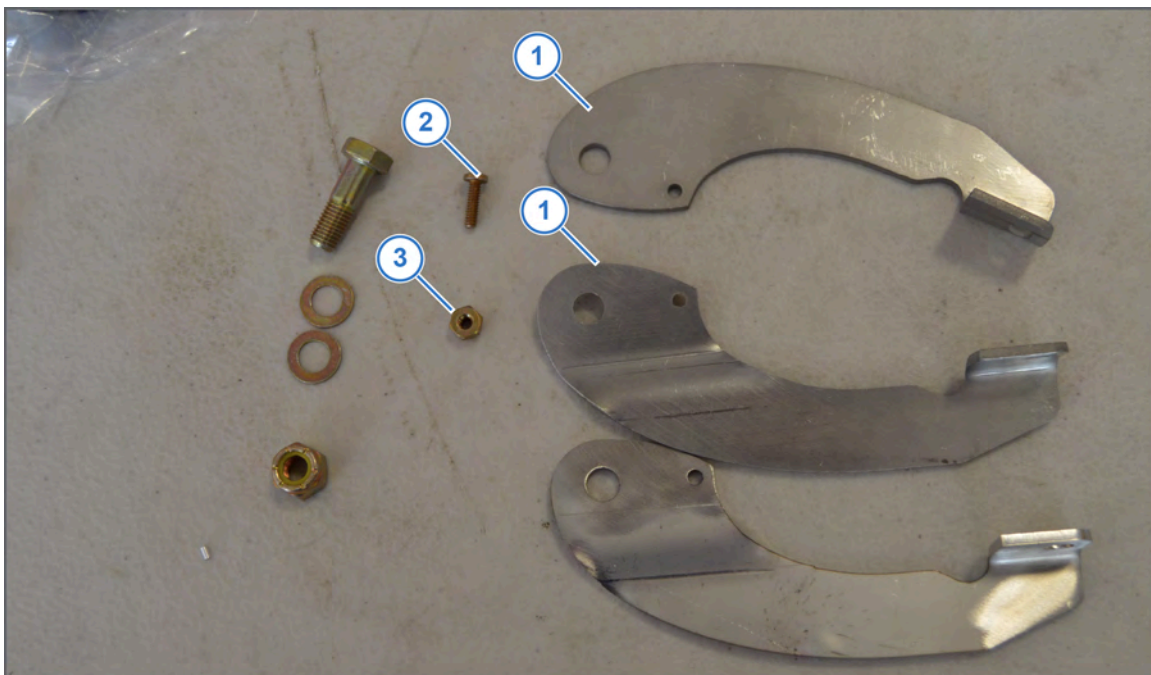


Figure 10: Boom Hanger Tab Assembly

20. Put the two boom hanger tab pieces (Figure 10, Item 1) together with the holes lining up.
21. Install the 6-32 x 1/2 screw (Figure 10, Item 2) and nut (Figure 10, Item 3) into the boom hanger tabs so that the nut will be against the boom hanger.

Table 11: Boom Hanger Tab Installation Parts

Parts from the Boom Hanger Kit

See [Figure 10](#)

Item	Part Number	Description	Qty
2	713501-452	Screw, Pan Head Philips, 6-32 x 1/2 Cad Plated	6
3	713501-526	Nut, Stop, Hex, Thin, 6-32 Cad Plated	6

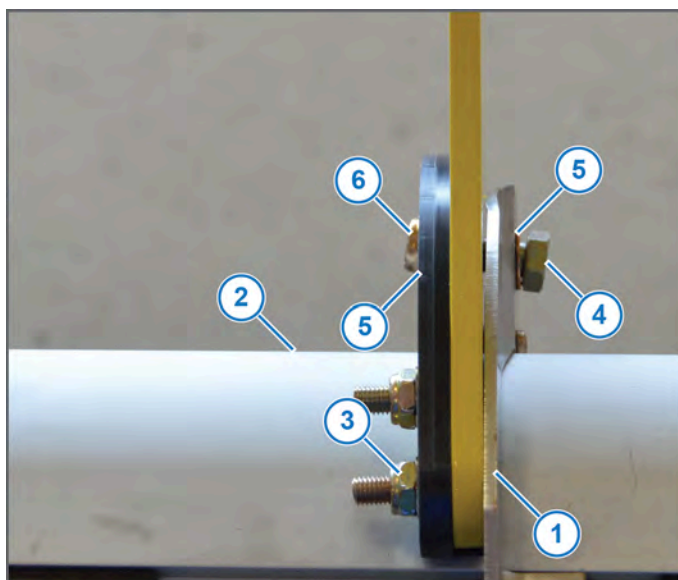


Figure 11: Installing the Boom Hanger Tabs

22. Slide the boom hanger tab assembly ([Figure 11](#), Item 1) over the boom ([Figure 11](#), Item 2) from the leading edge of the boom and onto the side of the boom hanger opposite of the plastic centering bracket nuts ([Figure 11](#), Item 3).
23. Insert a 5/16 bolt ([Figure 11](#), Item 4) through the boom hanger tab assembly and install the washers on each side ([Figure 11](#), Item 5) and nut ([Figure 11](#), Item 6).

Table 12: Boom Hanger Tab Installation Parts

Parts from the Boom Hanger Kit

See [Figure 11](#)

Item	Part Number	Description	Qty
4	713501-419	Bolt, Mil-Spec 5/16-24 x 31/32 Cad Plated	6
5	713600-010	Washer, Mil-Spec, 5/16, Cad Plated	12
6	713501-527	Nut, Hex, Nylok, 5/16-24, Cad Plated	6

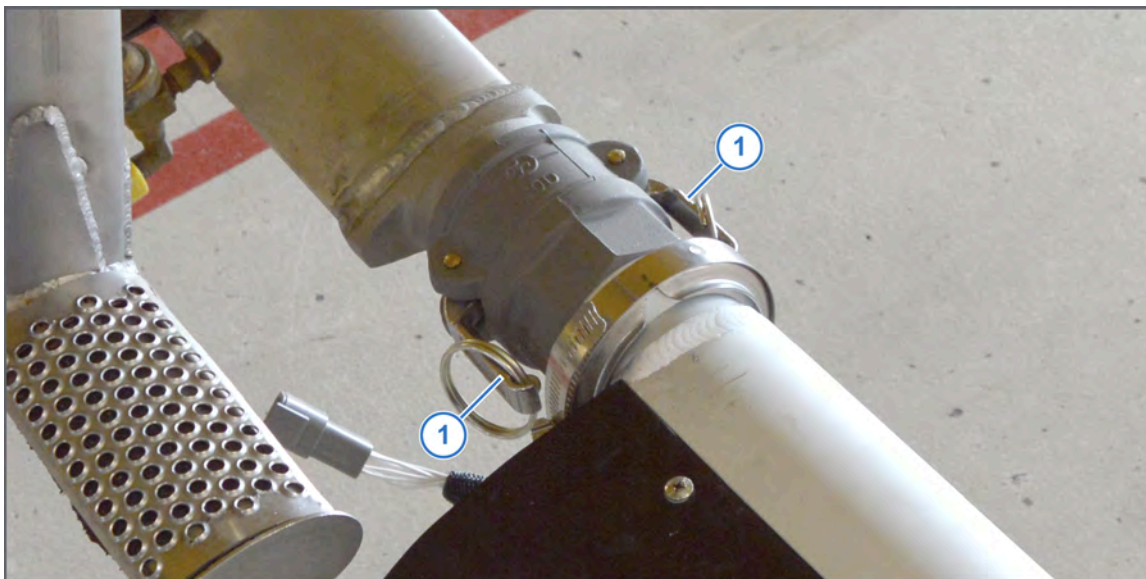


Figure 12: Do a Check of the Camlock Tension

24. Loosen and tighten the handles (Figure 12, Item 1) on the camlock to make sure that both handles have the same tension.
25. Check both sides of the aircraft to make sure that they have the same tension.
If the handles have different levels of tension, remove the clamp from the boom hangers and adjust the boom forward or aft until the handles are equal in closing force. Once the handles have equal tension, install the clamps on the boom hangers again.
26. Do a check of the straightness of the boom, position of the hangers, and tension on the camlock handles.
27. If the boom is straight, the hangers are in the correct position, and the tension on the camlock handles is equal, use the existing boom hanger mounting locations on your aircraft to match drill 1/4 inch holes into each of the SwathPRO™ boom hangers.



CAUTION: The minimum allowable distance from the center of a drilled hole to the edge of the boom hanger may be no less than 1.5 times the diameter of the hole.

As an example: the center point of a 1/4 inch diameter hole must be at least 3/8 inch from the edge of the boom hanger.

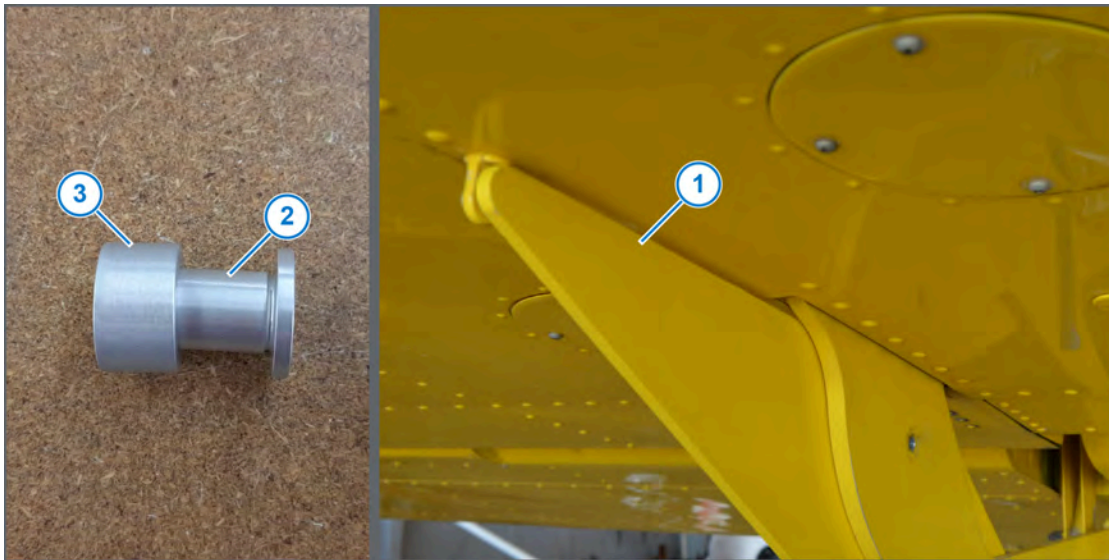


Figure 13: Installing the Bushing Kit

28. If necessary, install bushing kits [Table 13: Bushing Kit Part Numbers](#) to the boom hangers.

Table 13: Bushing Kit Part Numbers

Parts from the System Kit

See [Figure 13](#)

Item	Part Number	Description	Qty
1	320150-007	Kit, Boom Hanger, Bushing and Sleeve	802—6
			602—2

On the 802 aircraft, a bushing kit needs installed in three locations on each side of the aircraft. On the middle hanger, a bushing kit is installed in the aft top location. On the innermost hanger, a bushing kit is installed in both mounting locations.

On 602 aircraft, a bushing kit needs installed in one location in each side of the aircraft. On the innermost hanger, a bushing kit is installed in the lowest hole.

- Remove the boom hanger ([Figure 13](#), Item 1).
- Use a 39/64 inch drill bit to drill out the hole where the bushing will be installed.
- Use a 5/8 inch reamer to ream out the 39/64 inch hole.

Note: The final inner diameter of this hole must not be larger than 0.6257 inch.

- Use a clamp to press the bushing ([Figure 13](#), Item 2) into the hole until it is seated against its collar.

The collar should be on the side of the boom hanger that will not be facing the mounting location.

- If there are visual scratches on the bushing after pressing in, touch-up with Alodine around the outside of the bushing.
- Install the bushing sleeve ([Figure 13](#), Item 3) over the bushing.
- Repeat steps a to f for every bushing that needs installed.
- Install the boom hanger.

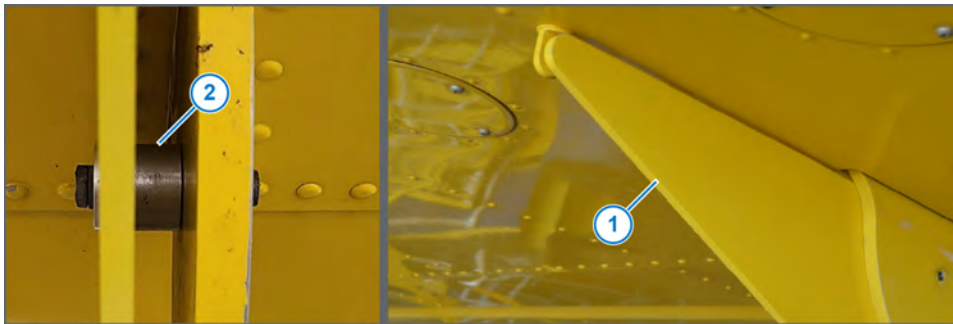


Figure 14: Boom Hangers Installation

- 29.** Start at the outside of the aircraft, on each side, to install the boom hangers (Figure 14, Item 1) using the existing washers and/or spacers you kept when removing the existing boom hangers from the aircraft.
On the 602 and 802 aircraft, the bushing kit (Figure 14, Item 2) will replace the spacer that was installed when the hanger was removed.
- 30.** Make sure that the hanger is parallel with the direction of flight.
Make adjustments by tapping the boom hanger tab assembly left or right to straighten the boom hanger. If the boom hanger has any bend in it, it can cause the spray pattern to have a gap in that location.

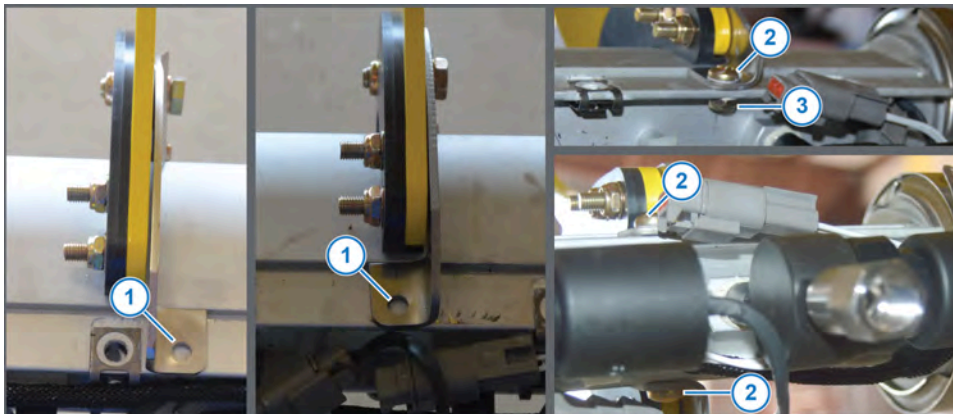


Figure 15: Boom Hanger Installation

- 31.** Use the hole in the boom hanger tab assembly (Figure 15, Item 1) as a guide and match drill the 1/4-inch holes in the top and bottom of the boom for each boom hanger tab assembly.
- 32.** Install the 1/4-28 x 5/8 screw (Figure 15, Item 2) and nut (Figure 15, Item 3) to the top and boom of the boom to attach the boom hanger tab assembly.

Table 14: Boom Hanger Installation Parts List

Parts from the Boom Hanger Kit

See Figure 15

Item	Part Number	Description	Qty
2	713501-417	Screw, 1/4-28 x 5/8" Cad Plated	12
3	713501-525	Nut, Stop, Hex, Thin, 1/4-28 Cad Plated	12

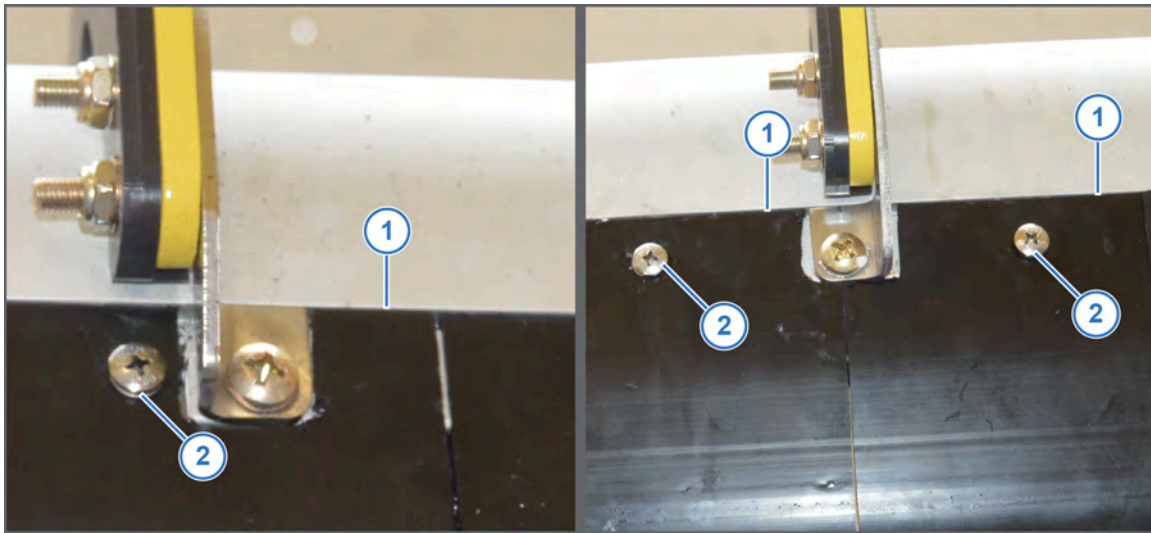


Figure 16: Install the Shells

- 33.** Cut the shells (Figure 16, Item 1) to fit around the boom hanger tab assembly.
- 34.** Install the shells and tighten the quarter-turn fasteners (Figure 16, Item 2)

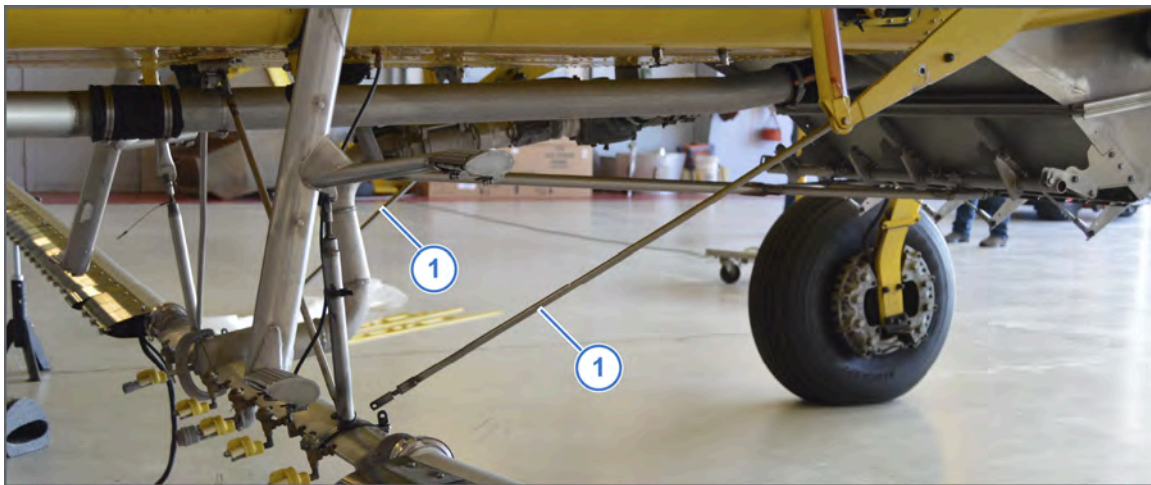


Figure 17: Forward-facing Support Tubes

- 35.** Attach the forward facing support tubes (Figure 17, Item 1) on the center boom.
You may need to readjust the length of these tubes to get them to fit correctly again.
- 36.** Remove the stands.

Gateway Hub Mounting Location Options

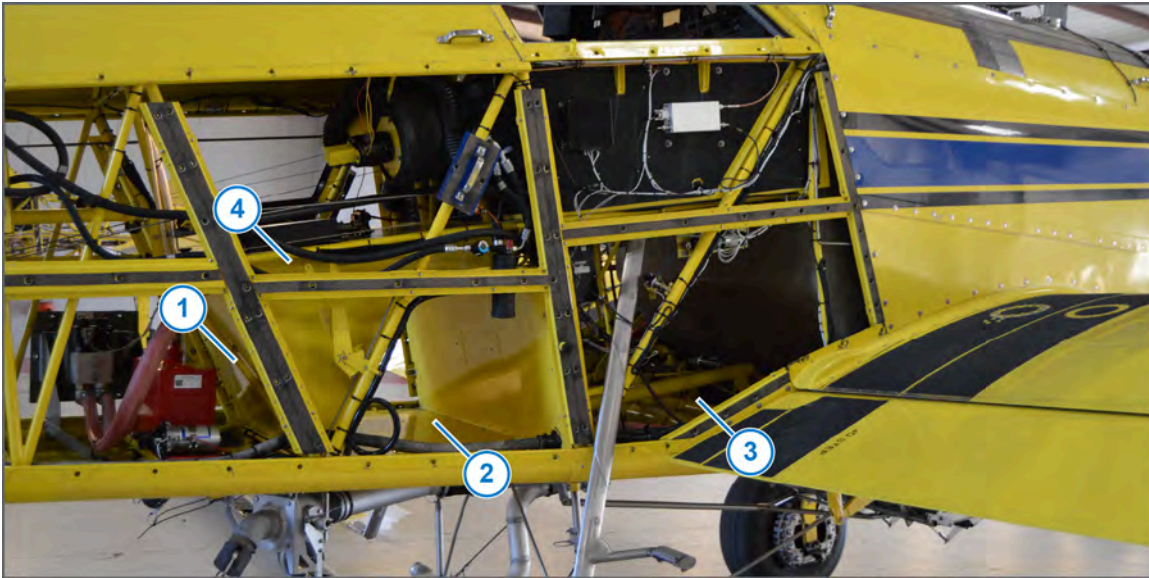


Figure 18: Gateway Hub Mounting Options

Find a suitable location for the Gateway hub. Recommended locations:

- Option 1 (Figure 18, Item 1)—On the back of the luggage compartment
- Option 2 (Figure 18, Item 2)—Inside the luggage compartment
- Option 3 (Figure 18, Item 3)—Underneath the cockpit
- Option 4 (for AT-802/802A Only) (Figure 18, Item 4)—On the top of the luggage compartment

Install the Gateway Hub On the Back of the Luggage Compartment

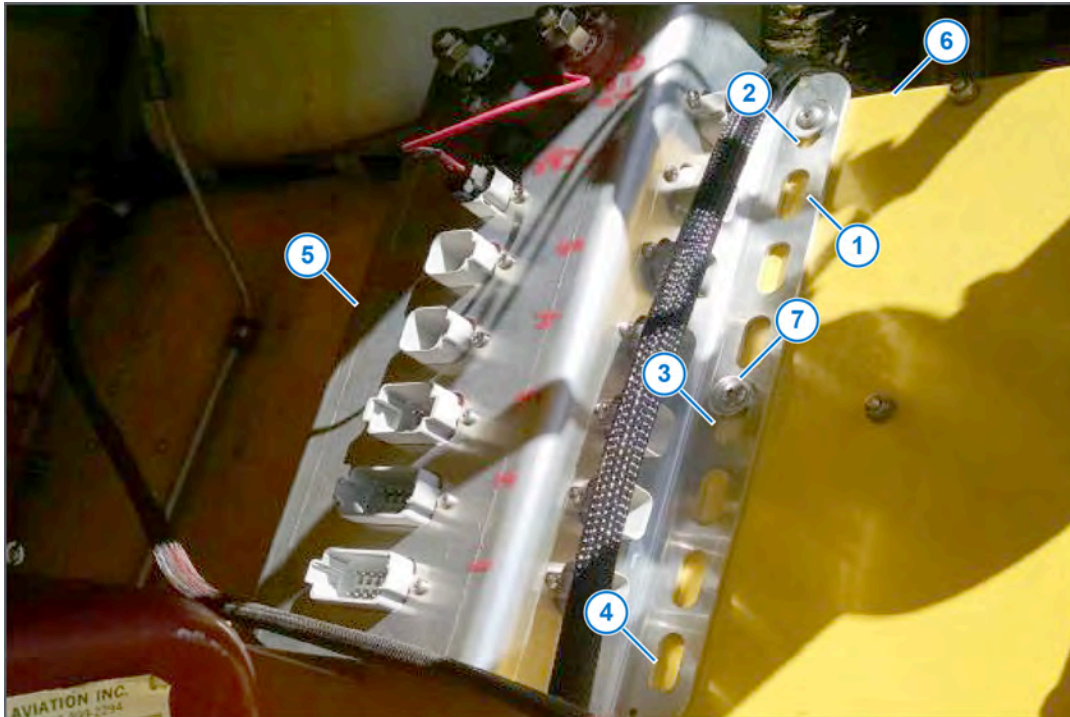


Figure 19: Gateway Hub on the Back of the Luggage Compartment

1. Put the Gateway hub on the back of the luggage compartment.
Make sure to stay away from any moving parts.
2. Use the slots (Figure 19, Item 1) in the Gateway hub housing as a guide to match drill three holes on each side on the Gateway—top (Figure 19, Item 2), center (Figure 19, Item 3), and bottom (Figure 19, Item 4) on each side of the Gateway.
3. Install the Gateway hub (Figure 19, Item 5) to the back of the luggage compartment (Figure 19, Item 6) with the supplied hardware (Figure 19, Item 7)—3/8-24 x 31/32 hex bolts, 3/8 flat washers, and 3/8-24 nuts.

Table 15: Gateway Hub Mounting Part Numbers

Parts from the Fuselage Kit

See [Figure 19](#)

Item	Part Number	Description	Qty
5	320200-100	Assembly, Gateway Hub, SwathPRO	1
7	713501-427	Bolt, Hex 3/8-24 x 31/32 Cad Plated	6
	713600-014	Washer, Flat, 3/8, Cad Plated	12
	713501-521	Nut, Hex 3/8-24 Stop, Cad Plated	6

4. Make sure that all of the hardware is tightened to the correct specification.

Install the Gateway Hub Inside the Luggage Compartment

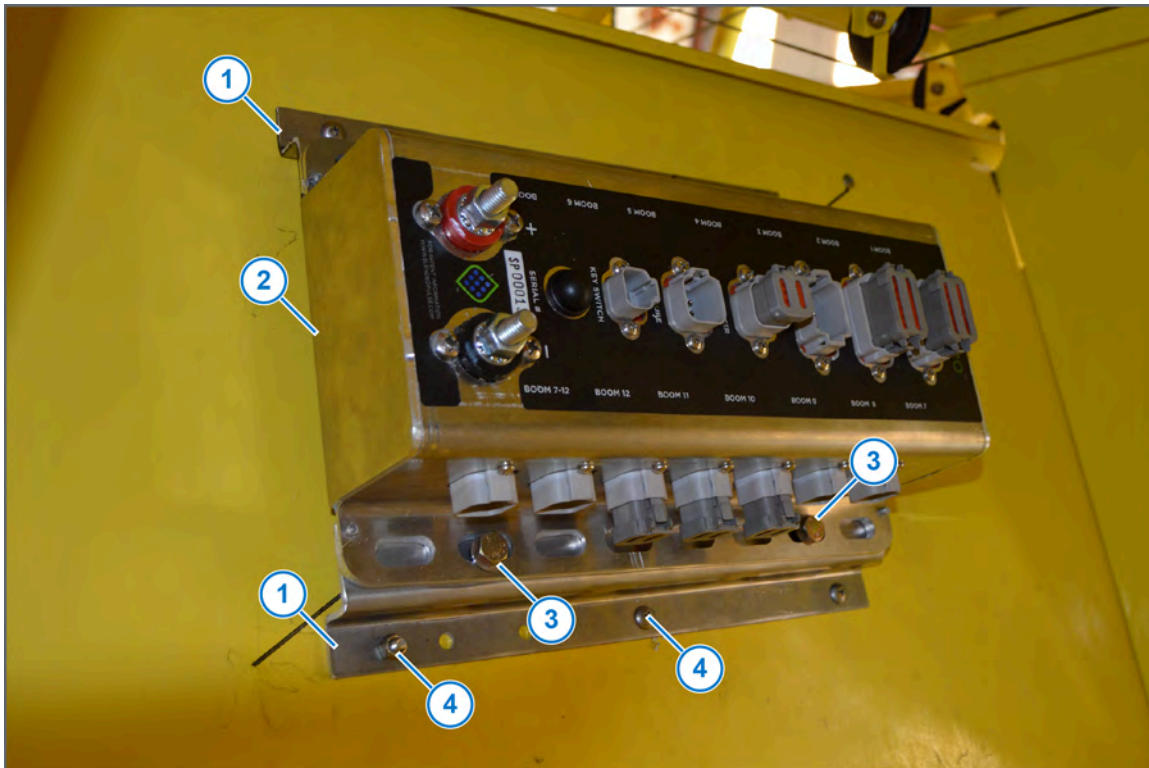


Figure 20: Mounting the Gateway Hub

1. Cut 12 inches off of each end of a supplied Gateway hub mounting bracket ([Figure 20](#), Item 1).

Table 16: Gateway Mount Part Numbers

Parts from the Fuselage Kit

See [Figure 20](#)

Item	Part Number	Description	Qty
1	320015-018	Mount, Gateway	2

2. Put the Gateway hub ([Figure 20](#), Item 2) onto each 12-inch mounting bracket, aligning the 3/8 holes in the bracket with the Gateway mount.

Make sure that the brackets have the bottom leg of the bracket facing out and that the Gateway hub is flush with both ends of the brackets.

Table 17: Gateway Hub Mounting Part Numbers

Parts from the Fuselage Kit

See [Figure 20](#)

Item	Part Number	Description	Qty
2	320200-100	Assembly, Gateway Hub, SwathPRO	1

3. Install the Gateway hub to the brackets with the supplied hardware ([Figure 20](#), Item 3)—3/8-24 x 31/32 hex bolts, 3/8 flat washers, and 3/8-24 nuts.

Table 18: Gateway Hub Mounting Part Numbers

Parts from the Fuselage Kit

See [Figure 20](#)

Item	Part Number	Description	Qty
3	713501-427	Bolt, Hex 3/8-24 x 31/32 Cad Plated	6
	713600-014	Washer, Flat, 3/8, Cad Plated	12
	713501-521	Nut, Hex 3/8-24 Stop, Cad Plated	6

4. Put the Gateway hub with the brackets into the desired location in the luggage compartment.
5. Match drill six locations with a #30 drill bit through the small holes of the mounting bracket
6. Attach the Gateway hub and mounts to the inside of the luggage compartment with the supplied Cherrymax rivets ([Figure 20](#), Item 4).

Table 19: Rivet Part Numbers

Parts from the Fuselage Kit

See [Figure 20](#)

Item	Part Number	Description	Qty
4	716023-112	Cherrymax Pop Rivet, 1/8" Aluminum	6

7. Make sure all 3/8 hardware is tightened to the correct specification.

Install the Gateway Hub Underneath the Cockpit

1. Install the Gateway hub onto both of the supplied mounting brackets, aligning the 3/8 holes in the brackets with the Gateway mount.

Make sure that the brackets have the bottom leg of the bracket facing out.

Table 20: Gateway Hub Mounting Bracket Part Numbers

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	320200-100	Assembly, Gateway Hub, SwathPRO	1
	320015-018	Mount, Gateway	2

2. Mount the Gateway hub to the mounts with the supplied hardware—3/8-24 x 31/32 hex bolts, 3/8 flat washers, and 3/8-24 nuts.

Table 21: Gateway Hub Mounting Part Numbers

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	713501-427	Bolt, Hex 3/8-24 x 31/32 Cad Plated	6
	713600-014	Washer, Flat, 3/8, Cad Plated	12
	713501-521	Nut, Hex 3/8-24 Stop, Cad Plated	6

3. Put the Gateway hub with the brackets under the cockpit, and span across the two tubes located on the right side of the aircraft.
4. If desired, cut one of the brackets to length.
5. Use four Adel clamps and the supplied hardware— to attach the mounting brackets to the tubes. Adel clamp sizing:

- MS2191-WDGXX¹ for aluminum
- MS2191-WSSXX¹ for stainless steel

Table 22: Clamp Part Numbers

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	713501-454	Bolt, Hex 10-32 x 21/32 Cad Plated	4
	713600-013	Washer, Flat, #10 Cad Plated	4
	713501-531	Nut, Hex Elastic Stop, 10-32 Cad Plated	4

6. Make sure that all hardware is tightened to the correct specification.

¹ XX is sized as required for mounting structure

Install the Gateway Hub on the Top of the Luggage Compartment

Important: This mounting location is for Air Tractor 802/802A Models Only.

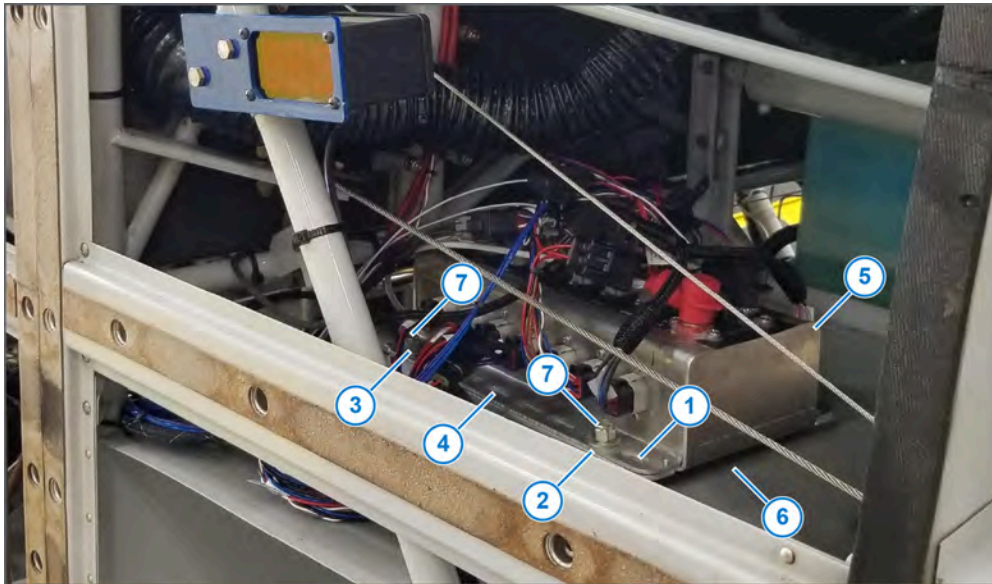


Figure 21: Gateway Hub on Top of the Luggage Compartment

1. Put the Gateway hub on top of the luggage compartment.
Make sure to stay away from any moving parts.
2. Use the slots (Figure 21, Item 1) in the Gateway hub housing as a guide to match drill three holes on each side on the Gateway—bottom (Figure 21, Item 2), top (Figure 21, Item 3), and center (Figure 21, Item 4) on each side of the Gateway.
3. Install the Gateway hub (Figure 21, Item 5) to top of the luggage compartment (Figure 21, Item 6) with the supplied hardware (Figure 21, Item 7)—3/8-24 x 31/32 hex bolts, 3/8 flat washers, and 3/8-24 nuts.

Table 23: Gateway Hub Mounting Part Numbers

Parts from the Fuselage Kit

See [Figure 21](#)

Item	Part Number	Description	Qty
5	320200-100	Assembly, Gateway Hub, SwathPRO	1
7	713501-427	Bolt, Hex 3/8-24 x 31/32 Cad Plated	6
	713600-014	Washer, Flat, 3/8, Cad Plated	12
	713501-521	Nut, Hex 3/8-24 Stop, Cad Plated	6

4. Make sure that all hardware is tightened to the correct specification.

Gateway Hub Identification

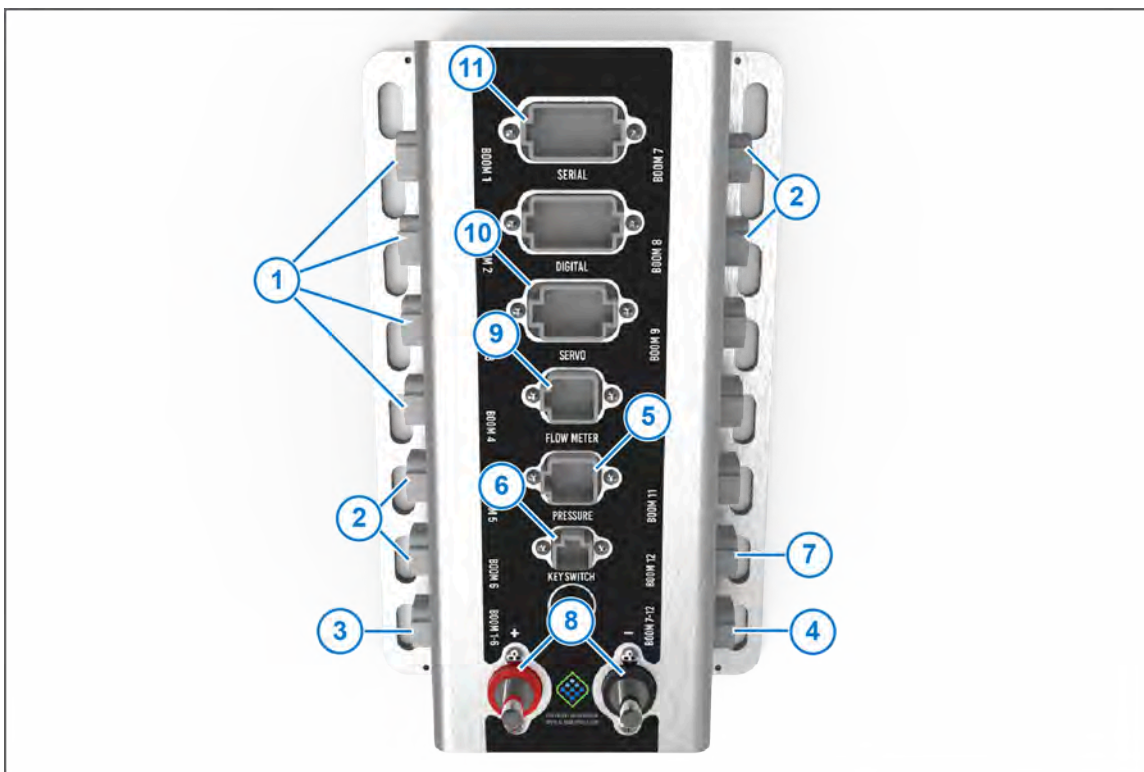


Figure 22: Gateway Hub Identification

Table 24: Gateway Hub Identification

Item	Description	Item	Description
1	Left Boom Harness Connector Ports	7	Display Harness Connector Port
2	Right Boom Harness Connector Ports	8	Battery Power Harness Terminals
3	Sections 1 to 6 Connector Port	9	Flowmeter Connector Port
4	Sections 7 to 8 Connector Port	10	Servo Port
5	Pressure Connector Port	11	Serial Port
6	Key Switched Power Connector Port		

Install the Circuit Breakers and Power Harnesses

Crimp all ring terminals in accordance with AC 43.13-1B Chapter 11, Section 14.

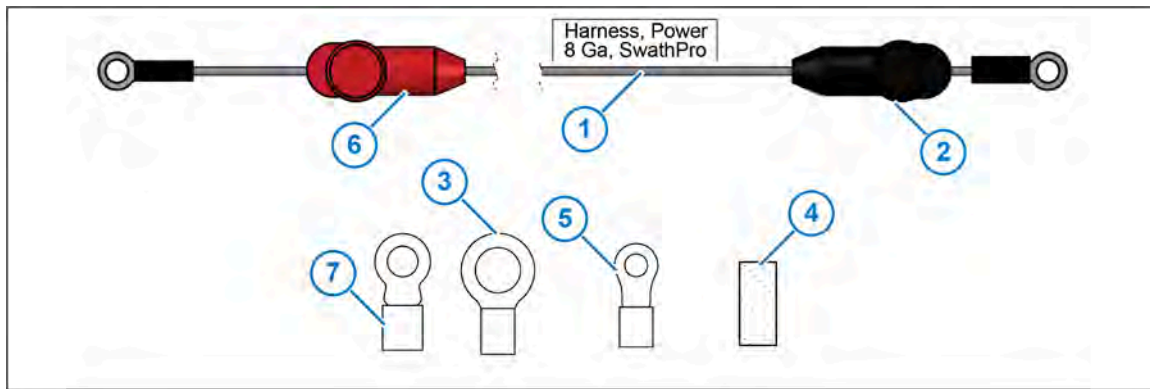


Figure 23: Power Harness

1. Measure and cut the *power harness* (Figure 23, Item 1) from the black boot (Figure 23, Item 2) to the correct length of harness to reach from the ground lug on the Gateway hub to an existing grounding point below the cockpit.

Table 25: Power Harness Part Number

Parts from the Fuselage Kit

See Figure 23

Item	Part Number	Description	Qty
1	320124-354	Harness, Power, 8Ga.	1

For more information, see [Gateway Hub Identification](#).

2. Install a shrink tube (Figure 23, Item 4) and crimp a ring terminal (Figure 23, Item 3) to the opposite end of the harness from the black boot.

Table 26: Power Harness Ring Terminal Part Number

Parts from the Fuselage Kit

See Figure 23

Item	Part Number	Description	Qty
3	715005-136	Ring Terminal, 8Ga. 1/4	1
4	708000-162	Shrink Tube, 1/4 x 1-1/4, Blk	1

You have now made the grounding power cable.

3. Install the grounding power cable between the existing grounding point below the cockpit and the Gateway hub.

Make sure that the black boot is installed on the Gateway hub.

For more information, see [Gateway Hub Identification](#).

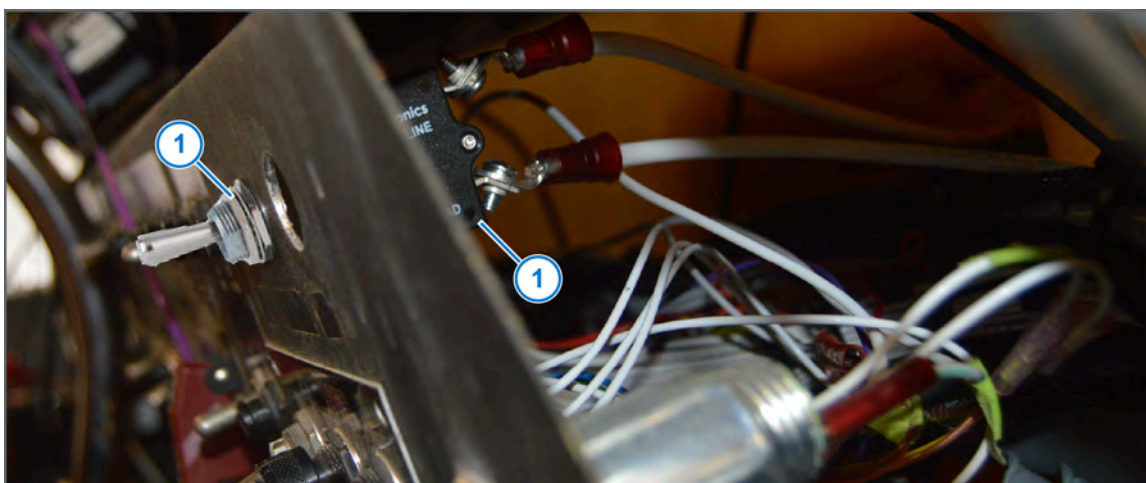


Figure 24: 50A Circuit Breaker Installation

4. Install the supplied SwathPRO™ 50A switch circuit breaker ([Figure 24](#), Item 1) in the lower instrument panel of the cockpit.

The mounting location can vary with each system installation.

Table 27: Circuit Breaker Parts List

Parts from the Fuselage Kit

See [Figure 24](#)

Item	Part Number	Description	Qty
1	W31-X2M1G-50	Circuit Breaker, 50 Amp Switch	1

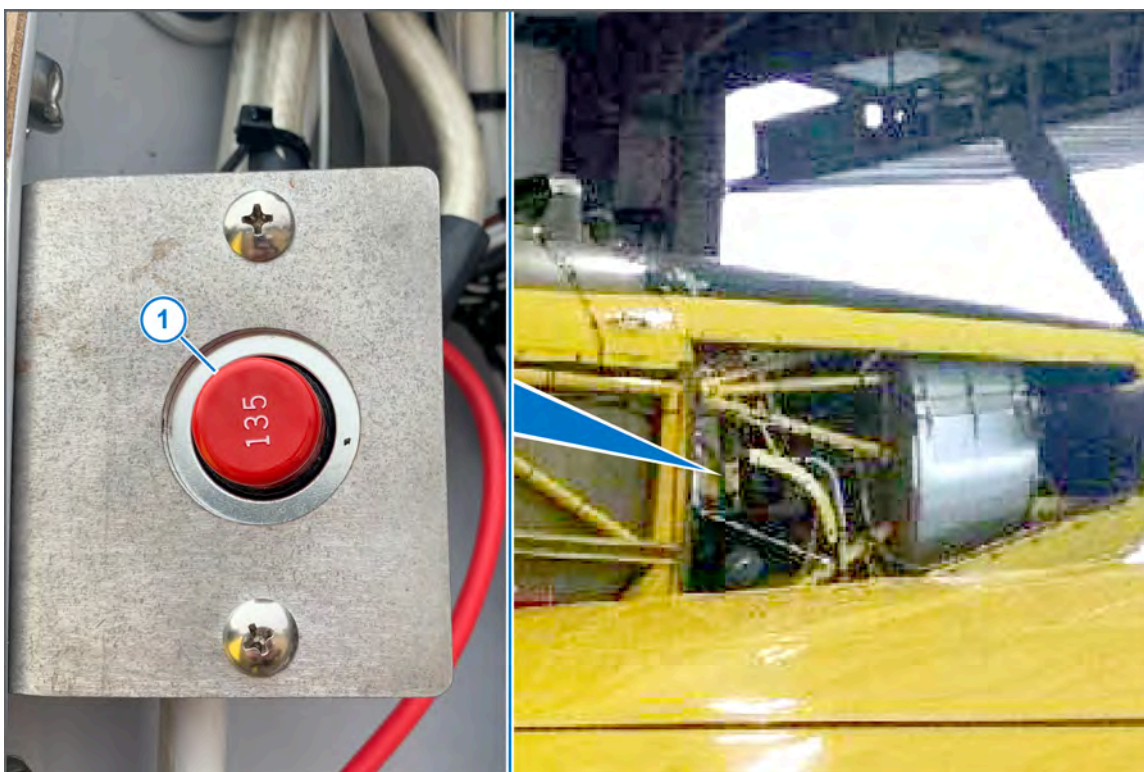


Figure 25: Master Circuit Breaker

5. From the bare end of the *power harness* (Figure 23, Item 1), measure the length of harness needed to reach from the 50A circuit breaker to the master circuit breaker (Figure 25, Item 1). The master circuit breaker for your type of aircraft may be different than the one shown.
6. Cut the correct length of harness and install the shrink tube (Figure 23, Item 4) and crimp the ring terminals (Figure 23, Item 5) to each end of the harness.

Table 28: Ring Terminal Part Number

Parts from the Fuselage Kit, shown in Figure 23

Item	Part Number	Description	Qty
4	708000-162	Shrink Tube, 1/4 x 1-1/4, Blk	2
5	715005-137	Ring Terminal, 8Ga. #10	1
7	715005-136	Ring Terminal, 8Ga. 1/4	1

You have now made the *breaker power harness*.

7. Install one end of the *breaker power harness* to the **LINE** terminal on the back of the 50A circuit breaker.
8. Install the other end of the *breaker power harness* to the **LINE** terminal on the master circuit breaker or to a connection coming from the main power bus.

Important: The SwathPRO main power must come directly from the main power bus with its own current protection. The SwathPRO power must **not** be installed after the aircraft OEM circuit breaker.

9. Measure and cut the *power harness* from the red boot (Figure 23, Item 1) to the correct length, to reach from the 50A circuit breaker in the cockpit to the power (+) terminal on the Gateway hub.
10. Install a shrink tube (Figure 23, Item 4) and crimp a ring terminal (Figure 23, Item 3) to the opposite end of the harness from the red boot.

Table 29: Power Harness Ring Terminal Part Number

Parts from the Fuselage Kit, shown in Figure 23

Item	Part Number	Description	Qty
3	715005-137	Ring Terminal, 8Ga. #10	1
4	708000-162	Shrink Tube, 1/4 x 1-1/4, Blk	1

11. Connect one end of the circuit power harness to the **LOAD** terminal on the 50A circuit breaker and the other end of the harness to the power (+) terminal on the Gateway Hub.

Make sure that the red boot is installed on the Gateway hub.

For more information, see [Gateway Hub Identification](#).

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.

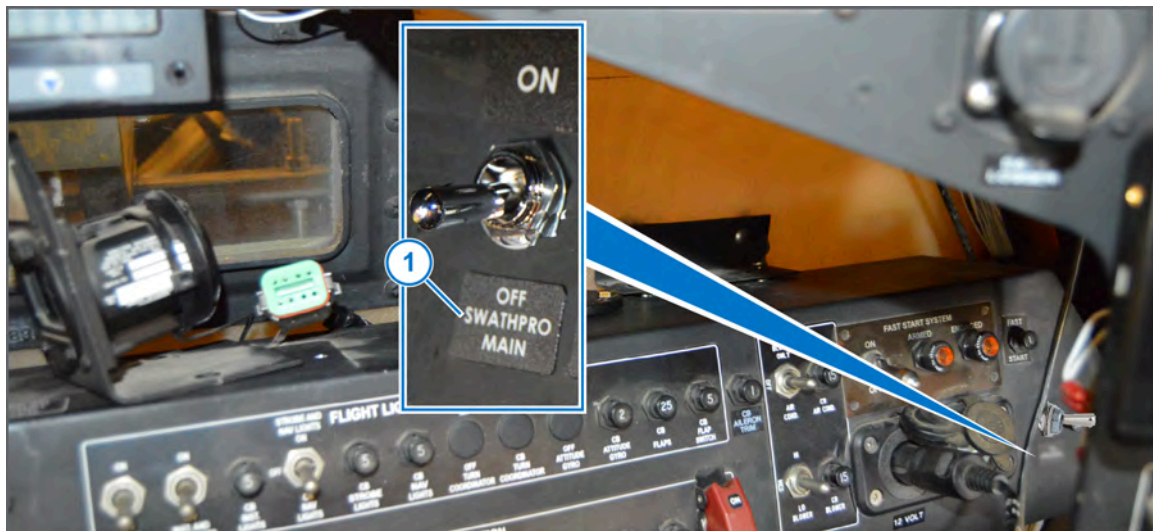


Figure 26: Label Location

12. Install the **SWATHPRO MAIN** label (Figure 26, Item 1) below the 50A circuit breaker.

Table 30: Decal Page Part Number

Parts from the Fuselage Kit

See Figure 26

Item	Part Number	Description	Qty
1	320015-015	Decal, Page, Fuselage Decals	1

Install Key Switch Power with CapstanAG Power Supply

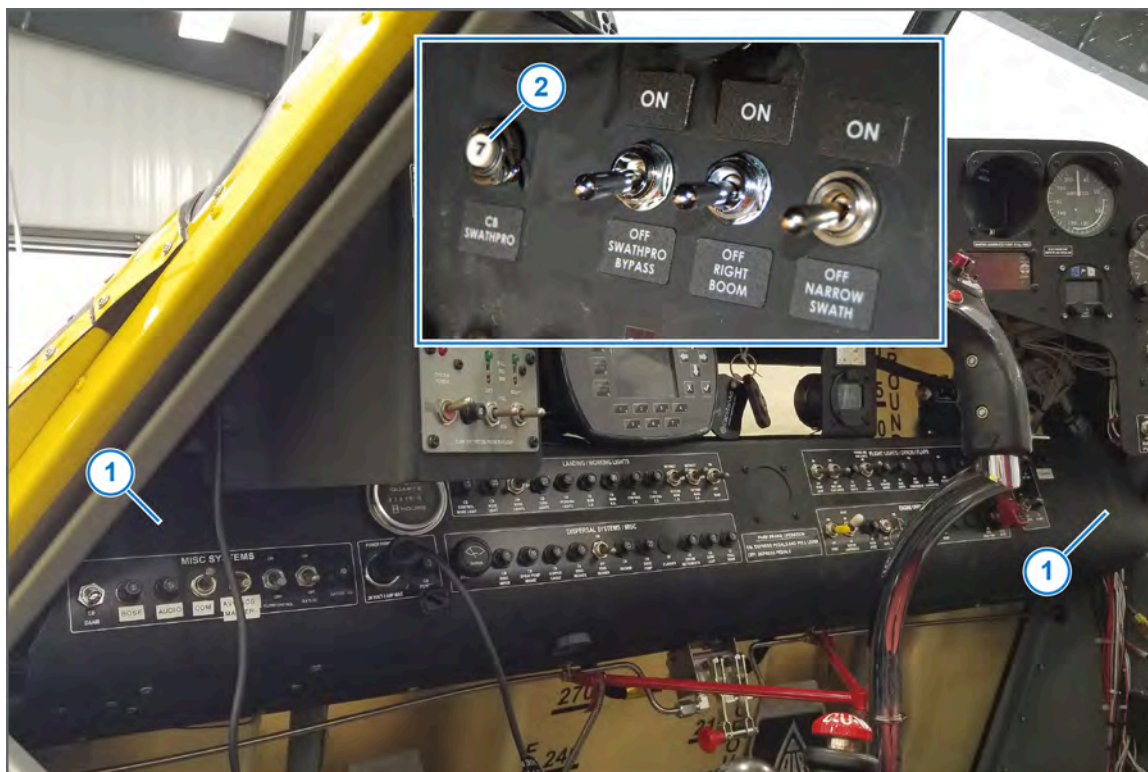


Figure 27: Circuit Breaker Location Options

Note: Each aircraft is set up differently. Mounting locations can vary with each installation.

1. Make or find an available hole in the lower instrument panel (Figure 27, Item 1) in the cockpit for the 7A circuit breaker (Figure 27, Item 2).

Table 31: Circuit Breaker Part Number

Parts from the Fuselage Kit

See Figure 27

Item	Part Number	Description	Qty
2	320015-088	7 Amp Circuit Breaker	1

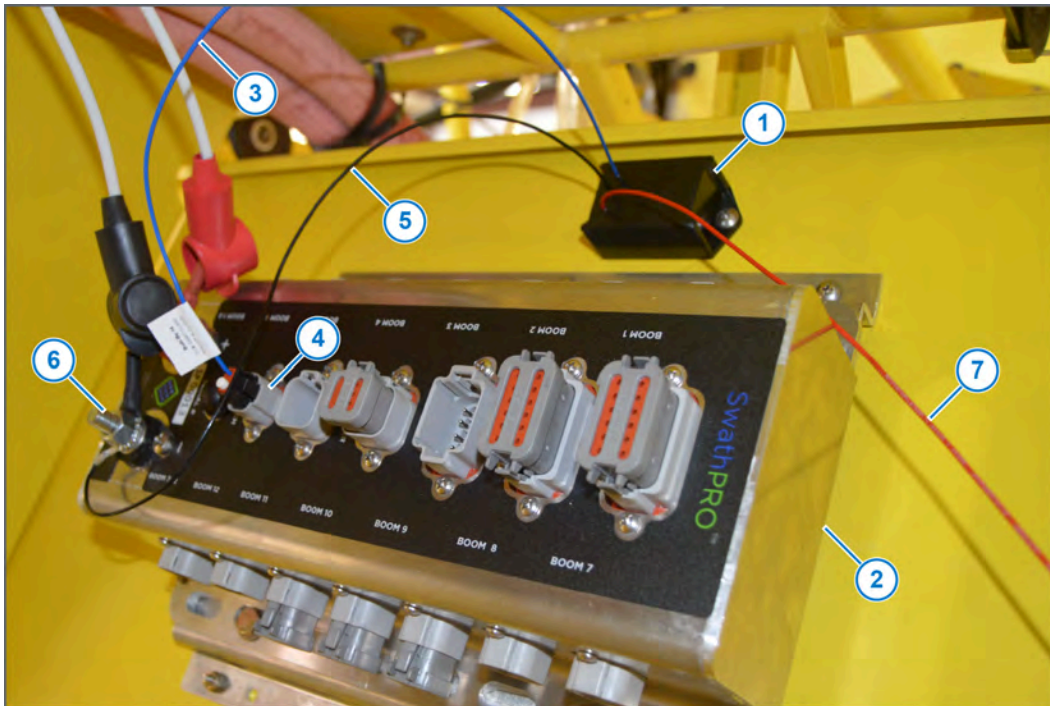


Figure 28: CapstanAG™ Power Supply

2. Mount the power supply (Figure 28, Item 1) near the Gateway Hub (Figure 28, Item 2).

Table 32: Power Supply Part Number

Parts from the Fuselage Kit

See Figure 28

Item	Part Number	Description	Qty
1	320015-092	Power Supply Assembly, 24V to 19V	1

3. Connect the 2-pin DT connector (Figure 28, Item 3), on the blue wire, to the **Key Switch** port (Figure 28, Item 4) on the Gateway hub.
4. Install the black wire (Figure 28, Item 5) with the ring terminal onto the ground lug (Figure 28, Item 6) on the Gateway hub.
5. Route the red wire (Figure 28, Item 7) to the 7A circuit breaker in the cockpit.
6. Cut off and discard any extra harness length that is not needed to reach the circuit breaker.
7. Crimp a ring terminal onto the end of the red wire.

Table 33: Ring Terminal Part Number

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	715005-151	Ring Terminal, #6, 22-18 Ga. w/Heat Shrink	1

8. Install the ring terminal to one of the terminals on the back of the 7A circuit breaker (Figure 27, Item 2).

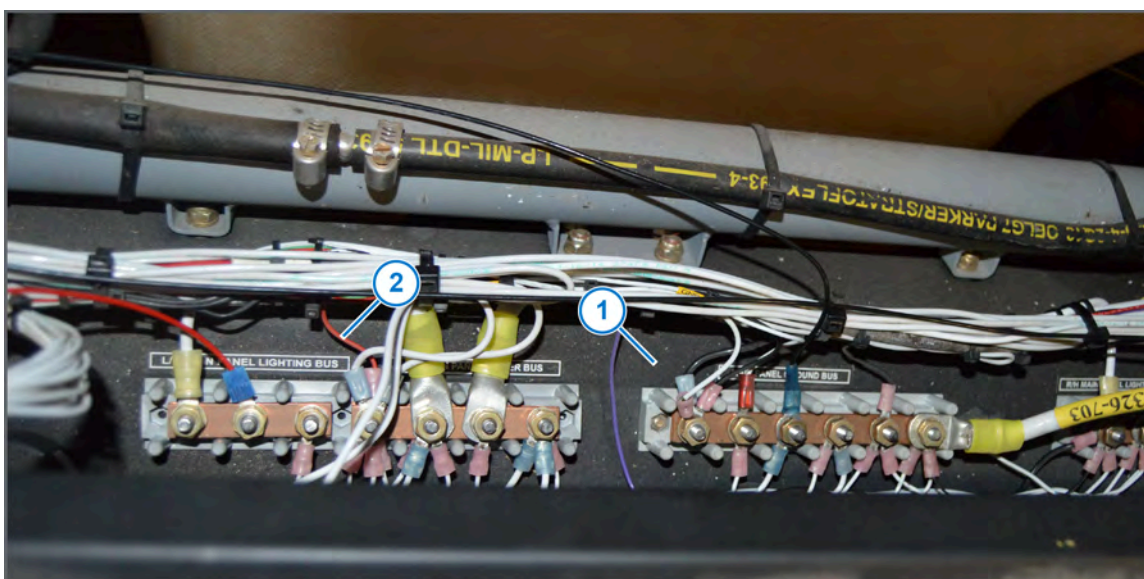
9. On the other terminal of the 7A circuit breaker, attach the ring terminal end of the *key switch cb harness*.

Table 34: Key Switch Harness Part Number

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	320124-016	Circuit Breaker Keyswitch Harness	1

Figure 29: Key Switch Harness Installation



10. Route the *key switch cb harness* to the main power bus (Figure 29, Item 1) behind the lower instrument panel in the cockpit.
11. Cut off and discard the extra harness length that is not needed to reach the main power bus.
12. Crimp a ring terminal onto the end of the red wire (Figure 29, Item 2) of the *key switch cb harness*.

Table 35: Ring Terminal Part Number

Parts from the Fuselage Kit

See [Figure 29](#)

Item	Part Number	Description	Qty
	715005-151	Terminal, Ring, Heat Shrink #6,18-22 Ga.	1

13. Install the *key switch cb harness* to a positive terminal on the main power bus.
14. Using the microswitch power shutoff harness, attach the ring terminal end to the same terminal on the circuit breaker as the *power supply harness*, and route the wire to the microswitch.
15. Install the circuit breaker into the instrument panel.
16. Install the **CB SWATHPRO** label for the switch.

Table 36: Decal Page Part Number

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	320015-015	Decal, Page, Fuselage Decals	1

Install the Pressure Sensor

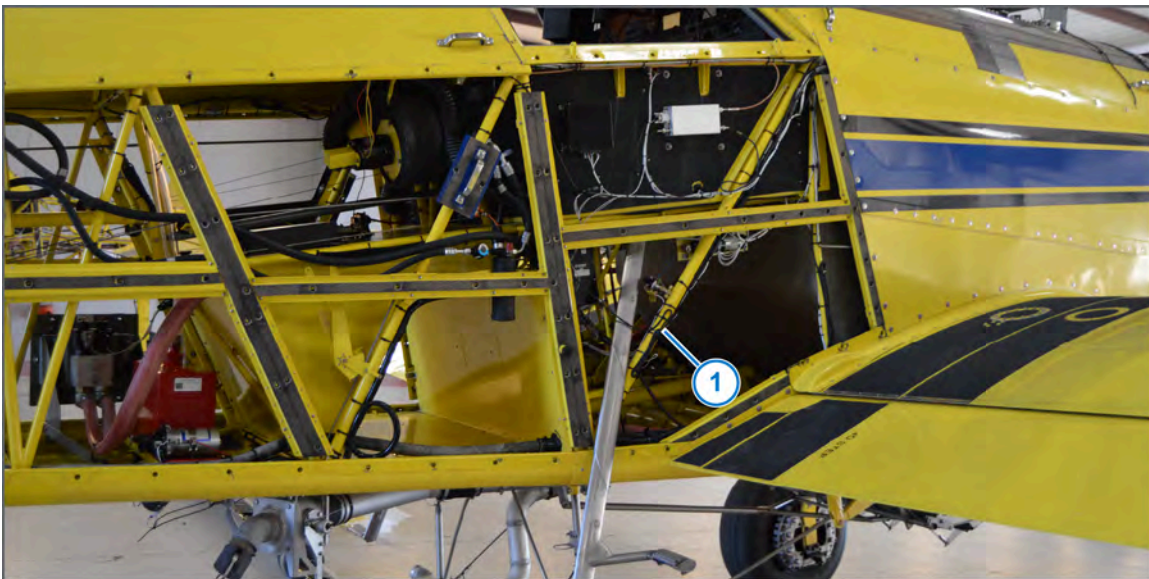


Figure 30: Existing Pressure Sensor Location

1. Locate the existing pressure sensor on the aircraft.
The usual location is on the right side of the cockpit (Figure 30, Item 1) inside the aircraft frame.

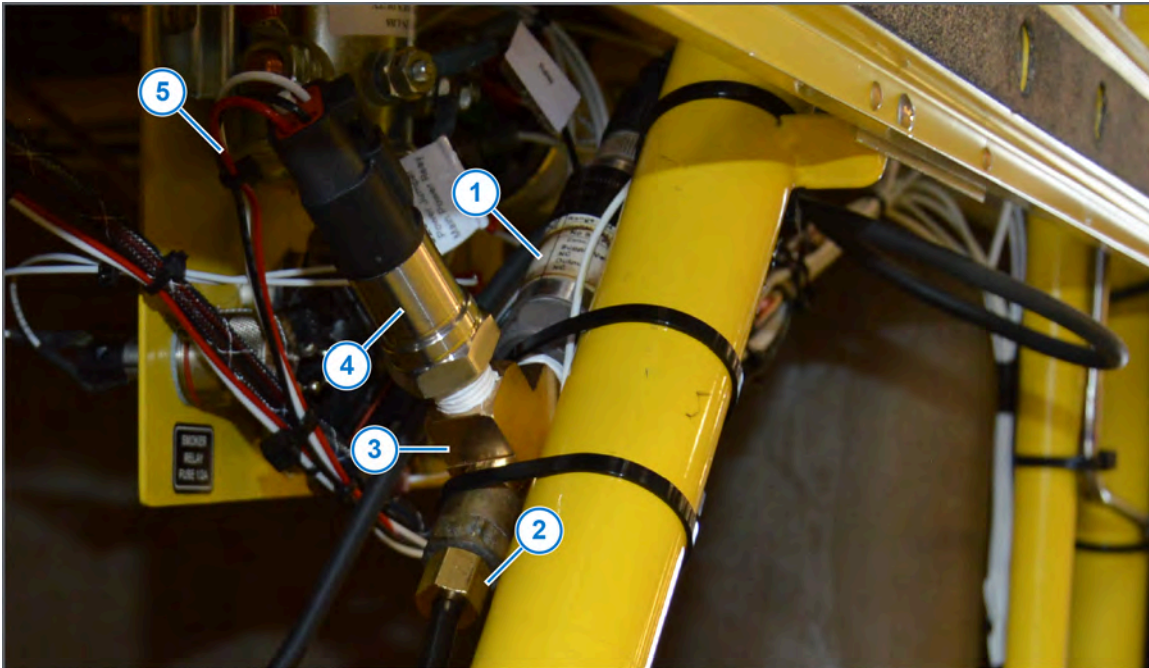


Figure 31: Pressure Sensor Installation

2. Remove the existing pressure sensor (Figure 31, Item 1) from the existing fitting (Figure 31, Item 2).
3. Install the existing hose and fitting (Figure 31, Item 2) onto the supplied ¼ NPT tee street fitting (Figure 31, Item 3).

Table 37: Pressure Sensor Hardware Part Numbers

Parts from the Fuselage Kit

See Figure 31

Item	Part Number	Description	Qty
3	716008-329	Tee Street, 1/4" NPT	1

4. Put thread sealant tape on the threads of the existing pressure sensor (Figure 31, Item 1).
5. Install the existing pressure sensor into the FPT port of the tee fitting that is opposite from the MPT port.
6. Make sure that the open ¼ inch FPT port on the tee fitting is on the top.
7. Put thread sealant tape on the threads of the new CapstanAG pressure sensor (Figure 31, Item 4)

Table 38: Pressure Sensor Part Number

Parts from the Fuselage Kit

See Figure 31

Item	Part Number	Description	Qty
4	116301-015	(CapstanAG) Pressure Sensor, 100PSI	1

8. Install the new CapstanAG pressure sensor to the tee fitting.
Mount the CapstanAG pressure sensor so that it is leaning back at approximately a 20-degree angle, or at least vertically.
9. Connect the *pressure sensor extension harness* (Figure 31, Item 5) to the pressure sensor.

Table 39: Pressure Sensor Harness Part Number

Parts from the Fuselage Kit

See Figure 31

Item	Part Number	Description	Qty
5	320124-009	Harness, Pressure Sensor Extension	1

10. Route the *pressure sensor harness* to the Gateway hub.
11. Connect the *pressure sensor harness* to the pressure port on the Gateway hub.
For more information, see [Gateway Hub Identification](#).

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.

Install the Gateway Boom Extension Harnesses

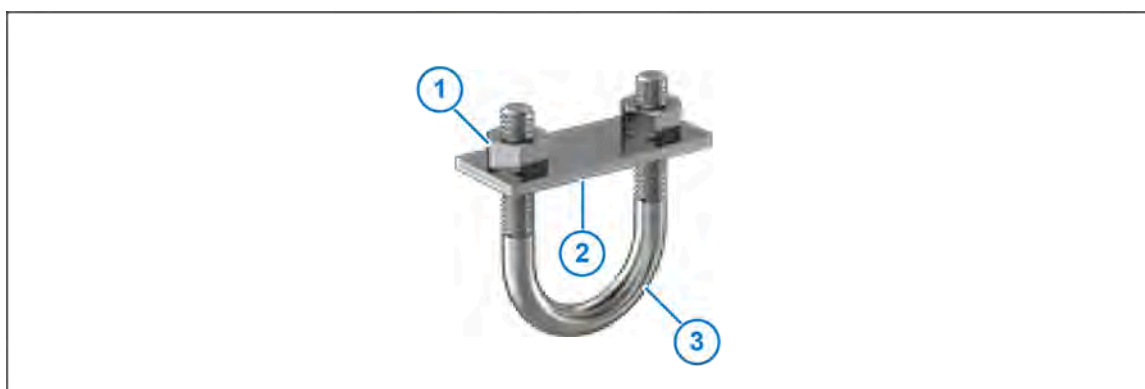


Figure 32: Disassemble the U-bolt

1. Remove and keep the nuts (Figure 32, Item 1) and mounting plate (Figure 32, Item 2) for the supplied U-bolt (Figure 32, Item 3).

Table 40: U-bolt Part List

Parts from the Fuselage Kit

See Figure 32

Item	Part Number	Description	Qty
1 to 3	320100-032	U-Bolt, 1/4-20 x 1", 304 SS, 425 Lb Cap	2

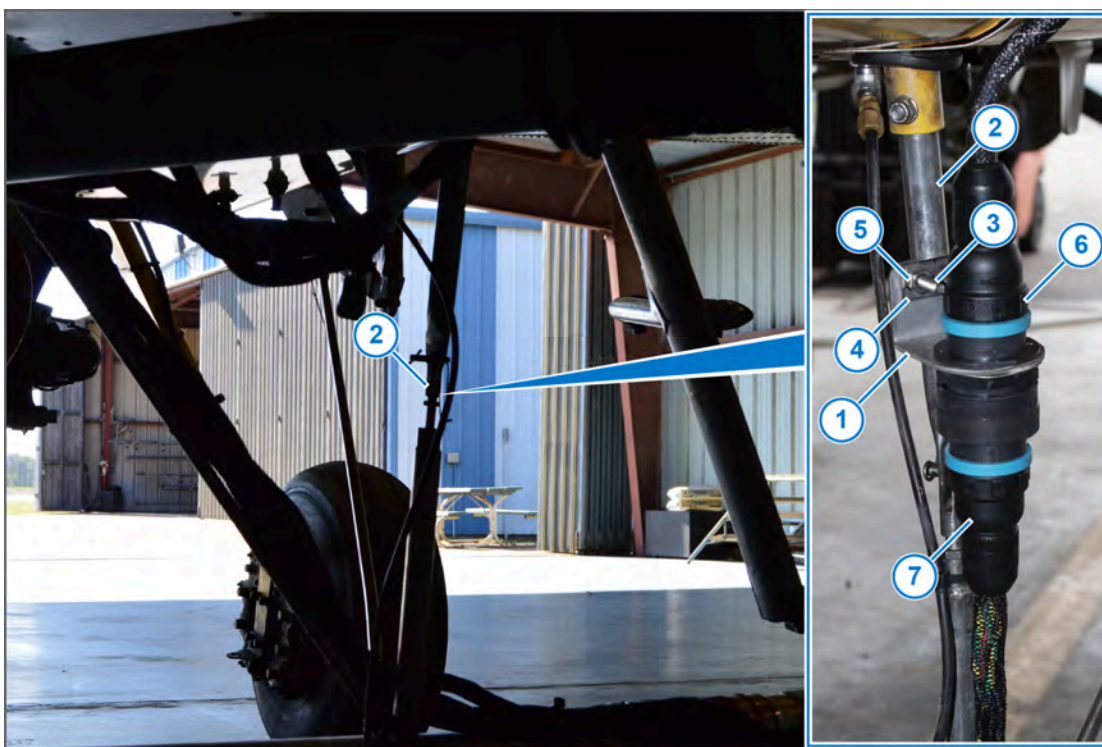


Figure 33: Bracket Installation

2. Install the bracket (Figure 33, Item 1) to the center boom support (Figure 33, Item 2) on each side of the aircraft using the U-bolt (Figure 33, Item 3), mounting plate (Figure 33, Item 4), and nuts (Figure 33, Item 5).

Note: The mounting plate may not be required on the larger support tubes. Make sure that your aircraft needs the mounting plate. Discard if not necessary.

Table 41: Bracket Installation Parts List

Parts from the Fuselage Kit

See Figure 33

Item	Part Number	Description	Qty
1	320100-031	Bracket, Boom Extension, Gateway	2
3 to 5	320100-032	U-Bolt, 1/4-20 x 1", 304 SS, 425 Lb Cap	2

3. Remove the plastic nut and washer from the *boom control extension harness* 31-pin connector (Figure 33, Item 6).

Table 42: Boom Control Extension Harness Part Number

Parts from the Fuselage Kit

See Figure 33

Item	Part Number	Description	Qty
6	320124-347	Harness, Boom Control Extension	2

4. Insert the connector from the top through the hole in the bracket.
- Note:** Make sure to avoid pinch points and moving parts when routing the harnesses.
5. Slide the washer onto the connector and screw on the plastic nut until tight.
6. Mount the *boom control extension harness* 31-pin connector (Figure 33, Item 6) for each boom to the bracket.
7. Connect the *boom control harness* (Figure 33, Item 7) to the *boom control extension harness*.

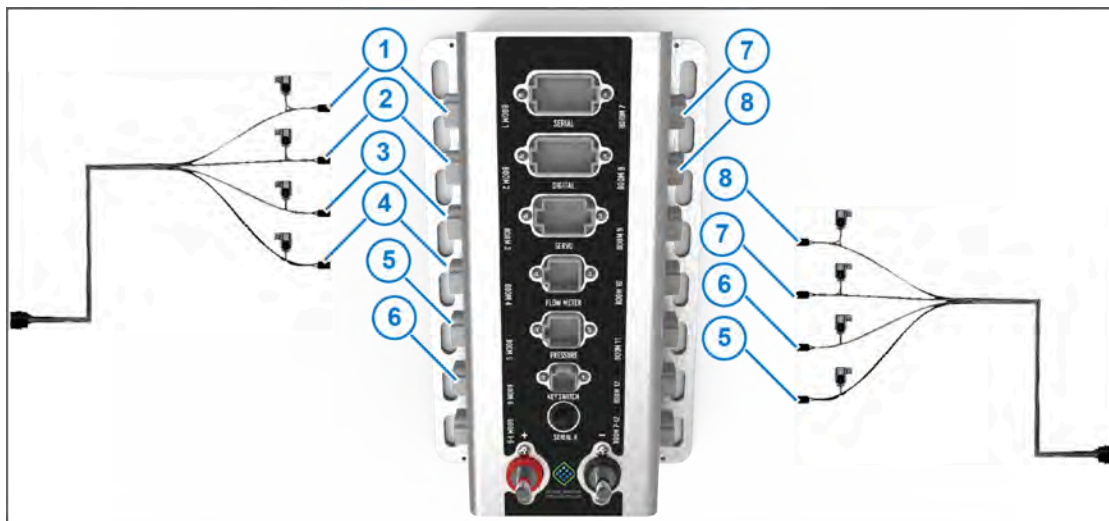
Table 43: Bracket Installation Parts List

Parts from the Boom Kit

Item	Part Number	Models	Description	Qty
7	320124-346	802/602	Harness, Boom Control, 4" Spacing, 19Ft	2
	320124-345	502/402	Harness, Boom Control, 4" Spacing, 17Ft	2

8. Route the *boom control extension harness* to the Gateway hub.

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.



9. Install the connectors to the correct ports of the Gateway hub.

Left boom control extension harness		Right boom control extension harness	
Item	Description	Item	Description
1	Connector 1/8 to Boom 1 Port	5	Connector 4/5 to Boom 5 Port
2	Connector 2/7 to Boom 2 Port	6	Connector 3/6 to Boom 6 Port
3	Connector 3/6 to Boom 3 Port	7	Connector 2/7 to Boom 7 Port
4	Connector 4/5 to Boom 4 Port	8	Connector 1/8 to Boom 8 Port

Boom Shut-off Kit Schematic

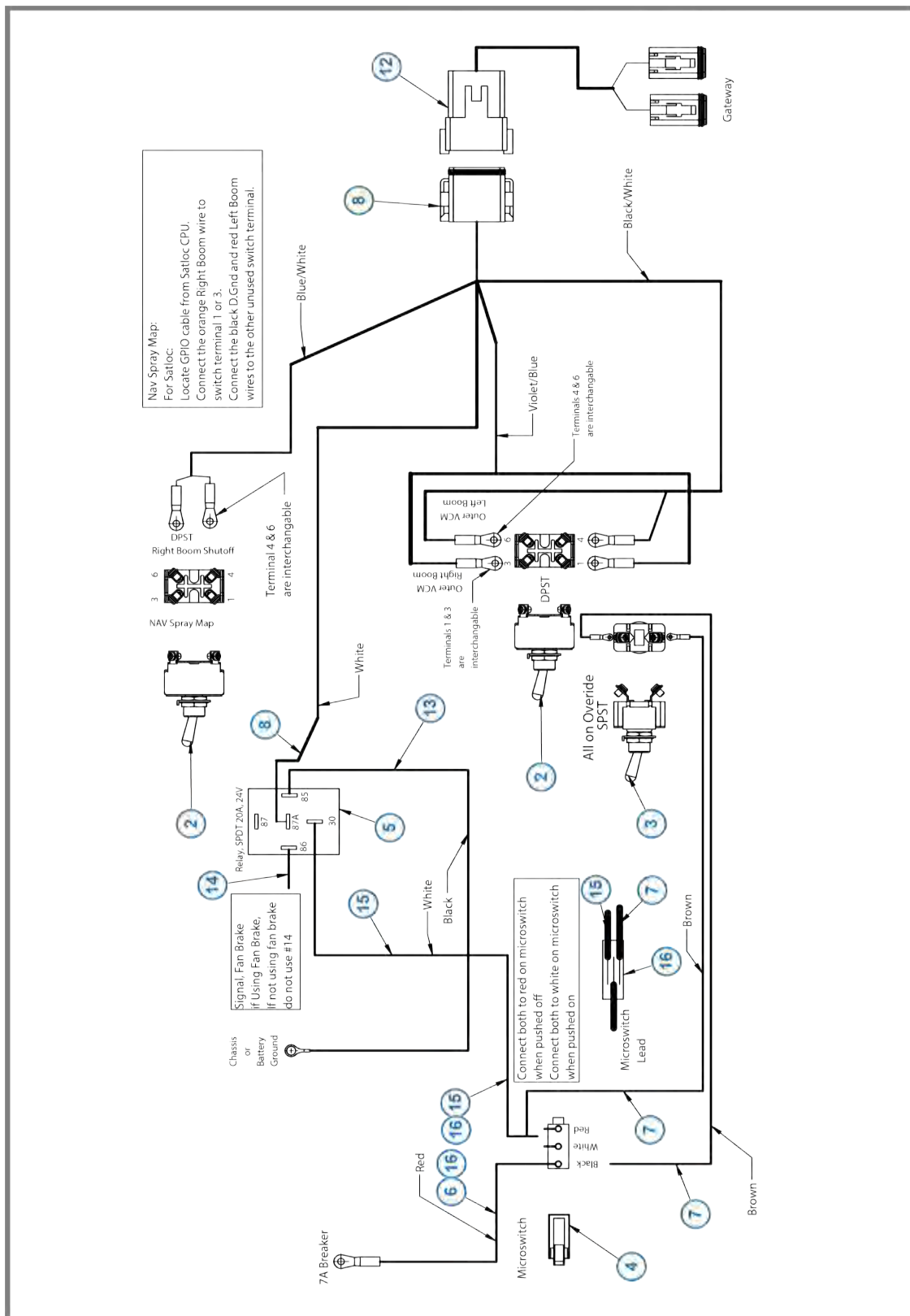


Figure 34: Boom Shutoff Kit Schematic

Table 44: Boom Shutoff Kit Schematic Parts List

Item	Part Number	Parts Drawing Description	Qty
2	320015-097	Toggle Switch, DPST	2
3	320015-098	Toggle Switch, SPST	1
4	320015-099	Microswitch	1
5	703500-151	Relay, SPDT, 20A, 24V	1
6	320124-008-1	Harness, Shutoff, Power, MicroSW	1
7	320124-008-2	Harness, SPST Switch	2
8	320124-008-3	Harness, Shutoff, Gateway, Pigtail	1
12	320124-008-7	Harness, Shutoff, 12 Pin Gateway	1
13	320124-008-8	Harness, Fan Brake Relay, Ground	1
14	320124-008-9	Harness, Fan Brake Relay, Signal (Optional)	1
15	320124-008-10	Harness, Microswitch to Relay	1
16	715005-156	Sleeve, Solder 14-16 Ga.	3

Install the Boom Shutoff Kit

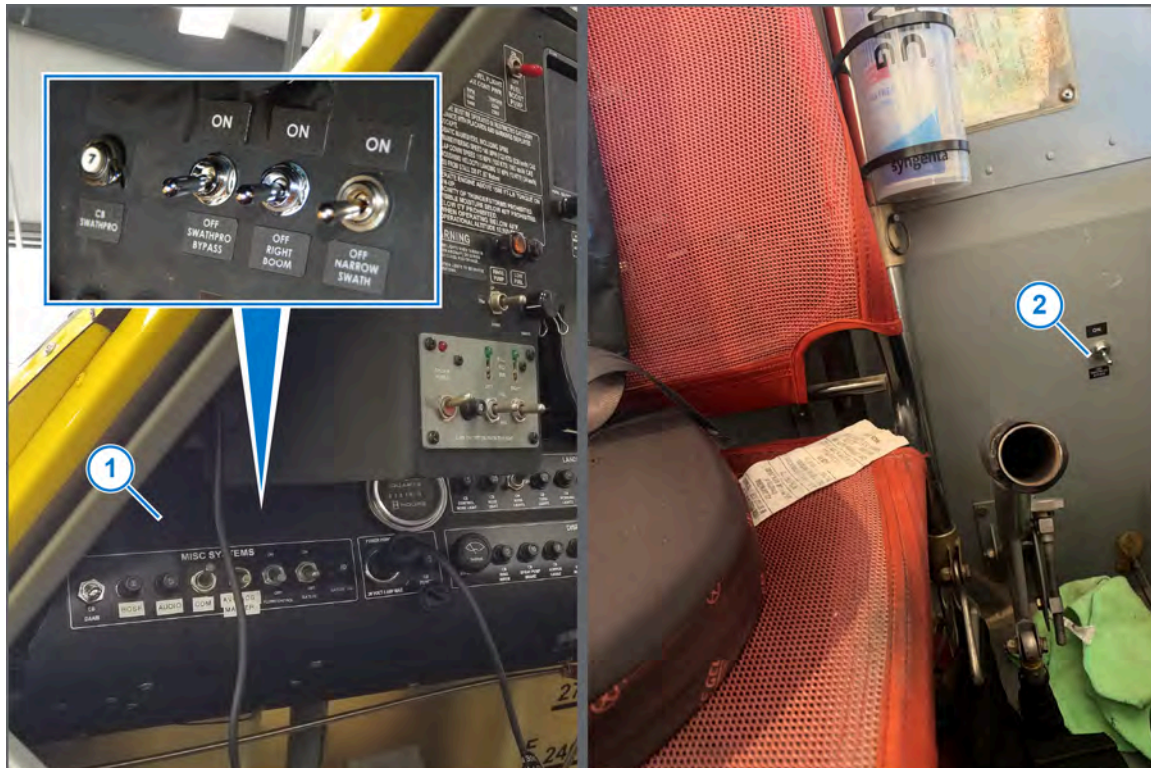


Figure 35: Switch Location Recommendations

1. Find three locations in the cockpit for the three toggle switches in the boom shutoff kit. Recommended locations are:

Note: All switches must be mounted within reach of the pilot.

- Mount all of the switches on the left side of the lower instrument panel (Figure 35, Item 1) in the cockpit.
- If your existing system is already using a right boom shutoff switch, remove the existing switch and install the new SwathPRO™ switch in that location.
- The bypass switch mounted on the left side back wall aft of the spray handle (Figure 35, Item 2) or the left side console.

Do not install the switches yet. The wires must be connected to the switches before installation.

Table 45: Switch Part Numbers

Parts from the Boom Shutoff Kit

Part Number	Description	Qty
320015-097	Toggle Switch, DPST	2
320015-098	Toggle Switch, SPST	1
320015-099	Micro Switch	1

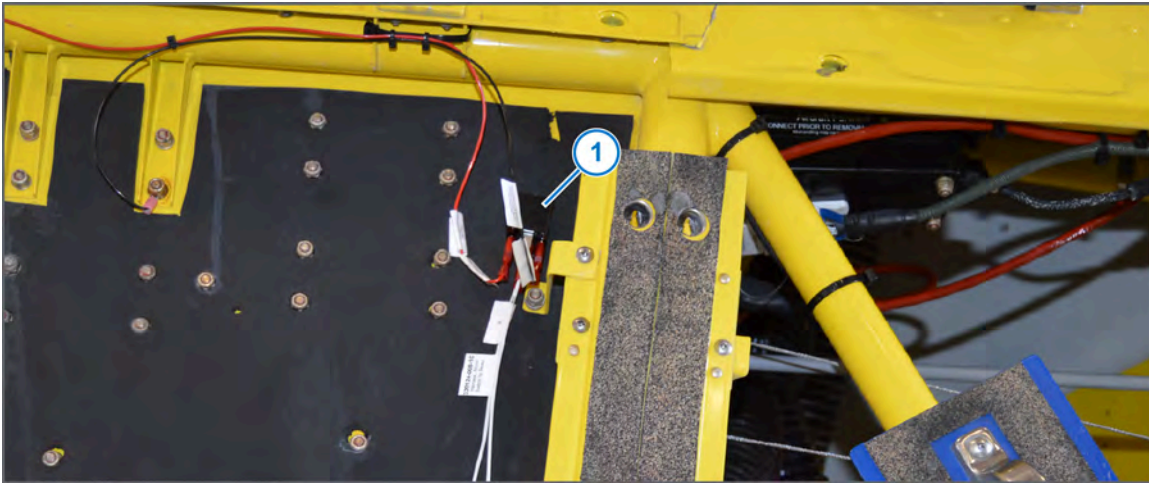


Figure 36: Relay Location

2. Mount the spray on/off relay ([Figure 36](#), Item 1) on the left side of the cockpit.

Table 46: Relay Part Number

Parts from the Boom Shutoff Kit

See [Figure 36](#)

Item	Part Number	Description	Qty
1	703500-151	Relay, SPDT, 20A, 24V	1

3. Route harnessing according to the [Boom Shutoff Kit Schematic](#).
For more information about the fan brake circuit see [Install the Fan Brake Relay Signal Harness \(Optional\)](#).

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.

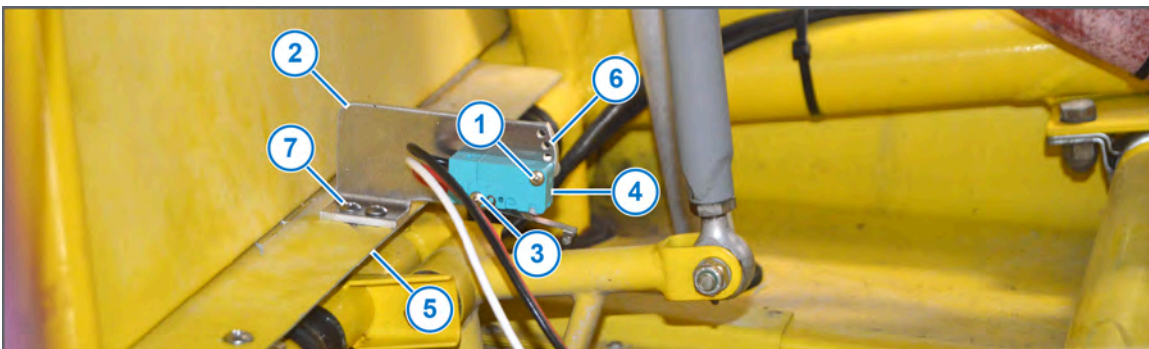


Figure 37: Microswitch Installation

4. Install the microswitch ([Figure 37](#), Item 1) to the bracket ([Figure 37](#), Item 2):
 - a) Install one screw ([Figure 37](#), Item 3) with the associated hardware through the microswitch into the slotted hole of the bracket.
 - b) Install another screw ([Figure 37](#), Item 4) with associated hardware through the microswitch into the third hole from the bottom on the bracket.

This hole positions the switch level.

- c) Place the bracket/switch on the flat piece of metal ([Figure 37](#), Item 5) located behind the spray handle in the fuselage.
- d) Move the spray handle up and down to verify that the microswitch is working correctly in the current position.
- e) If the microswitch does not work in the current location:
 - i. Remove the front screw.
 - ii. Move to the desired hole ([Figure 37](#), Item 6).
 - iii. Install the front screw.
- f) Once the desired position has been identified, match drill the bracket to the aircraft using a #30 drill bit.
- g) Install two Cherrymax rivets ([Figure 37](#), Item 7) per AC 43.13-1B, Chapter 4, Section 4, to attach the bracket to the aircraft.
- h) Tighten the screws on the microswitch.
- i) Make sure that the spray handle engages and disengages the microswitch. If adjustment up or down is needed, adjust as necessary.

Table 47: Microswitch Installation Part Numbers

Parts from the Shutoff Kit

See [Figure 37](#)

Item	Part Number	Description	Qty
1	320015-099	Micro Switch	1
2	320015-019	Bracket, Microswitch Mount	1
3 and 4	713501-428	Screw 4-40 x 3/4 Cad Plated	2
	713600-015	Washer, Flat, #4, Cad Plated	2
	713501-522	Nut, 4-40 Thin, Cad Plated	2
7	716023-112	Cherrymax Rivet, 1/8 Dia, Aluminum	2

For more information, see [Boom Shutoff Kit Schematic](#).

5. Connect the microswitch to the designated wires using the supplied solder sleeves.

Table 48: Solder Sleeve Part Number

Parts from the Shutoff Kit

Item	Part Number	Description	Qty
	715005-156	Sleeve, Solder 14-16Ga.	2

For more information, see [Boom Shutoff Kit Schematic](#).

6. To splice the wires and use the solder sleeve:
 - a) Strip the wire ends 3/8 inch.
 - b) Slide the solder sleeve over one of the wires to be connected.
 - c) Push all of the stripped wire ends together, intertangling the wires.

- d) Position the solder sleeve over the mat-ed wires. The internal solder stripe should be centered over stripped section of wires.
- e) Use a heat gun to apply heat in the center moving to both ends of the sleeve. Continue until the solder has flowed into the wires and the sleeve is tight to the wire. Use caution, do not overheat and melt the sleeve.
- f) Let the solder sleeve cool before handling.
7. Route the harnessing for the right boom shutoff, narrow swath, and bypass switches into the cockpit.

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.

For more information, see [Boom Shutoff Kit Schematic](#).

8. Cut off and discard the extra harness length that is not needed to reach the correct switches.
9. Crimp a ring terminal onto the end of all the wires that are being used.

Table 49: Ring Terminal Part Number

Parts from the Fuselage Kit

See [Boom Shutoff Kit Schematic](#)

Item	Part Number	Description	Qty
	715005-151	Terminal, Ring, Heat Shrink #6,18-22 Ga.	1

10. Connect the designated harness to the correct switch.
11. Install the shutoff kit harnesses, as shown in [Figure 34](#), Items 7, 8, and 9.
12. Connect the SwathPRO shutoff harness to the Boom Switch port on the Gateway hub:
For more information, see [Gateway Hub Identification](#).
13. Install the switches into the desired locations in the cockpit.
14. Install the on and off labels, as shown in [Figure 35](#).
 - SPST switch—**SWATHPRO BYPASS**
 - DPST switch—**NARROW SWATH**
 - DPST switch—**RIGHT BOOM**

Table 50: Decal Page Part Number

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	320015-015	Decal, Page, Fuselage Decals	1

Install the Fan Brake Relay Signal Harness (Optional)

Note: The fan brake relay ground harness (Figure 34, Item 10) is required and must be installed, even if the fan brake relay signal harness is not.

1. If the aircraft has an unmodified fan brake circuit:
 - a) Trace the signal wire from the fan brake switch in the cockpit until the wire exits the cockpit.
 - b) Cut the wire.
 - c) With the aircraft power key switch on, verify the wire from the switch has 24V when in the spray off position and 0V when in the spray on position.
 - d) Splice the two wires back together with the fan brake signal harness (Figure 34, Item 11) added into the splice (3 wires total).
 - i. Strip the wire ends 3/8 inch.
 - ii. Slide the solder sleeve over one of the wires to be connected.
 - iii. Push all of the stripped wire ends together, intertangling the wires.
 - iv. Position the solder sleeve over the mat-ed wires. The internal solder stripe should be centered over stripped section of wires.
 - v. Use a heat gun to apply heat in the center moving to both ends of the sleeve. Continue until the solder has flowed into the wires and the sleeve is tight to the wire. Use caution, do not overheat and melt the sleeve.
 - vi. Let the solder sleeve cool before handling.
2. If the fan brake circuit has been modified with relays or an autoboom kit:
 - a) Attach the fan brake signal harness (Figure 34, Item 11) to any point where there is 24V when in the spray off position and 0V in the spray on position.
3. If the fan brake signal harness (Figure 34, Item 11) is not to be installed, the system will only be able to be operated via the microswitch or the bypass switch, and it will not be able to be controlled by a fan brake switch, autoboom kit, or other relay.

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.

Install the Servo/Flow Control Valve Harness

This harness is required to operate automatic flow control in Auto mode.

The SwathPRO system is compatible with three brands of rate controllers:

- Satloc
- Insero
- Ag-Nav

Each brand of rate controller requires a different harness:

Satloc 320124-014

Insero 320124-015

Ag-Nav 320124-025

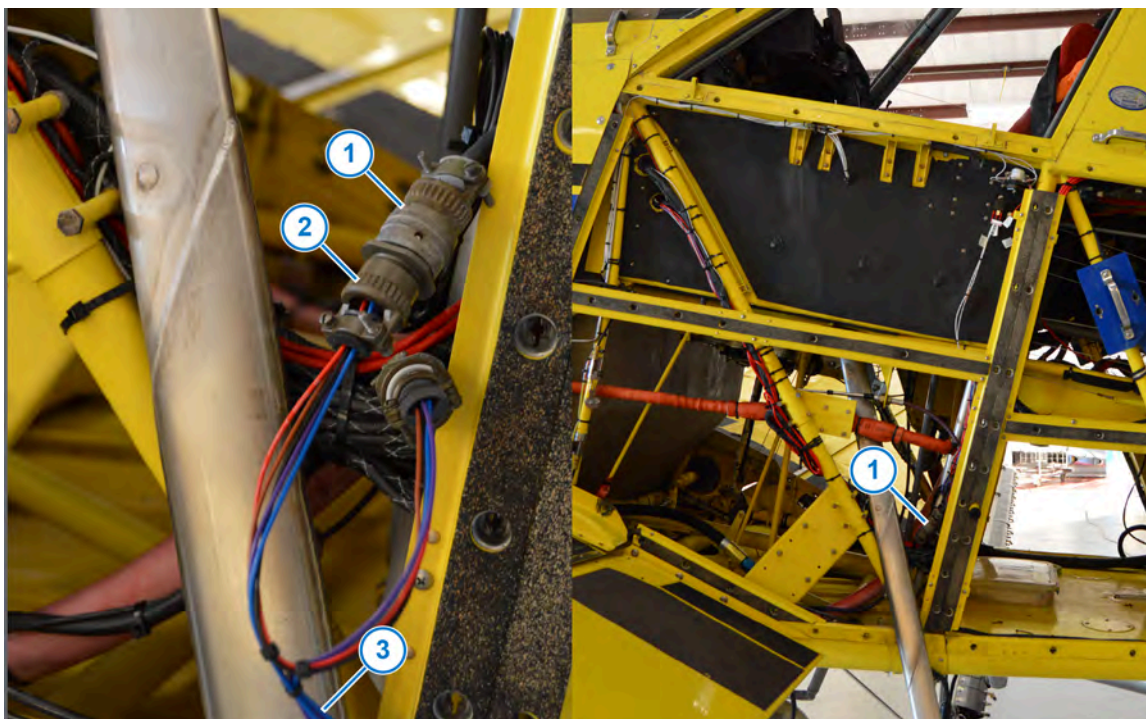


Figure 38: Servo/Flow Control Harness Install

1. Locate the existing connector (Figure 38, Item 1) in the fuselage above the servo/flow control valve.

For Satloc, it is a 5-pin twist-lock Amphenol connector.

For Insero, it is a 6-pin DT connector.

For Ag-Nav, it is a 6-pin twist lock connector.

2. Disconnect the existing connector.
3. Install the correct harness (Figure 38, Item 2) between the existing connectors.
4. Route the harness (Figure 38, Item 3) to the Gateway hub.

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.

5. Connect the 8-pin DT connector to the **SERVO** port on the Gateway hub.

Install the GPS Receiver



Figure 39: GPS Receiver Location

1. Install the GPS receiver ([Figure 39](#), Item 1) on top of the tubing, located under the canopy, behind the cockpit, at the highest point in the fuselage.

Table 51: GPS Receiver Part Number

Parts from the Fuselage Kit

See [Figure 39](#)

Item	Part Number	Description	Qty
1	320015-020	Assembly, GPS, Hub 5Hz, Aerial	1

2. Use cable ties to attach the GPS receiver to the tubing.
3. Route the harness toward the Gateway hub.

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.

4. Connect the end of the GPS harness to the GPS-hub adapter harness.

Table 52: GPS Adapter Harness Part Number

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	320124-355	Harness, Adapter, GPS - Hub	1

5. Connect the connectors on the GPS-hub adapter harness to the **SERIAL** port and the **FLOWMETER** port on the Gateway hub.

For more information, see [Gateway Hub Identification](#).

Install the CapView



Figure 40: Back of CapView

1. Remove and keep the four screws (Figure 40, Item 1) from the back of the CapView (Figure 40, Item 2).

Table 53: CapView Display Part Number

Parts from the Fuselage Kit

See Figure 40

Item	Part Number	Description	Qty
2	320200-300	Display, Capview, SwathPRO	1

2. Use the four screws to install a ball mount (Figure 40, Item 3) to the back of the CapView.

Table 54: Ball Mount Part Number

Parts from the Fuselage Kit

See Figure 40

Item	Part Number	Description	Qty
3	118603-113	Ram Mount Ball, 1"	1

3. Install the *CapView harness* to the **Boom 12** port on the Gateway hub.

Table 55: CapView Harness Part Number

Parts from the Fuselage Kit

Item	Part Number	Description	Qty
	320124-352	Harness, Capview, 10Ft	1

For more information, see [Gateway Hub Identification](#).

4. Route the *CapView harness* from the Gateway hub into the cockpit.

Note: The 8-pin connector may need to be removed from the display harness to get it into the cockpit. Take a picture or record the pin locations before removing any wires from the connector.

Note: Route the wiring in accordance with AC 43.13-1B Chapter 11, Section 8, paragraph 11-96 and secure per Chapter 11, Section 11.



Figure 41: CapView Mounting Location

5. In the cockpit of the aircraft, find the best location for the CapView ([Figure 41](#), Item 1).

Note: The CapView needs to have a clear line of sight and within reach of the pilot. The CapView also needs to allow the lower instrument panel to fold down.

The CapView installation location recommendations include:

- a. Mounted on the face of the lower instrument panel as far to the right or left as possible.

- b. Mounted on the left or right wall of the cockpit, below the window, as close to the lower instrument panel as possible.
- c. Mounted on top of the lower instrument panel under the Controller display.

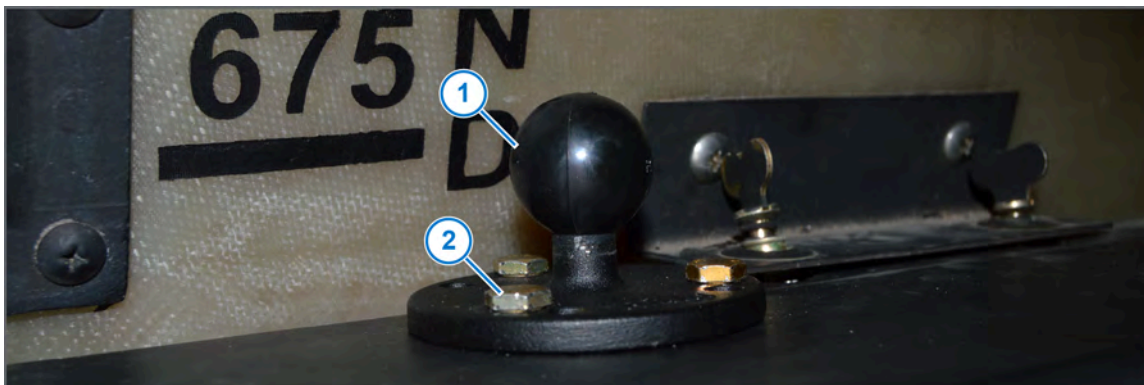


Figure 42: Ball Mount Installation

6. After the desired mounting location is established, attach a ball mount (Figure 42, Item 1) to the aircraft using the supplied 10-32 hardware (Figure 42, Item 2)—10-32 hex bolts, flat washers, and 10-32 stop nuts.

Table 56: Ball Mount Part Number

Parts from the Fuselage Kit

See Figure 42

Item	Part Number	Description	Qty
1	118603-113	Ram Mount Ball, 1"	1
2	713501-454	Bolt, Hex 10-32 x 21/32 Cad Plated	4
	713600-013	Washer, Flat, #10 Cad Plated	4
	713501-531	Nut, Hex Elastic Stop, 10-32 Cad Plated	4



Figure 43: Install the CapView

7. Connect the *CapView* harness (Figure 43, Item 1) into the back of the CapView (Figure 43, Item 2).
8. Install one end of the clamp (Figure 43, Item 3) onto the ball mount (Figure 43, Item 4) on the back of the CapView, and the other onto the ball mount attached to the aircraft.

Table 57: RAM Arm Clamp Part Number

Parts from the Fuselage Kit

See Figure 42

Item	Part Number	Description	Qty
	118603-114	Ram Arm, Medium, B Size	1

9. Remove the screen protector from the CapView screen.

Install the Maneuvering Speed Placard Decal



Attention: Do not remove the existing maneuvering speed placard.

Important: Must be installed ONLY on an 802 aircraft.

1. Select the correct maneuvering speed placard decal for the aircraft's serial number, from the provided maneuvering speed decal.
2. Mount as close to the existing maneuvering speed placard, which is close to the airspeed indicator.

Install the Parts to the Center Boom

1. If the operator will have valves on the center boom, go to **Step 3**.

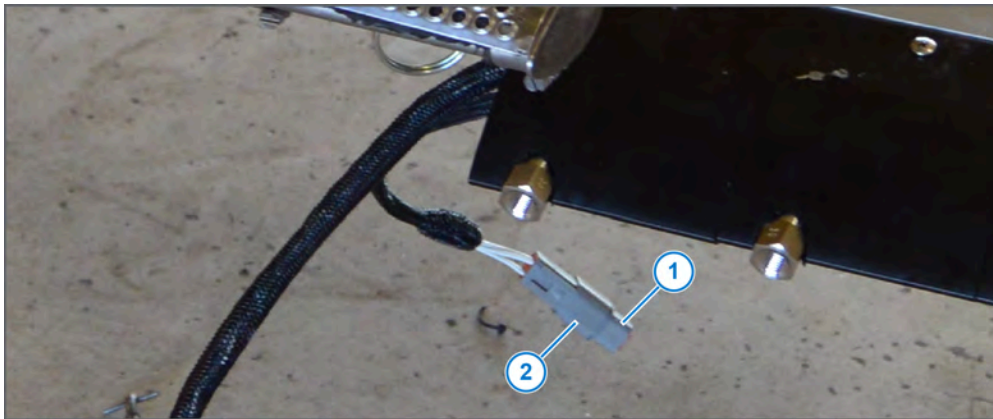


Figure 44: Dust Plug Installation

2. If the operator chooses not to use any center boom valves:
 - a) Install the 6-pin DTM dust plug (Figure 44, Item 1) into the 6-pin DTM connector (Figure 44, Item 2) on the left and right center VCM harnesses.

Table 58: Center Valve Part Number

Parts from the Spare Parts Kit

See [Figure 44](#)

Item	Part Number	Description	Qty
1	706530-425	Plug, Dust, 6 Pin DTM	2

- b) Route the VCM harnesses (Figure 44, Item 3) back along the booms inside the shells.
- c) Go directly to [Install the Nozzle Tips](#).

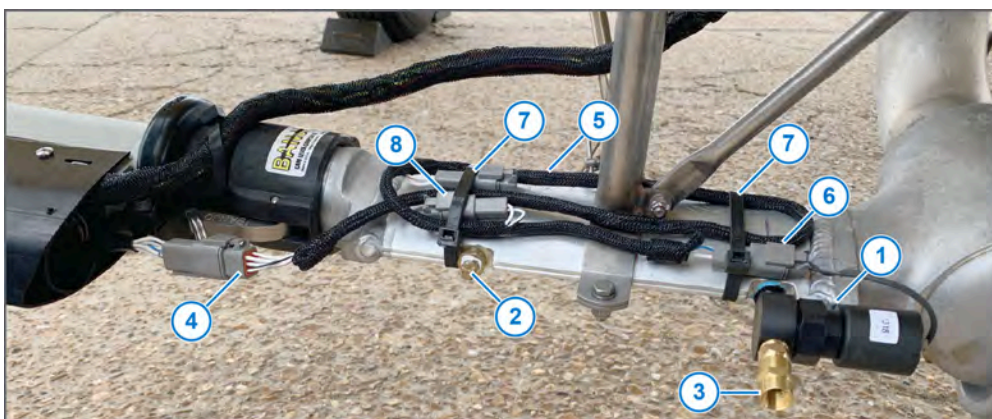


Figure 45: Parts Installation on the Center Boom

3. Install the valves (Figure 45, Item 1) to the desired open ports on the existing center boom.

Note: Each system can vary from what is shown. The operator may choose not to use all the ports on the center boom.

Table 59: Center Valve Part Number

Parts from the Fuselage Kit

See Figure 45

Item	Part Number	Description	Qty
1	320015-108	Assembly, 7W, Stainless, Center w/Check Valve	6

4. Plugs (Figure 45, Item 2) must be installed on any unused ports. Those parts are not supplied by CapstanAG.
5. Install the spray nozzles (Figure 45, Item 3).
The SwathPRO™ system is compatible with aftermarket spray nozzles, which should be installed at this time.
6. Lay the right and left center boom harnesses along the center boom.
Important: The right harness has a red stripe in the braiding, and the left harness has a yellow stripe in the braiding.
7. Connect the 6-pin DTM connectors (Figure 45, Item 4) from the center boom harness to the 6-pin DTM connectors from the left and right center VCM harnesses.
8. Route the center boom harness along the center boom (Figure 45, Item 5) and connect to the nozzle valve connectors (Figure 45, Item 6).

Table 60: Center Boom Harness Part Numbers

Parts from the Fuselage Kit

See Figure 45

Item	Part Number	Description	Qty
5	320124-231	Harness, Boom, Center, 4 Space, Right	1
	320124-232	Harness, Boom, Center, 4 Space, Left	1

9. Make sure that the harness is attached to the center boom as necessary using cable ties (Figure 45, Item 7).
10. Install dust plugs (Figure 45, Item 8) on any unused 2-pin DTM connectors.

Table 61: Dust Plug Part Number

Parts from the Fuselage Kit

See Figure 45

Item	Part Number	Description	Qty
8	320015-006	Dust Plug, Aerial, VCM Harnesses, Center	6

Install the Nozzle Tips

Install the desired ¼ inch NPT spray tips to each nozzle.

The spray tips can vary. The SwathPRO™ system is compatible with aftermarket spray tips.

Post-install Checklist

- Make sure that the quarter-turn fasteners on the top and boom of each shell are installed and tightened.
- Make sure that the harnesses are connected and fastened in place with cable ties.

Important: Do not attach the harnesses to the aircraft or components with cable ties until the dry test of the system is complete.

Electrical Loads

Update the aircraft electrical loads for the SwathPRO™ system.

Aircraft	Phase of Flight (Amps)				
	Start ²	Taxi ²	Takeoff ²	Cruise (Spraying) ³	Land ²
AT-402/502 Series	1	1	1	36	1
AT-602/802 Series	1	1	1	40	1

The maximum electrical loads installed by the SwathPRO™ system are as follows:

- AT-402 and AT-502 Series Aircraft: 44 A
- AT-602 and AT-802 Series Aircraft: 49 A

² SwathPRO™ system idle

³ SwathPRO™ system at 80% duty cycle

Weight and Balance Information

Weigh the modified aircraft and update the records.

Note: A calculated weight and balance is not acceptable to determine the updated weight and balance of the modified aircraft.

Return to Service

1. Execute FAA Form 337 in accordance with 14 CFR Part 43, Appendix B.
2. Insert these into the maintenance records of the modified aircraft:
 - Instructions for Continued Airworthiness
 - Copy of 337 and STC
3. Insert these into the Flight Manual for the Modified aircraft.
 - Revised empty weight and corresponding CG determined in Section 16.2
 - Aircraft Flight Manual Supplement
4. Make an entry into the maintenance record of the modified aircraft in accordance with 14 CFR 43.9.

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Section 4: Setup

Topics:

- [CapView Button Descriptions](#)
- [System Setup](#)
- [Do the Factory Reset Procedure](#)
- [Do the Location Setup Procedure](#)
- [Input the Total Number of Valves](#)
- [Upload a Profile and Set the Preset Buttons](#)
- [System Dry Tests](#)
- [System Wet Test](#)

CapView Button Descriptions



Figure 46: CapView Buttons

Table 62: CapView Button Descriptions

Item	Description	Function
1	ALARM	Press the button to silence an audible alarm
2	POWER	Press the button to start or shut down the CapView display
3	NOZZLE SETUP	Press the button to go to the Nozzle Setup Menu
4	SYSTEM SETUP	Press the button to go to the System Setup Menu
5	LOCATION SETUP	Press the button to go to the Location Setup Menu Press and hold the button for 10 seconds to edit the location setup information
6	Presets	Use the seven buttons to store and use the boom, tip size, and flow profiles
7	Navigation Arrows	Press the buttons to move through the menu items
8	ENTER	Press the button to open the selected menu screen or to accept the selected value
9	ESCAPE	Press the button to exit the current screen

System Setup

The system setup procedure includes:

1. Factory Reset
2. System Setup Procedure
3. Nozzle Setup Procedure
4. System Dry Test
5. System Wet Test

Do the Factory Reset Procedure

A factory reset must be done during the initial system setup and if the CapView or a VCM is replaced.

Important: Leave both the aircraft key switch power and the SWATHPRO MAIN circuit breaker on to maintain power to the Gateway Hub during this procedure.



Figure 47: Advanced Settings—Factory Reset

1. Make sure that the aircraft key switch power is on.
2. Press the **POWER** button (Figure 47, Item 1) on the display.
3. Take pictures of all the settings, or record all the settings in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Supplement for SwathPRO™.
4. Press the **SYSTEM SETUP** button (Figure 47, Item 2) on the display.
5. Use the **UP** or **DOWN** arrow buttons (Figure 47, Item 3) to go to **Advanced Settings**.
6. Press the **ENTER** button (Figure 47, Item 4) on the display.
7. Use the up or down arrows to go to **Factory Reset** (Figure 47, Item 5).
8. Press the **ENTER** button on the display.
9. A message shows on the screen, use the left or right arrow buttons (Figure 47, Item 6) to select Yes.
10. Press the **ENTER** button on the display.
The display will turn off when this procedure is complete.
11. Do the location setup procedure after completing a factory reset.
For more information, see the [Do the Location Setup Procedure](#).

Do the Location Setup Procedure

If you are not prompted to do this procedure, it is not necessary to complete.



Figure 48: Location Setup

1. Make sure that the aircraft key switch power is on.
2. If the CapView is not on, press the **POWER** button (Figure 48, Item 1) on the display.
3. If a location setup is needed, the system prompts you when the CapView is powered on.
 - a) Use the arrow buttons (Figure 48, Item 2) to select **OK**.
 - b) Press the **ENTER** button (Figure 48, Item 3) on the display.
4. Press and hold the **LOCATION SETUP** button (Figure 48, Item 4) on the display for 10 seconds.

Note: It is normal for the screen to change as you press and hold the button.
5. Use the left or right arrow buttons to go to **AUTO SETUP** (Figure 48, Item 5).
6. Press the **ENTER** button on the display.
7. Press the **ENTER** button on the display to accept the default 4-inch nozzle spacing.



Figure 49: Auto Location Setup

This screen shows a picture with the VCMs (Figure 49, Item 1) located on the booms.

The graphic along the bottom shows a VCM with a 15-nozzle wire harness (Figure 49, Item 2). The black dot (Figure 49, Item 3) represents the direction of the harness, and the nozzles are indicated with numbers. This graphic changes as you move the yellow highlighter from VCM to VCM. This can be an indicator of which VCM is which, based on the number and location of the valves on the VCM.

Start with the VCM located on the far left section of the left boom.

8. Use the left or right arrow buttons (Figure 49, Item 4) to highlight the desired VCM.
9. Press the **ENTER** (Figure 49, Item 5) button on the display.
The highlight color will change to red and the nozzles on that VCM pulse.
10. Move the highlighted VCM using the left or right arrows to the physical location on the boom.
Example: Selected far left VCM (VCM #1), but it pulses at physical location #4.
11. Press the **ENTER** button on the display to stop the pulsing.
12. Press the up or down arrow buttons to flip the VCM graphic, so the VCMs on the left side must show the black dot on the left side. The VCMs on the right side must show the black dot on the right side.
13. Repeat the process from left to right until all of the VCMs are moved to their proper location and flipped to their proper orientation.
14. When finished, press the **ESCAPE** (Figure 49, Item 6) button three times.
This screen will give the option **YES** (to save) or **NO** (not to save) the entered data.
15. If the data is correct, use the right or left arrow buttons to go to **YES**.
16. Press the **ENTER** button.

A blue save bar will show and move across the screen. The CapView is saving all the data inside the VCMs. This process may take a few minutes to complete.

Important: The CapView will shutdown to reboot shortly after selecting **YES**.

Input the Total Number of Valves

After a factory reset, input the total number of valves used on the system back into the Capview.

1. Press the **SYSTEM SETUP** button.
2. Using the **UP** or **DOWN** arrow, scroll to the **Advanced Settings** line (Line 29).
3. Press the **ENTER** button.
4. Using the **DOWN** arrow, scroll to the **Total Number Valves Expected** line (Line 10).
5. Press the **ENTER** button.
The line will turn red.
6. Use the arrow buttons to select the desired number of nozzles.
Once the total number of valves has been reached, the alarm light will turn off.
7. Press the **ENTER** button.
The line will turn yellow.
8. Press the **ESCAPE** button or the **SYSTEM SETUP** button to return to the main screen.

Note: Profiles cannot be uploaded until the Total Number Valves Expected line matches the total number of valves used on the SwathPRO system.

Upload a Profile and Set the Preset Buttons

You must first make a profile using ProMaker. Go to the ProMaker User Manual for more information.



Figure 50: Upload Profile

1. Insert a USB memory device into the back of the CapView.
The **USB Host Menu** screen (Figure 50, Item 1) will show.
2. Use the up or down arrow buttons (Figure 50, Item 2) to select the **Upload Profile** line (Figure 50, Item 3).
3. Press the **ENTER** button (Figure 50, Item 4).
The **Upload Profiles Menu** screen (Figure 50, Item 5) will show.
4. Use the up or down arrow buttons to select the desired profile (Figure 50, Item 6).
5. Press the **ENTER** button.
The **Profile Upload** screen (Figure 50, Item 7) will show.
6. Use the arrow buttons to select the desired profile number (Figure 50, Item 8).
7. Press the **ENTER** button.
A blue bar will show the progress of uploading the profile to the CapView.
8. When the profile upload is complete, the **Upload Profiles Menu** screen will show.
9. Repeat Step 4 to 8 until all the desired profiles are uploaded to the CapView.
10. Press the **ESCAPE** button (9) to return to the main screen.
11. Press the **POWER** button (10) to turn off the CapView, then press the **POWER** button again to turn the CapView on again.

Note: Profiles cannot be uploaded until the Total Number Valves Expected line matches the total number of valves used on the SwathPRO system.

System Dry Tests

Do these procedures to make sure that the nozzle valves are operating correctly:

- Boom Dry Test
- Key Fob Boom Dry Test

Do the Boom Dry Test

1. Make sure that the engine is off and the aircraft key switch is on.
2. Make sure that the circuit breaker switch labeled **SWATHPRO MAIN** is on.
3. Turn on the CapView display.
4. If using the fan brake relay, put the fan brake switch in the **SPRAY ON** position.
5. Push the spray handle down.
All nozzle valves on the boom should start clicking.
6. Pull the spray handle up.
All nozzle valves should turn off and stop clicking.

Do the Key Fob Boom Dry Test

Using the key fob to operate the boom sections lets the operator see the operation of the nozzle valves. Use the key fob to operate each nozzle.



Figure 51: System Setup—Nozzle Control

1. Activate the Nozzle Control (Key Fob) on the CapView.
 - a) Press the **SYSTEM SETUP** button (Figure 51, Item 1).
 - b) Use the **UP** or **DOWN** arrow buttons (Figure 51, Item 2) to go to **Nozzle Control (Key Fob)** (Figure 51, Item 3).
 - c) Press the **ENTER** button (Figure 51, Item 4).
 - d) Use the **UP** or **DOWN** arrow buttons to go to **Key Fob Active**.
 - e) Press the **ENTER** button.

When the key fob mode is activated, all the nozzles are turned off. The CapView shows that the Key Fob Mode is active. This is indicated by the text block in the upper left corner and the blinking LEDs.

2. Press the top/bottom buttons on the key fob to turn on or off each boom section. Make sure that each boom section is operating (clicking) in the correct order.

Note: If the nozzles do not turn on in sequential order, it indicates the VCMs are not setup correctly.

3. Press the right/left buttons on the key fob to turn on or off each individual nozzle. Make sure that each nozzle is operating (clicking) in the correct order.
4. Press the center button on the key fob to turn off the whole boom.
5. Activate Nozzle Control (Key Fob) in the **SYSTEM SETUP** and change the setting back to **12V Active** or the previous setting.

System Wet Test

Do this procedure to make sure that the nozzle valves are operating correctly.

Do the Key Fob Boom Wet Test

Using the key fob to operate the boom sections lets the operator see the operation of the nozzle valves. Use the Key FOB to operate each nozzle.

The Key FOB works well when checking for plugged tips without wasting a significant amount of product.



Figure 52: System Setup—Nozzle Control

1. Activate the Nozzle Control (Key Fob) on the CapView.
 - a) Press the **SYSTEM SETUP** button (Figure 52, Item 1).
 - b) Use the **UP** or **DOWN** arrow buttons (Figure 52, Item 2) to go to **Nozzle Control (Key Fob)** (Figure 52, Item 3).
 - c) Press the **ENTER** button (Figure 52, Item 4).
 - d) Use the **UP** or **DOWN** arrow buttons to go to **Key Fob Active**.
 - e) Press the **ENTER** button.

When the key fob mode is activated, all the nozzles are turned off. The CapView shows that the Key Fob Mode is active. This is indicated by the text block in the upper left corner and the blinking LEDs.

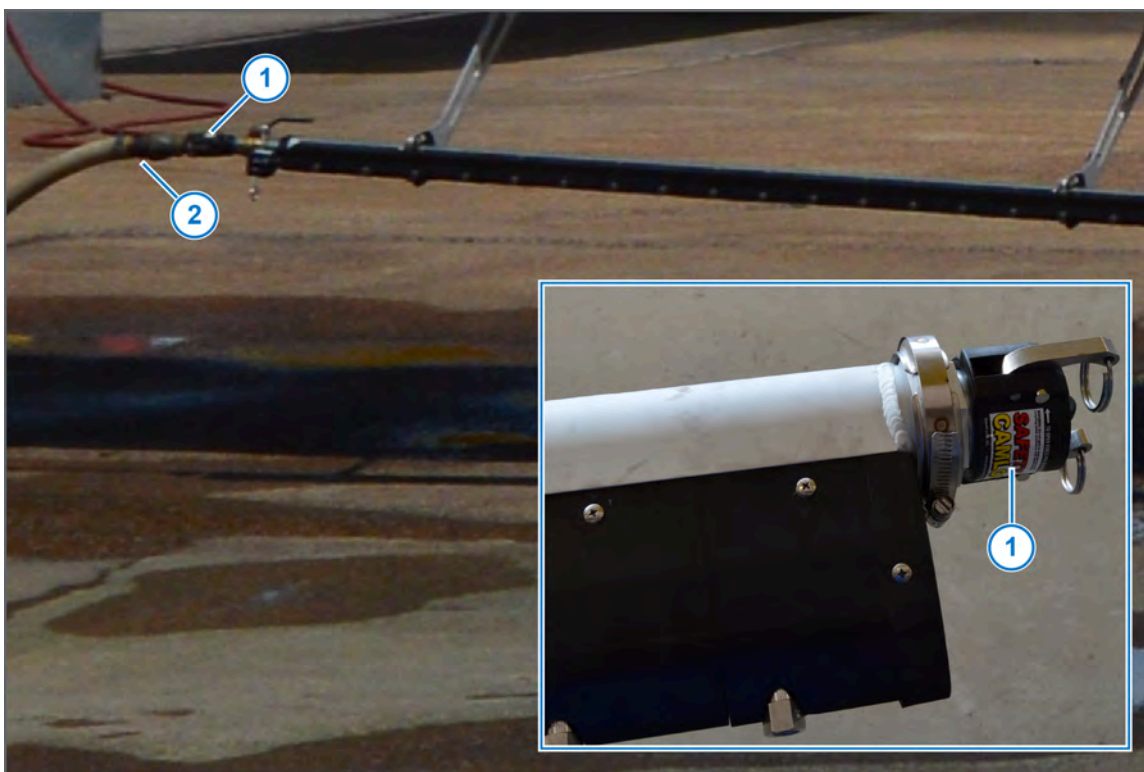


Figure 53: Connect Water Line

2. Use one of the camlock fittings (Figure 53, Item 1), located at the end of each boom, to attach a water line (Figure 53, Item 2) that can build more than 5 psi inside of the boom.
3. Press the top/bottom buttons on the key fob to turn on or off each boom section.
Make sure that each boom section is operating (clicking) in the correct order.
Note: If the nozzles do not turn on in sequential order, it indicates the VCMs are not setup correctly.
4. Press the right/left buttons on the key fob to turn on or off each individual nozzle.
Make sure that each nozzle is operating (clicking) in the correct order.
Note: If a nozzle valve is leaking or dripping, use a marker to mark the nozzle valve. Continue to check all nozzle valves.
5. Press the center button on the key fob to turn off the whole boom.
6. Activate Nozzle Control (Key Fob) in the **SYSTEM SETUP** and change the setting back to **12V Active** or the previous setting.

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