

PERFORMANCEstol

BY AIRFRAMES
ALASKA

Installation Instructions



Manual No. PSTOL-013

Performance STOL Double Slotted Flaps for Piper PA-18 Series Aircraft

This Page Intentionally Left Blank

Record of Revisions

Rev Level	Date	Page	By	Explanation of Revision
IR	9/6/2016	-	Doug Keller	Initial Release
A	6/1/2017	All	Doug Keller	Clarifications from customer installation
B	10/4/2017	All	Abe Harman	Added additional detail and clarification. Updated company references to be from Performance STOL to Airframes Alaska, LLC.
C	7/15/2019	10, 12, 13, 16, and 19	Abe Harman	Added additional installation notes to steps 16, 21, 29, and two notes to step 12.
D	3/16/2021	All	Doug Keller	Added provision for installing only the false spar and rib flange doublers without the installation of the PSTOL flaps

Distribution of Changes

A current copy of this manual will be maintained on the Airframes Alaska, LLC. Website.

Contents

1.0	Introduction and Description	5
2.0	Placards and Marking.....	5
3.0	Installation Instructions	6
4.0	Weight and Balance	25
5.0	Trouble Shooting	25
6.0	Drawings and Diagrams.....	26
7.0	Engineering Changes and Amendments	26
	Figure 1: Four rivets to drill out in inboard flap false spar	8
	Figure 2: Four rivets to drill out in outboard flap false spar	9
	Figure 3: Inboard False Spar Doubler Position.....	10
	Figure 4: Outboard False Spar Doubler Position	10
	Figure 5: Match drilling existing rivet holes in inboard doubler from template.....	11
	Figure 6: Rivet doublers to false spar	12
	Figure 7: Rib Flange Doubler Location.....	13
	Figure 8: Rib Flange Doubler Installation Detail.....	13
	Figure 9: Rib Flange Doubler Installation Photo.....	14
	Figure 10: Install flap hangar extender and cleco both aft holes.....	15
	Figure 11: Insert flap channel stiffener into flap hangar	16
	Figure 12: Extender and stiffener bolted to flap hangar	16
	Figure 13: Flap Hanger Extender installed.....	17
	Figure 14: Inboard Vane hanger installed on flap hanger extender	18
	Figure 15: Vane push rod installed.....	19
	Figure 16: Flap Element installed	20
	Figure 17: Mount turnbuckle assemblies	21
	Figure 18: Maximum Flap Deployment Angles.....	22
	Figure 19: Install Gap Seals	23
	Figure 20: Upper wing root fairing modification.....	23
	Figure 21: Lower wing root fairing modification.....	24

1.0 Introduction and Description

Introduction:

The performance STOL PA-18 Double Slotted Flap system is a replacement flap system with enhanced performance over the original PA-18 flap system.

Description:

The Performance STOL PA-18 Double Slotted flap system is composed of three key components:

1. New flap hinges which replace the original flap hinges. The installer simply drills out the original flap hinges and installs the Performance STOL flap hinges, along with a flap hanger stiffener and inboard and outboard false spar doublers.
2. A vane element, the first of the two flap elements, mounts directly to the newly installed flap hinges. A new push rod is provided to connect the vane element to the existing original flap bell crank inside the wing.
3. The flap element, the second of the two element flap system, mounts directly onto the vane element. A new push rod (called "link turnbuckle assembly"), is provided to control the flap element and is attached to the new flap hinge.

Instructions for installation of this kit are detailed within this manual.

2.0 Placards and Marking

The following information must be displayed in the form of a placard in addition to those specified in the operator's basic handbook.

**DO NOT EXCEED 70 MPH IAS
WITH FULL FLAPS DEPLOYED**

This placard is placed on the instrument panel immediately adjacent to the airspeed indicator and in full view of pilot as part of the installation instructions.

3.0 Installation Instructions

Before beginning the installation, ensure that the kit received contains all the parts listed below:

Description	Part Number	Quantity	Notes (if applicable)
Vane Structure Assembly	PSTOL-0015-R/L	1 RH, 1 LH	
Flap Structure Assembly	PSTOL-0027-R/L	1 RH, 1 LH	
Gap Seal Assembly	PSTOL-0037-R/L	1 RH, 1 LH	
Link Turnbuckle Assembly	PSTOL-0038	4	
Pushrod Assembly	PSTOL-0042	2	
Hanger Extender Assembly	PSTOL-0029	4	
Hanger Stiffener	PSTOL-0033	4	
Bolt	AN3-16A	2	Preinstalled on assembly PSTOL-0015
Bolt	AN3-6A	4	
Washer Head Screw	AN525-832R16	8	
Clevis Pin	MS20392-3C53	8	4 of 8 preinstalled to hold flap and vane together
Clevis Pin	MS20392-2C21	8	Preinstalled on assembly PSTOL-0038
Washer	AN960-8L (NAS1149FN816P)	8	
Washer	AN960-10 (NAS1149F0363P)	2	Preinstalled on assembly PSTOL-0015
Washer	AN960-10L (NAS1149F0332P)	12	8 of 12 preinstalled on assembly PSTOL-0038
Washer	AN960-416 (NAS1149F0463P)	16	8 of 16 preinstalled to hold flap and vane together
Cotter Pin	MS24665-132	16	8 of 16 preinstalled on assembly PSTOL-0038, 4 of 16 preinstalled to hold flap and vane together
Nut	MS21042-L08	8	
Nut	MS21042L3	2	Preinstalled on assembly PSTOL-0015
Nut	MS21044N3	4	
Rib Flange Doubler	PSTOL-0050	2	Included in certified installation kit
Inboard False Spar Doubler	PSTOL-0066	2	Included in certified installation kit
Outboard False Spar Doubler (RH)	PSTOL-0065-01	1	Included in certified installation kit
Outboard False Spar Doubler (LH)	PSTOL-0065-02	1	Included in certified installation kit
Inboard False Spar Template	PSTOL-0068	2	Included in certified installation kit
Outboard False Spar Template	PSTOL-0067	2	Included in certified installation kit
CherryMAX® Rivet	CR3213-3	106*	Included in certified installation kit
CherryMAX® Rivet	CR3213-4	12*	Included in certified installation kit
CherryMAX® Rivet	CR3212-3	6*	Included in certified installation kit
CherryMAX® Rivet	CR3212-4	4*	Included in certified installation kit
Placard (as shown in section 2.0)	N/A	1	

*Rivet quantities represent the kit as supplied for most typical installations. Actual rivet length needed may vary from one installation to another. It is the responsibility of the installer to verify the correct rivet length needed and obtain any additional rivets from those supplied. Additional rivets are available for purchase separately if needed.

If the kit does not contain all of the parts listed, contact Airframes Alaska LLC. within 10 days of receiving the kit. Airframes Alaska LLC. will not be liable for parts lost by the installer or aircraft owner.

Note: *This STC allows for the installation of the False Spar and Rib Flange Doublers without installing the PSTOL flaps. This provision allows aircraft owners to install the doublers during wing rebuild and/or recover prior to purchasing the actual PSTOL flaps. If this is the case, remove the original flaps then follow installation steps 4 through 12 below. After completing step 12, reinstall the original flaps and rig according to the aircraft's maintenance manual. Update the aircraft's weight and balance by adding .5 Lbs. at station 56.0. Submit FAA form 337 indicating the installation of this STC without the installation of the PSTOL flaps.*

Installation steps:

1. Remove the original flaps, flap gap seals, and aft wing root fairings on both wings. Remove the original flap push rods. Do not remove the rod end bearings from the flap bell cranks, located inside the wings. These will be reused with the new flap system.
2. Drill out the original aluminum flap hinge block rivets from the flap hangers (two rivets per hanger). Use caution when drilling so as to not create oblong rivet holes. The rivets are steel. A #40 drill bit is recommended. Drill through the rivet head and opposing shop head only far enough to get through the flap hanger. Use a #30 drill bit to remove the rivet head and opposing shop head. Use pliers to grip the flap hinge block and pry it out of the flap hanger.
3. Clean the area where the flap hinges were located with a wire brush, if necessary, to remove any surface corrosion. The flap hangers are steel and will corrode if not painted.

Note: If aircraft has Dakota Cub wings, remove the cross screw that passes through the flap hanger channel, inside the wing.

4. If the wing is covered, remove the fabric around the four existing rivets around the flap hangar on the inboard false spar. Drill out these rivets with a #30 drill. Figure 1 shows drawing of the hole template for the inboard false spar doubler (as viewed from behind if held up in position to the trailing edge of the wing), which indicates the approximate location of the four rivets to remove. Do not remove the two rivets just above the flap hangar. Do not remove the two rivets just above the flap hangar.

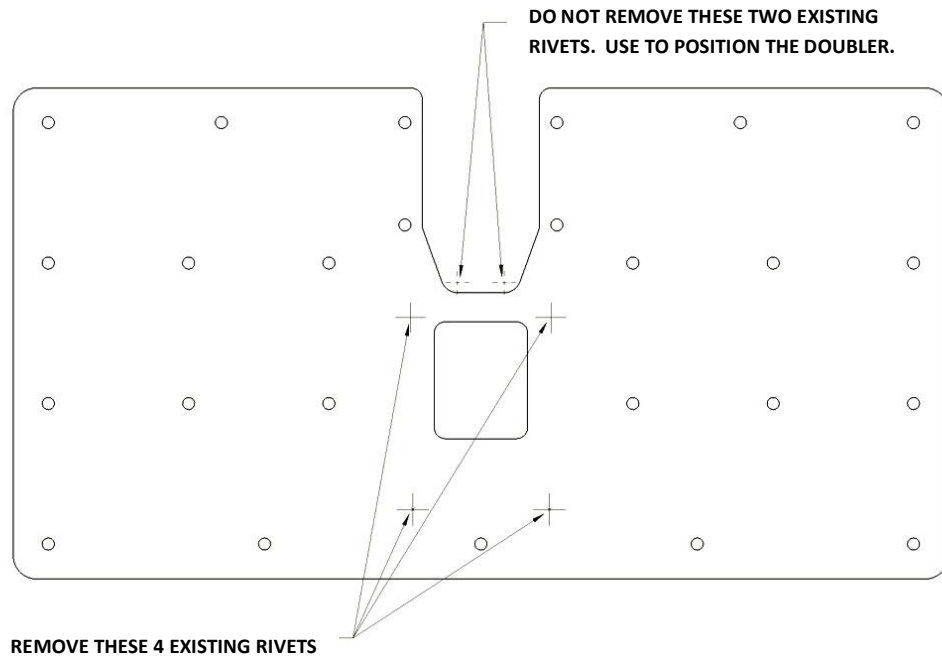


Figure 1: Four rivets to drill out in inboard flap false spar

- Also, if the wing is covered, remove the fabric around the four existing rivets beside the flap hangar on the outboard false spar. Drill out these rivets with a #30 drill. Figure 2 shows the drawing of the hole template for the outboard false spar doubler (as viewed from behind if it were held up in position to the trailing edge of the wing), which indicates the approximate location of the four rivets to remove. Do not remove the single rivet just above the flap hangar.

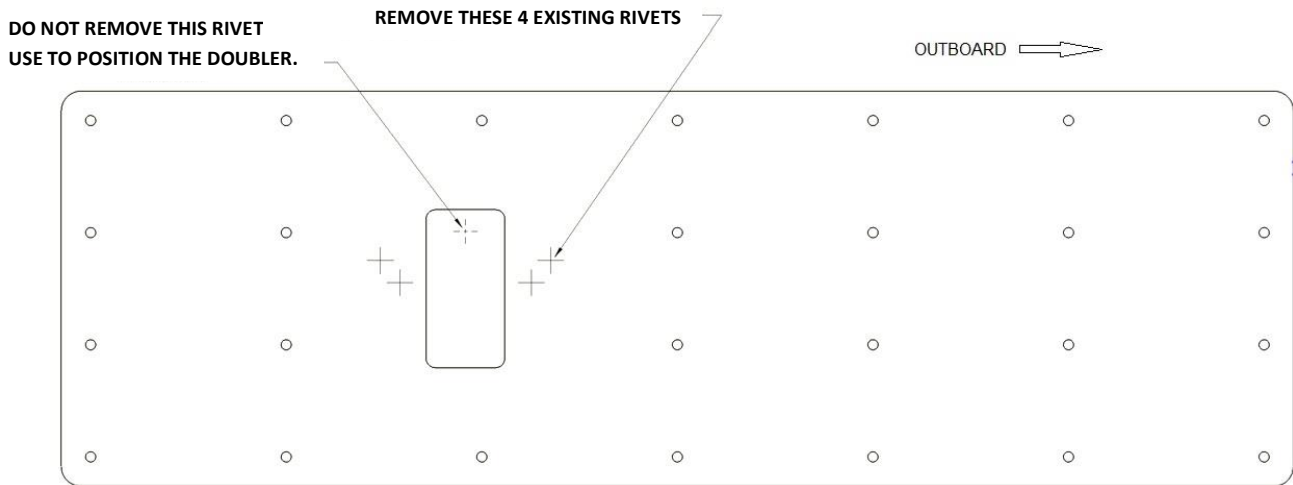


Figure 2: Four rivets to drill out in outboard flap false spar (RH shown, LH mirrored)

6. Locate the inboard and outboard false spar doublers (PSTOL-0066, and PSTOL-0065) on the false spar per drawing PSTOL-001. Carefully position the doublers on the false spar by centering the flap hanger in the cutout in the doubler and fitting the curve of the doubler to the false spar (it may be necessary to hand form the doublers slightly to ensure a tight match up to the curve of the false spar without any gaps). Make sure the 2 rivets remaining on the inboard flap hanger and the single rivet remaining in the outboard flap hanger are centered in the doubler cutouts as shown above in Figure 1 and Figure 2. Figures 3 and 4 below show the detail views from drawing PSTOL-001 for positioning the false spar doublers.

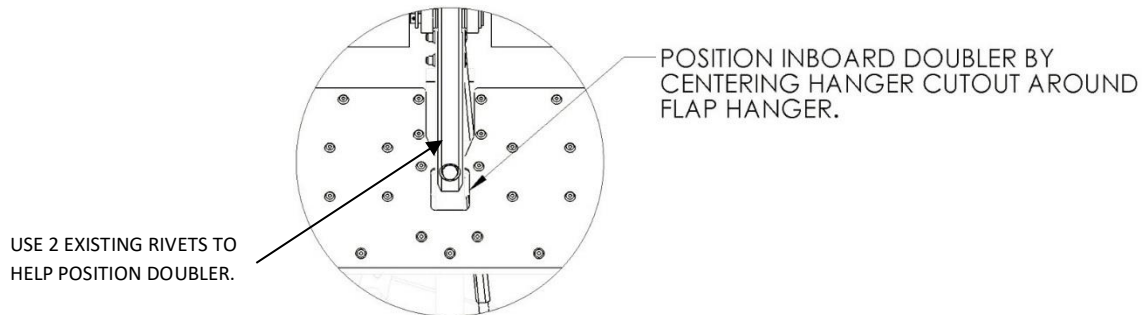


Figure 3: Inboard False Spar Doubler Position
(As viewed from standing underneath the wing, looking up)

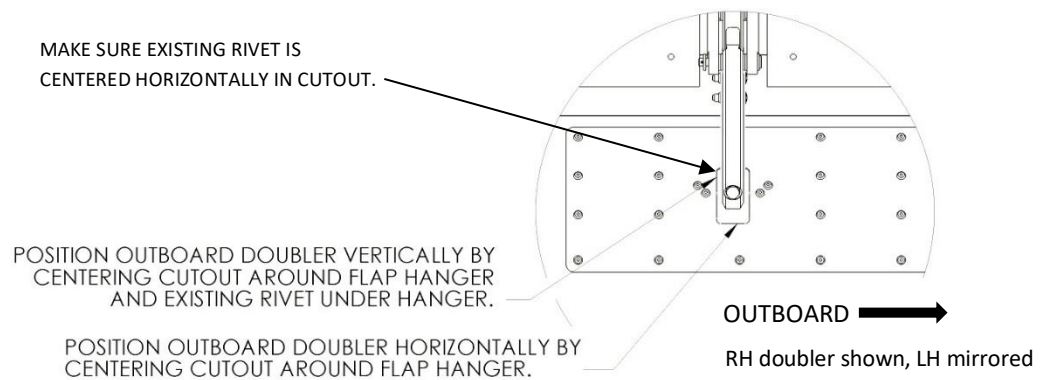


Figure 4: Outboard False Spar Doubler Position (viewed from underneath the wing, looking up)

7. Match drill the predrilled rivet holes from the doublers into the false spar using a number #30 drill. Drill one of the outer corner rivets and insert a cleco, then fine tune the doubler position and drill the opposite corner and cleco. Drill and cleco the remaining holes in the doubler. When complete, remove the doubler from the false spar.

8. Using the supplied inboard and outboard clear plastic false spar templates (PSTOL-0068, PSTOL-0067 respectfully), match drill holes in the templates for the four removed rivets around the inboard and outboard flap hangars (shining a flashlight inside the wing will help to illuminate the holes from behind). Locate the templates by cutting out the outline of the flap hangar hole and punching out several rivet holes, which are printed on the template. Position the template on the false spar and cleco to the false spar using the rivet holes just drilled in the false spar.
9. Using the newly drilled holes in the clear plastic templates from the previous step, match drill these added rivet holes through the inboard false spar doubler (PSTOL-0066) and outboard false spar doubler (PSTOL-0065). Position the template on the doubler and cleco to the doubler. Make sure the template is flush against the doubler to match its curve. See Figure 5.

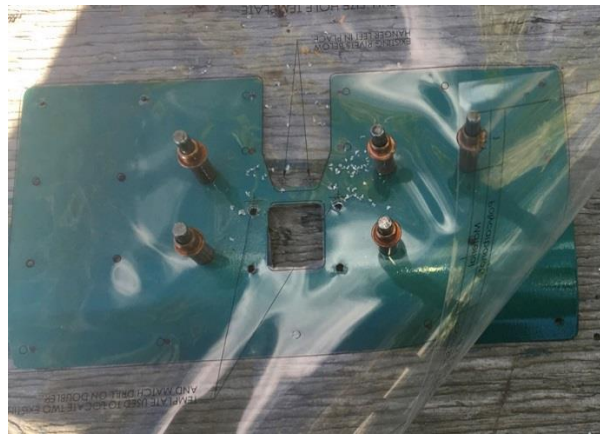


Figure 5: Match drilling existing rivet holes in inboard doubler from template

10. Using the supplied CherryMAX® 3213-4-X rivets, rivet the doublers to the false spar. Caution: use the proper rivet length to ensure that the CherryMAX® rivets are properly secured. The doublers can be installed either over the fabric of a covered wing or under the fabric if the wing is not yet covered. Use a CherryMAX® Grip Gauge to determine the rivet length to use. Both CherryMAX® 3213-4-3 and CherryMAX® 3213-4-4 are supplied in the kit, but measuring and using the proper rivet length is the responsibility of the installer.



Figure 6: Rivet doublers to false spar

11. At this point, both the inboard and outboard false spar doublers should be riveted in place on both wings.
12. Install the rib flange doublers (PSTOL-0050) on the top of the inboard wing rib flange for each wing:
 - Remove the tank lid and wing root fairings from both wings.
 - Place the rib flange doubler in position along the top of the rib flange as shown in Figure 7 and Figure 9. Match drill the predrilled holes in the doubler through the rib flange. Use care to ensure the drill hole is not through the center web structure of the rib. Rivet hole should be through the flange surface where there is clearance behind for the rivet.
 - Rivet the doubler to the rib with 5 CherryMax 3212-4-X rivets in each wing, as specified in Figure 8. Use a CherryMax rivet gauge to determine the appropriate length rivet for each location (both -3 and -4 lengths are supplied in the standard kit).

Note: The rib flange doubler (PSTOL-0050) should be countersunk to accept the 3212 series rivets, these are different than the 3213 rivets with the universal head used on the false spar doublers.

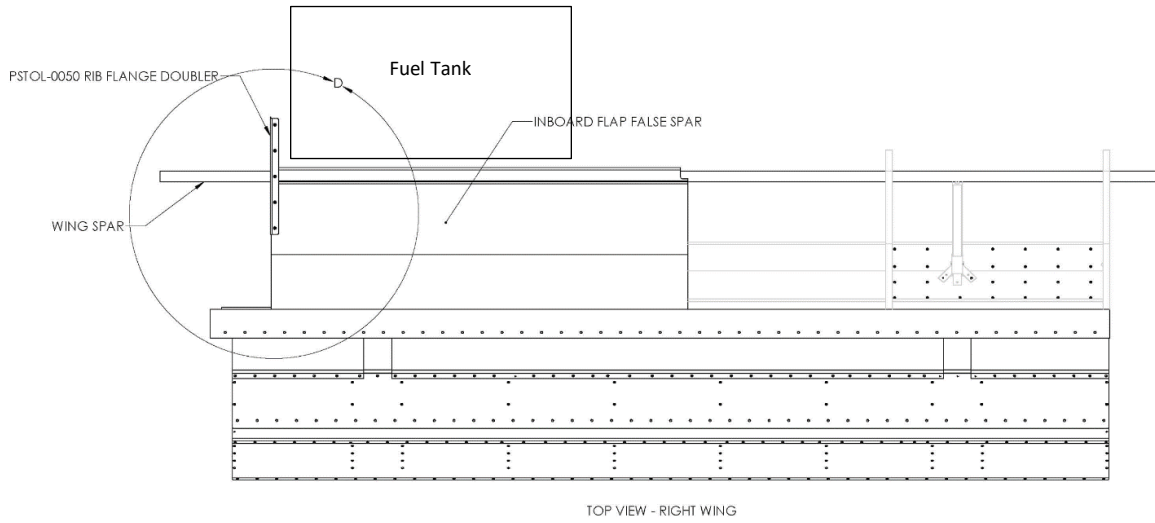


Figure 7: Rib Flange Doubler Location

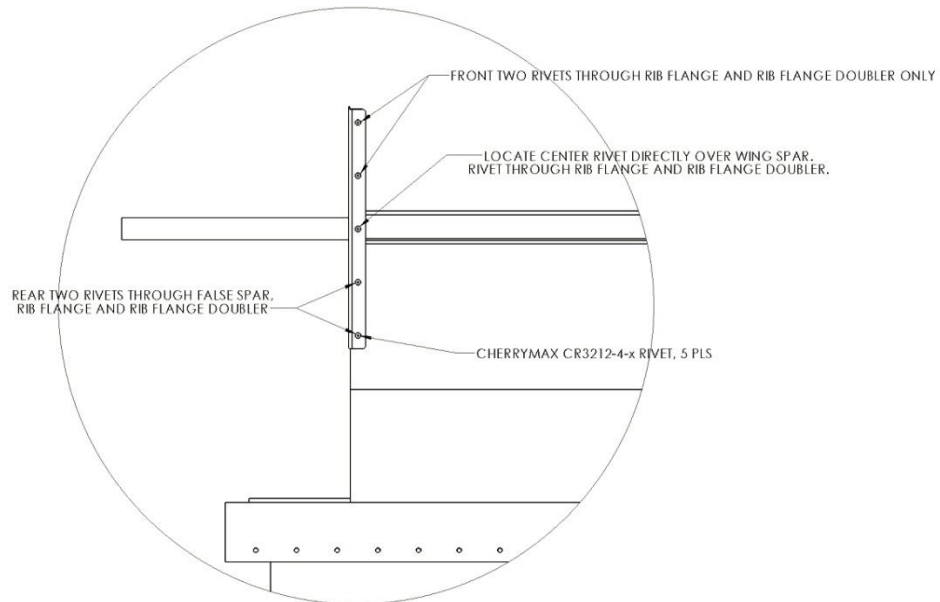


Figure 8: Rib Flange Doubler Installation Detail

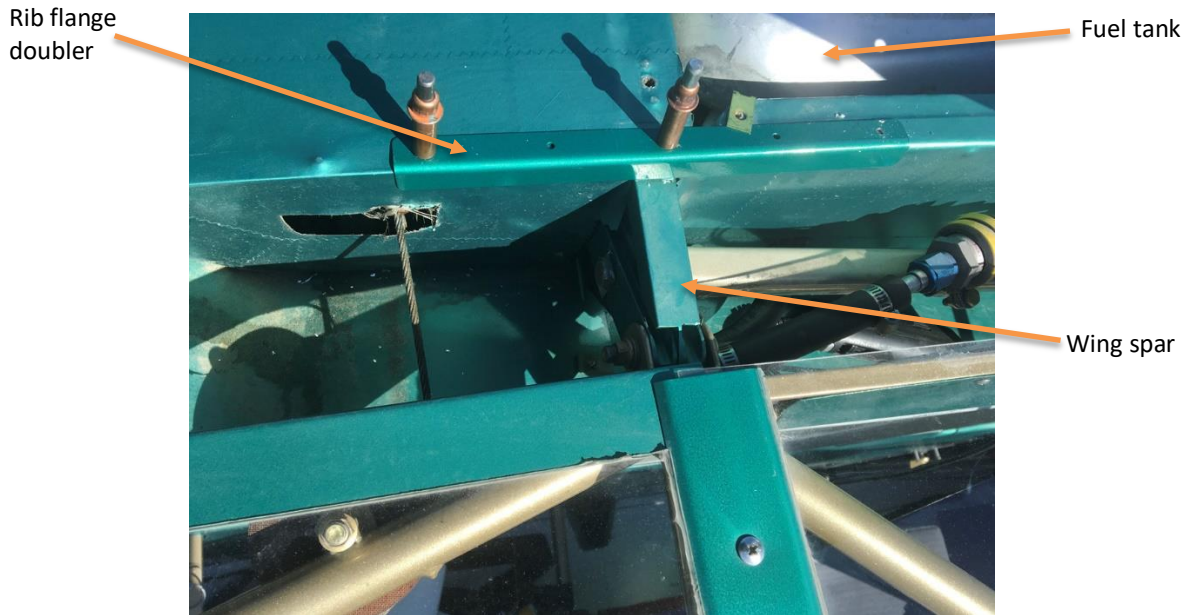


Figure 9: Rib Flange Doubler Installation Photo

Note: If you have Atlee Dodge oversized 30 gallon fuel tanks, the rib portion where the rib flange doubler (PSTOL-0050) installs has been modified, and cannot be installed as shown in Figures 7, 8, and 9 for standard fuel tanks. Installation variation and compatibility in this case is at the discretion of the installing IA.

13. Place the flap hanger extenders (PSTOL-0029) into the existing flap hanger channels. The flap hanger extenders have two #30 holes located near the end that is inserted into the flap hanger. Place the flap hanger extender into the flap hanger so that the two holes are as concentric as possible to the two existing holes in the end of the original flap hanger – see Figure 10. Using two #30 copper clecos, secure the flap hanger extender (PSTOL-0029) to each existing flap hanger. The clecos must be inserted from opposite sides, because the holes are too close for both to be on one side.

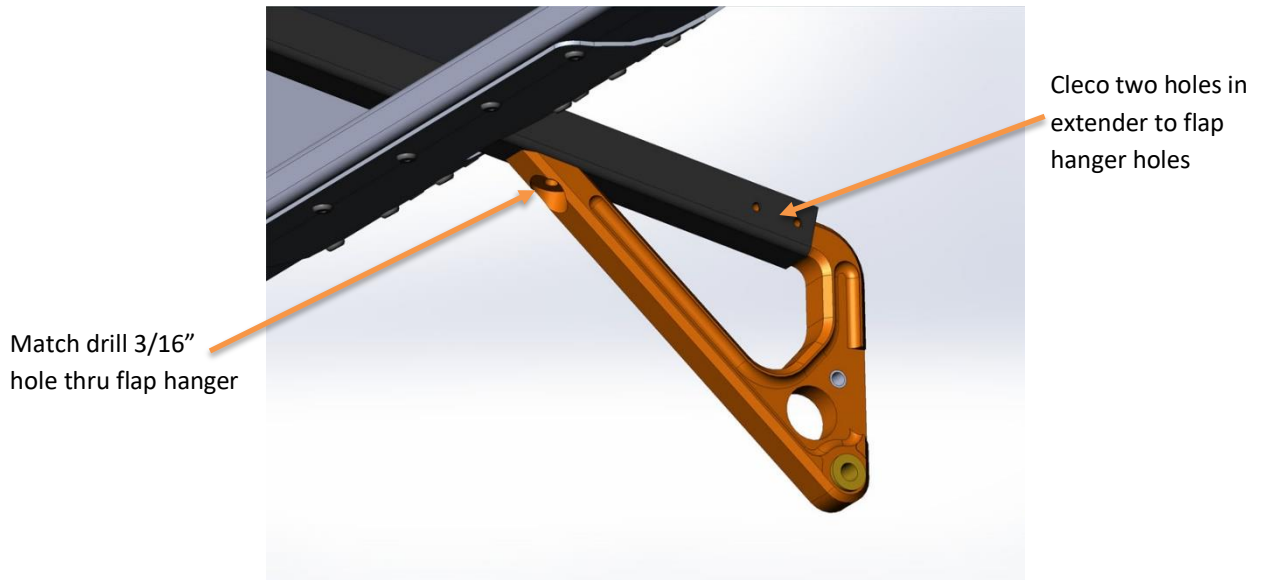


Figure 10: Install flap hanger extender and cleco both aft holes

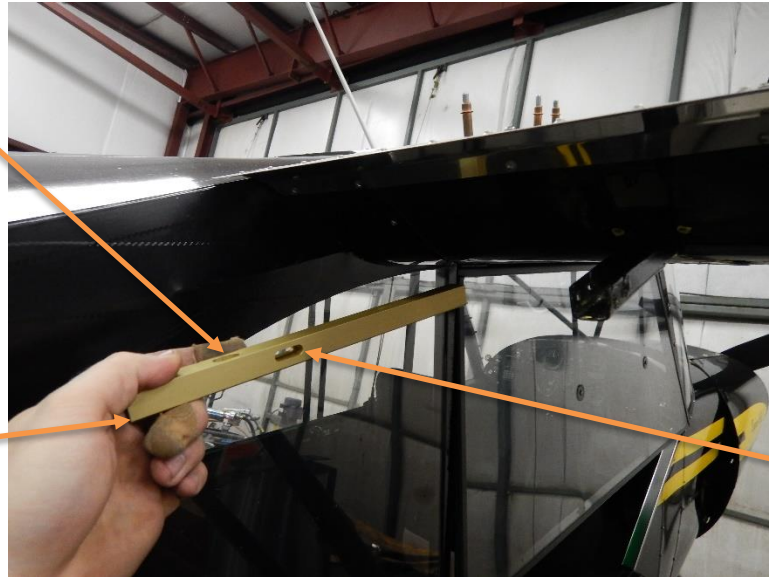
14. Using a 3/16" diameter (or #12) drill bit, match drill the hole on the bottom of the aluminum flap hanger extender (PSTOL-0029) up through the existing steel flap hanger – see Figure 10. Caution: Ensure that the aluminum flap extender is centered and that hole is drilled perpendicular to the steel flap hanger.
15. Remove the flap hanger extender (PSTOL-0029), by removing the clecos. Debur and clean up the holes.
16. Insert the aluminum channel stiffener (PSTOL-0033) into the steel flap hanger. Make sure the stiffener is oriented as shown in Figure 11. The vertical slot has a press fit nut pre-installed, which should be pointing up. The machined "bumps" at each end go on the bottom. Push the stiffener up into the flap hanger channel until the pre-installed nut aligns with the hole just drilled in the bottom of the flap hanger.

If the stiffener is having trouble fitting down inside the channel, inspect for drips/runs of dried fabric dope or other obstructions on the interior of the channel that may need to be cleaned out for proper fit.

Note: If aircraft has Dakota Cub wings, at this point you would reinstall the cross screw that passes through the flap hanger channel, inside the wing. Channel stiffener PSTOL-0033 has a slot machined in it to allow this cross bolt to pass through. See Figure 11.

Pre-installed nut in vertical slot must align with match drilled hole in bottom of flap hanger

Machined bump at each end of stiffener goes on the bottom



Horizontal slot for Dakota wings – see step 16

Figure 11: Insert flap channel stiffener into flap hanger

17. Reinsert the flap hanger extender (PSTOL-0029) into the flap hanger behind the stiffener. There should be approximately a $\frac{1}{4}$ " gap between the aft end of the stiffener and the flap hanger extender. Bolt the flap hanger extender (PSTOL-0029) through the front bottom hole to the existing steel flap hanger and to the channel stiffener (PSTOL-0033), using the provided AN3-6A bolt and AN960-10L washer. The nut is already press fit into the slot in the stiffener. Cleco the aft holes of the extender with #30 clecos as before.



Figure 12: Extender and stiffener bolted to flap hanger

18. Remove the forward #30 cleco from the flap hanger extender. Using a #21 drill, drill the front rivet hole through the existing steel flap hanger holes and the aluminum flap extender (you can also step drill hole for increased controllability by removing less material per pass starting with a #30, then a #27, and then final size drill). To ensure that the holes are concentric with the existing holes, drilling may need be accomplished from both ends. Once completed, insert a #21 black cleco in the new hole and remove the #30 copper cleco from the aft hole. Using a #21 drill, drill out the aft hole as was done with the first hole. Insert a #21 black cleco in the hole.
19. Install the AN525-832R16 bolts with AN960-8L washers and MS21042-L08 jet nuts into the two aft holes in the flap hanger extender. See Figure 13.

If bolt won't fit through the #21 hole (as it is slightly undersized for an 8-32 fastener), then chase holes by stepping up to a #20 and then #19 drill (sequentially) and retry bolt in between until it fits into tightest sized hole.

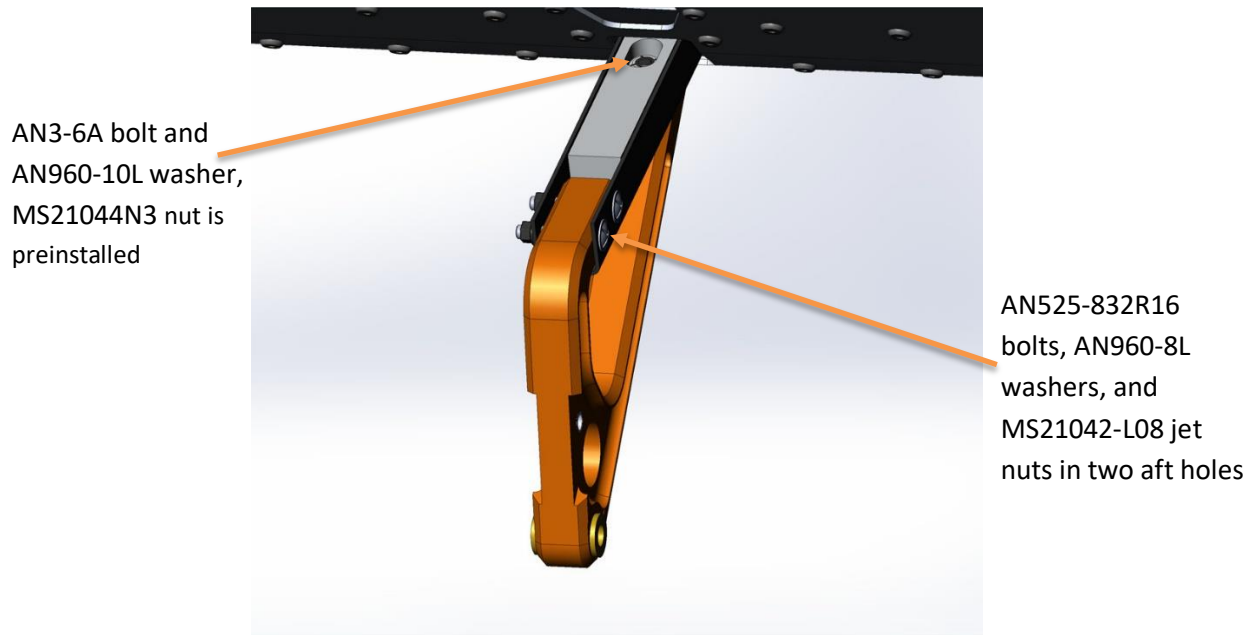


Figure 13: Flap Hanger Extender installed

20. Repeat the preceding for all four flap hangers.

21. Cut the original wing root fairing tab off the fuselage. (PSTOL flaps are inboard extended all the way to the fuselage.) Use a fabric patch to cover the opening in the fabric where the tab was located. Repeat on the second side of the fuselage.

Note: If you have an original PA-18A "Ag model" fuselage that has not been previously modified with inboard-extended flaps, there is an additional triangular fabric former channel structure underneath the wing root fairing which must be trimmed off. There is a little more fabric patching required in this instance. Trim and patch as necessary to allow inboard flap edge to extend all the way to fuselage.

22. Mount the first element, the vane (PSTOL-0015), to the wing. Note that there are left and right flap elements. The end with the shorter distance from the flap hinge to the end of the flap element is the inboard end. Each vane hanger is mounted with an MS20392-3C53 clevis pin, two AN960-416 washers (one on each side of hinge) and an MS24665-132 cotter pin. See Figure 14.

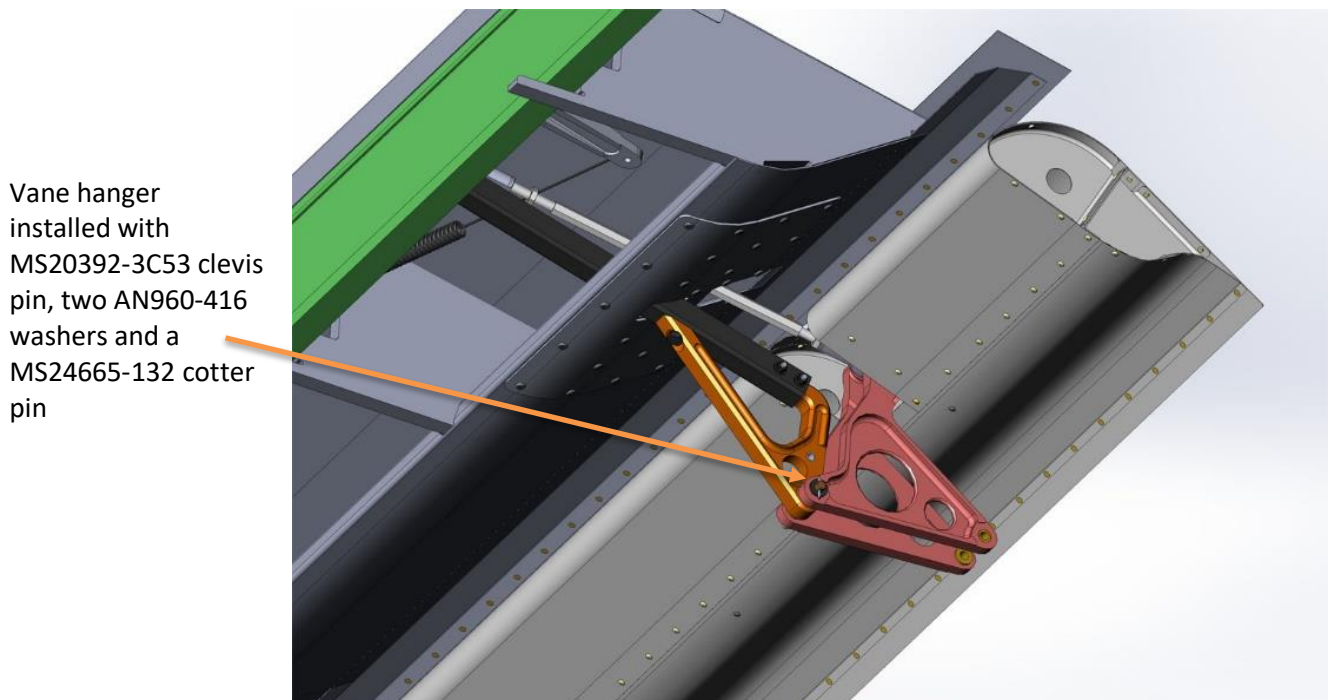


Figure 14: Inboard Vane hanger installed on flap hanger extender

23. Attach the new push rods (PSTOL-0042) to the vane element and to the bell crank rod end in the wing. The vanes come with rod end bearings already pre-installed on the inboard vane hanger. See Figure 15. Repeat on other wing.

Note: The pushrods have LH threads on one end and RH threads on the other. Ensure that there is equal and adequate thread engagement at both ends. Adjust the length of the push rods by rotating the push rod. One direction will increase the length; the other direction will decrease the length.

Vane push rod
installed using pre-
installed rod end
bearing on the
inboard vane hanger

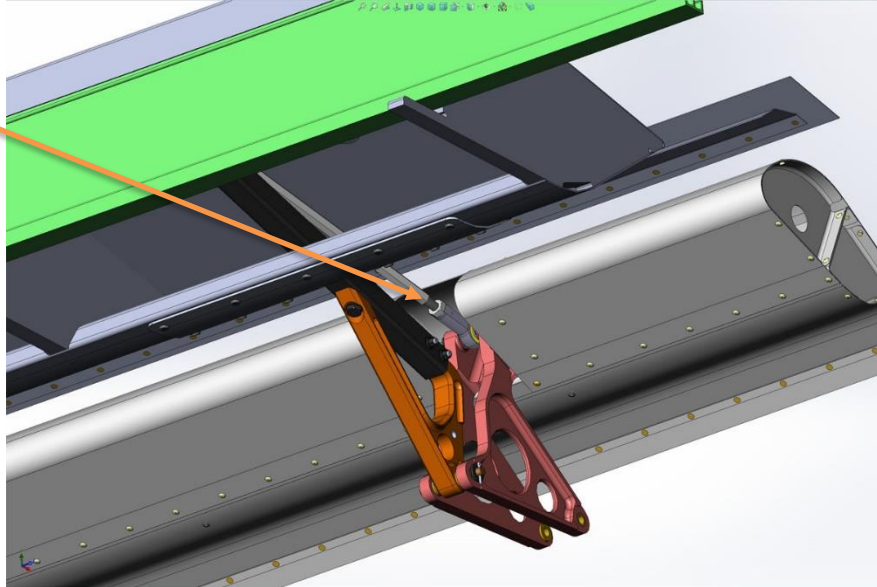


Figure 15: Vane push rod installed

24. Using a long straight edge, adjust both vane elements so that the bottom of the vanes are parallel to the bottom of the wing.
25. With the vane elements (PSTOL-0015) mounted and adjusted, mount the second element, the flap (PSTOL-0027), to the vane element as shown in Figure 16. Ensure that the left flap is mounted to the left wing, and right to the right. Each flap hinge is installed with an MS20392-3C53 clevis pin, two AN960-416 washers (one on each side of hinge), and an MS24665-132 cotter pin.

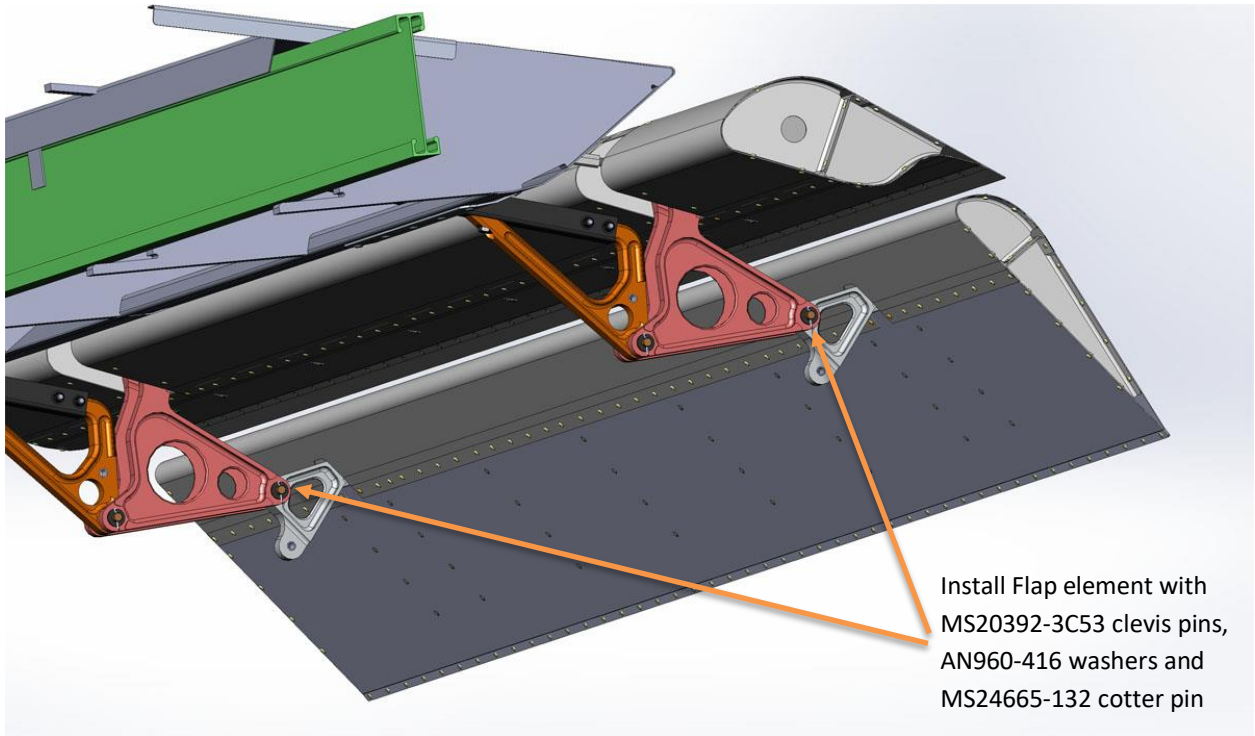


Figure 16: Flap Element installed

26. Mount the turnbuckle assemblies (PSTOL-0038) to the hanger extenders (PSTOL-0029) and flap elements (PSTOL-0027) as shown in Figure 17. Each end of each turnbuckle assembly is mounted with an MS20392-2C21 clevis pin, one AN960-10L washer under the cotter pin, and an MS24665-132 cotter pin. Using a long straight edge, adjust the turn buckle assemblies so the flap element bottom is parallel to the bottom of the vane element. Repeat for second wing.

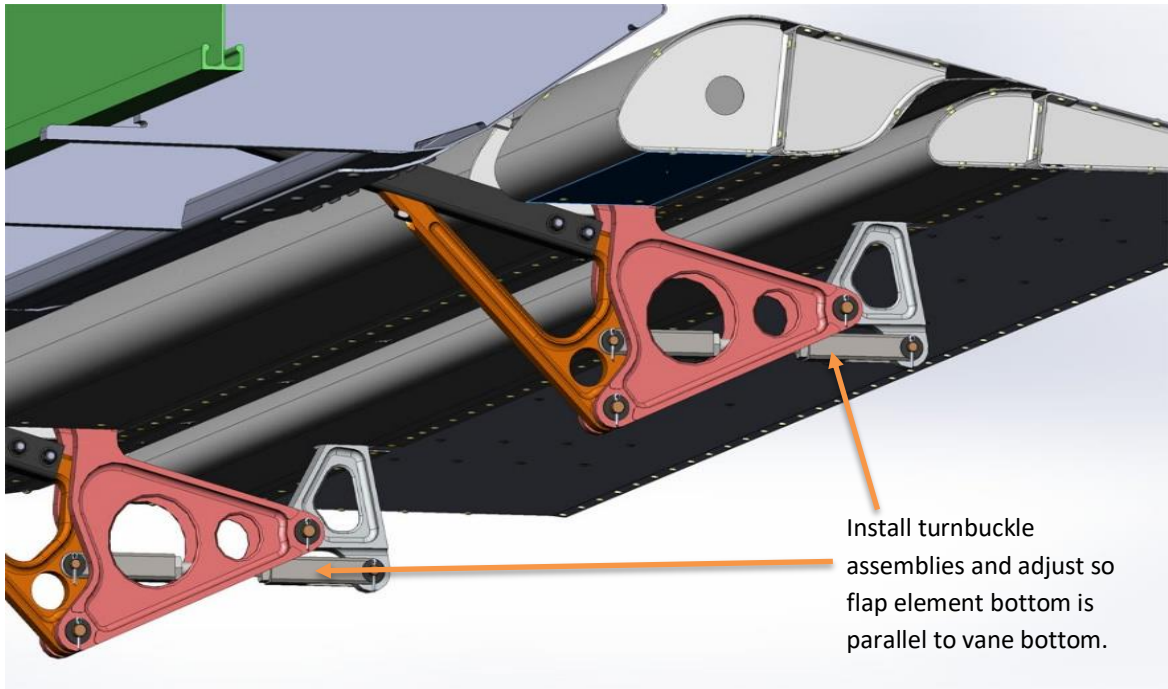


Figure 17: Mount turnbuckle assemblies

27. Operate the flap handle to ensure proper motion of the flap system and that there is no binding.
28. If the flap return springs are old or worn the flaps may sag with the flap handle in the fully retracted position. In such case, replace the springs. The Piper part number for the flap return spring is 10940-00.

Due to the increase in weight of the Performance STOL flap system over a stock PA-18 flap, Airframes Alaska recommends replacing any original flap spring with a "Heavy-Duty" type replacement regardless of age for best result and minimum sag tendency.

29. Pull the flap handle to the fully deployed position and verify that the vane and flap deployment angles are equal or less than the maximum angles specified on PSTOL-0001 "Master Assembly, PA-18 Double Slotted Flaps" drawing, as depicted in Figure 18. Note that these are the nominal static maximum deployment angles for a Stock 3 position flap ratchet. Flap ratchet tolerances, cable slack and cable tension could vary per individual aircraft, and most installations will be less than the maximum angles specified. Exceeding maximum deployment angles could result in structural damage to the wing.

Note: If the flap pushrod assemblies (PSTOL-0042) bottom out their threads inside the rod end bearings before reaching a short enough adjustment length to yield a full flap deployment angle below the maximum 54.5° as specified, then it is acceptable to trim down the threads to allow deeper thread engagement to achieve the proper geometry. Make sure any trimming does not yield a minimum thread engagement of less than 2 times the threaded diameter.

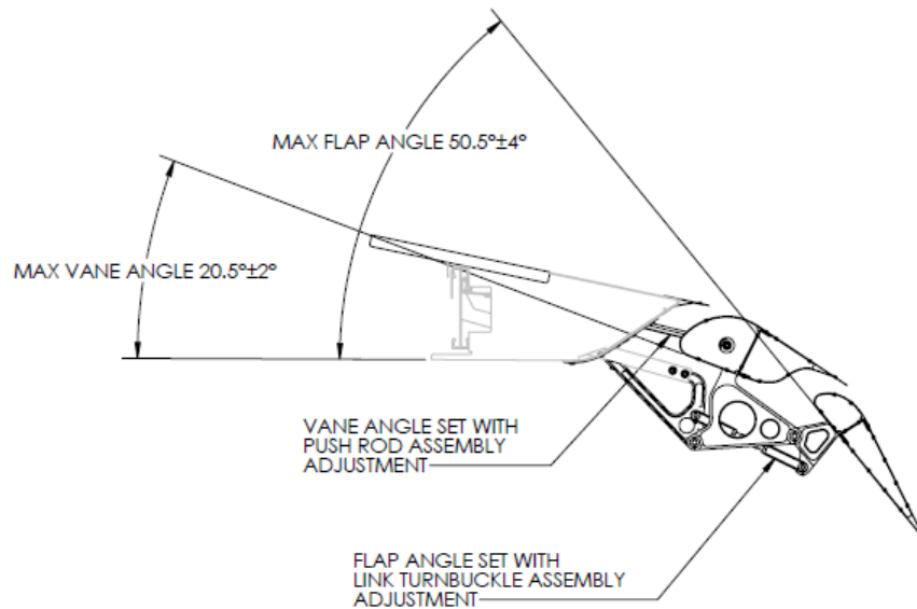


Figure 18: Maximum Flap Deployment Angles

30. After the flaps are installed and properly adjusted, check to see that all the cotter pins are properly installed and all push rod jam nuts are tightened. Check to see that the flaps operate without binding.
31. Attach the flap gap seals (PSTOL-0037-L and -R). The end of the gap seal with the overhang goes to inboard and should be trimmed up tight to the edge of the fuselage after attachment. Place the seal so it just touches the upper surface of the vane element, is parallel to the top of the wing, and parallel to the trailing edge of the wing. Attach using the same screws used to secure the original gap seals. Use a hole finder to match drill the new gap seal to the existing holes in the false spar. It may be necessary to temporarily remove flap assembly to get to the lower row of holes and screws depending on the length of your drill and drill bit. Make sure gap seal is already located by top holes/screws to ensure it stays in position relative to flap and vane if so, and you can even temporarily hold lower portion of seal in place with tape until fastened.



Figure 19: Install Gap Seals

32. Modify the aft wing root fairings to fit the false spar trailing edge as shown in Figure 20 and Figure 21. Shorten fairings to false spar and attach to false spar or gap seal. Fairing modification details are the responsibility of the installer.



Shortened upper fairing attached to false spar and gap seal

Figure 20: Upper wing root fairing modification



Figure 21: Lower wing root fairing modification

33. The Performance STOL PA-18 Double Slotted flap kit includes an option to shorten the flap handle. A shortened flap handle allows for more (aileron) control stick movement, avoiding the typical pilot's thigh-flap handle interference problem. If the purchaser of this kit elects to shorten the flap handle of the PA-18 on which this kit is being installed, this alteration must be done in accordance with drawing PSTOL-12775S "Flap Lever Assembly – Short" (drawing attached below). Otherwise, an already shortened flap handle can be purchased directly from Airframes Alaska.
 34. Install the airspeed limitation placard, provided in this kit. Place on the instrument panel immediately adjacent to the airspeed indicator and in full view of the pilot.
 35. Enter this installation in the maintenance records for the airplane. If the flap handle has been shortened as a part of this alteration, state so in the maintenance record entry.
 36. Update weight and balance data for the airplane, and its equipment list, to reflect this alteration per Section 4.0 Weight and Balance.
 37. Record the installation PSTOL wing flaps on a copy of FAA Form 337; sign and submit per current FAA policy.
- Note: All hardware in this kit is to be installed and torqued in accordance with FAA Advisory Circular 43.13-1B Chapter 7, Par 7-40, Table 7-1 and Table 7-2.

4.0 Weight and Balance

The Performance STOL PA-18 Double Slotted Flap system has an exchange weight increase of 12 lbs when exchanged for the OEM flaps. The C.G. location for the added weight is at 56.0 inches aft of the leading edge of the wing. Add this weight and moment arm to the latest aircraft Weight and Balance Sheet and retain it in the aircraft.

Weight of Performance STOL, PA-18, Double Slotted flaps:	21 lb 12 oz
<u>- Weight of PA-18 OEM flaps:</u>	<u>9 lb 12 oz</u>
Added exchange weight:	12 lb 00 oz

5.0 Trouble Shooting

- Problem:** The flap elements and/or gap seal rub and cause wear marks.
- Correction:** Bend the vane and/or flap elements and/or gap seal trailing edges up where wear is occurring. Bend up until the wear/rubbing is eliminated. Make sure not to crease any component.
- Problem:** The flaps do not deploy down to the specified angle.
- Correction:** Tighten the flap cable turn buckles to eliminate any slop in the cable. Make sure that the cables are not tightened so much as to move the flap bell cranks off their stops when the flaps are not deployed. It is possible that the flap pawl and or ratchet are worn and are in need of replacement.
- Problem:** The flaps do not retract flush with the bottom of the wing when fully retracted.
- Correction:** The flap springs are worn and in need of replacement. As the flap springs age, they lose stiffness. Drooping flaps in the static non-retracted position is not a hazard to flight, but may be problematic when parked outside in strong winds.
- Problem:** The aircraft turns to the left or right and/or the inclinometer ball is not centered in cruise flight.
- Correction:** The flaps are not adjusted properly in the non-deployed position. Adjust the pushrods so that the vane and flap elements are parallel to the bottom of the wing. The addition of the Performance STOL flaps should not alter the aircraft rigging as long as the bottom of each element is parallel to the bottom of their respective wing. Ensure that the aircraft is properly rigged according to the aircraft's TCDS.
- Problem:** The bottom of the flaps are lower or higher than the bottom of the wing.
- Correction:** All aircraft have build tolerances and they vary drastically from one aircraft to another. There is no correction for this problem and it is acceptable. It is important that the bottom of the flap elements are parallel with the bottom of the wing.

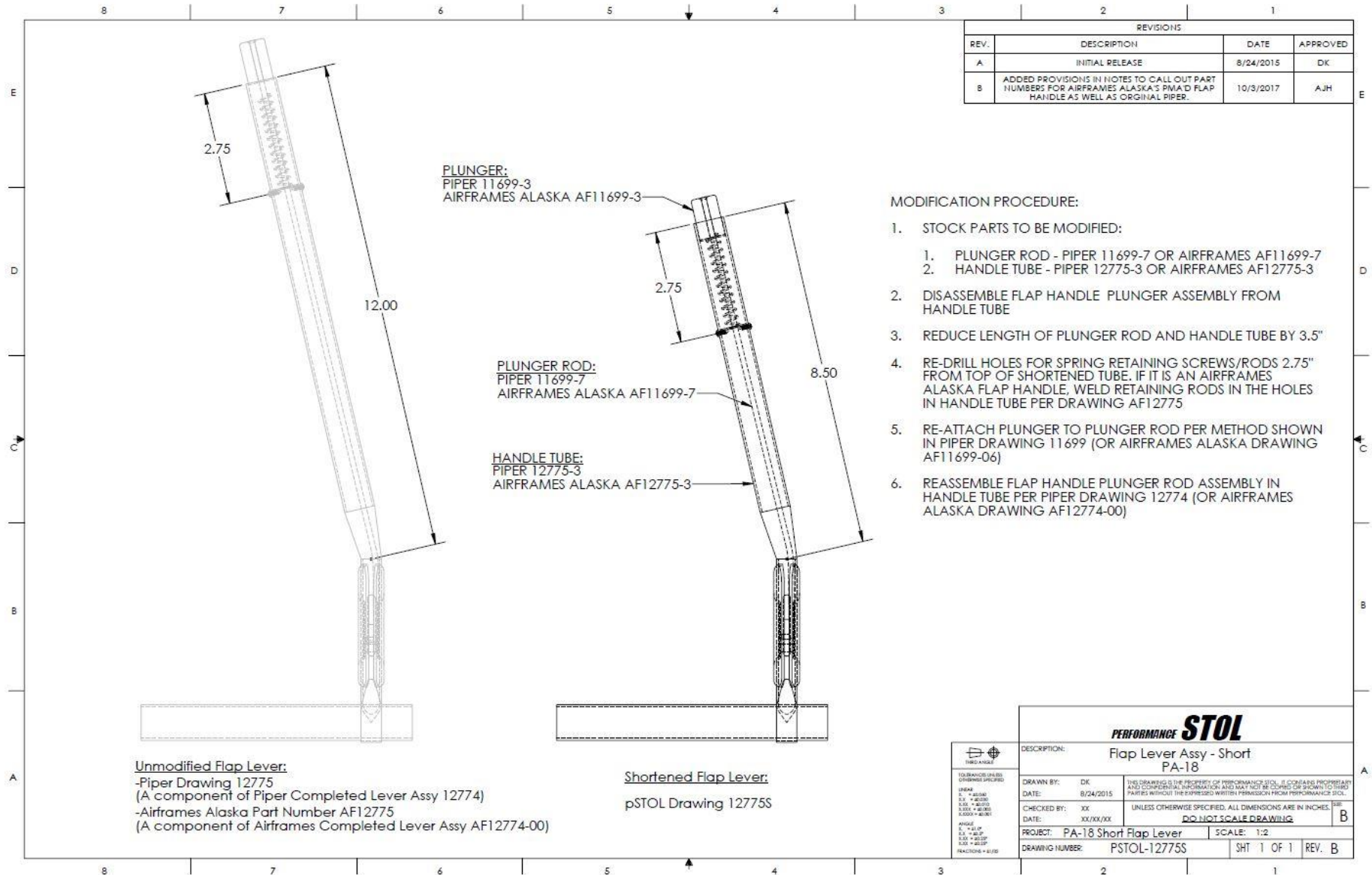
6.0 Drawings and Diagrams

Descriptive Data List

Document Title	Document Number	Revision Level	Pages	Date
Instructions for Continued Airworthiness Including Installation, maintenance and Service Instructions	Manual PSTOL-010	B	1-9	10/4/2017
Flap Lever Assembly - Short	Drawing PSTOL-12775S	B	1	10/3/2017
PA-18 Double Slotted Flaps - Master Assembly	Drawing PSTOL-0001	H	1-3	10/4/2017
Flight Manual Supplement	Manual PSTOL-011	Original	1-4	3/28/2017
Approved Model List (AML)	SA02485AK	7/7/2017	1	7/7/2017

7.0 Engineering Changes and Amendments

In the event that a change or amendment is made to the design, components, or procedures contained within this manual or the STC that affect airworthiness of the flap installation; Airframes Alaska, LLC. will notify the recorded owner in writing of the affected element(s) and provide the necessary data for compliance.



Performance STOL, LLC. Manual No. PSTOL-013

ITEM NO.	Part Number	DESCRIPTION	QTY
1	PSTOL-0015-R	Vane Structure Assembly - RH	1
2	PSTOL-0015-L	Vane Structure Assembly - LH	1
3	PSTOL-0027-R	Flap Structure Assembly - RH	1
4	PSTOL-0027-L	Flap Structure Assembly - LH	1
5	PSTOL-0037-R	Gap Seal Assembly - Right Wing	1
6	PSTOL-0037-L	Gap Seal Assembly - Left Wing	1
7	PSTOL-0038	Link Turnbuckle Assembly	4
8	PSTOL-0042	Pushrod Assembly	2
9	PSTOL-0029	Hanger Extender Assembly	4
10	PSTOL-0033	Hanger Stiffner	4
11	PSTOL-0050	Rib Flange Doubler	2
12	PSTOL-0045-01	Outboard False Spar Doubler - RH	1
13	PSTOL-0045-02	Outboard False Spar Doubler - LH	1
14	PSTOL-0066	Inboard False Spar Doubler	2
15	AN3-16A	Bolt	2
16	AN3-6A	Bolt	4
17	AN525-832R16	Washer Head Screw	8
18	MS20392-3C53	Clevis Pin	8
19	MS20392-2C21	Clevis Pin	8
20	AN960-8L	Washer	8
21	AN960-10	Washer	2
22	AN960-10L	Washer	12
23	AN960-416	Washer	16
24	MS24665-132	Cotter Pin	16
25	MS21042-L08	Jet Nut 8-32	8
26	MS21042L3	Jet Nut 10-32	2
27	MS21044N3	Lock Nut 10-32	4
34	CR3213-4-X	Cherymax Rivet	118
35	CR3212-4-X	CheryMax Rivet	10

REV.	DESCRIPTION	DATE	APPROVED
A	Initial Release	7/8/2014	DK
B	Removed PSTOL-0016 Return Spring from BCM	8/27/2015	DK
C	Added ribs to Vane and Flap; sidewall cutout on hanger stiffner	10/20/2015	DK
D	Added L/R Gap Seal Config (0037), lengthened Flap Pushrod (0042), shorter Clevis Pin (MS20392-C53)	1/10/2014	DK
E	Changed single flap hanger configuration for both outboard and inboard hangers. Lengthened pushrod.	4/28/2014	DK
F	Added false spar doublers	9/11/2014	DK
G	Added Rib Flange Doubler (0050)	11/12/2014	DK
H	Updated BCM and QTY column to show total part number required for a full RH and LH combined assembly (not just one flap). Updated notes to specify that assembly included both RH and LH flaps. Updated BCM column for Item 35 and detail on sheet 3 for length to be determined by the installer.	10/04/2017	AJH

NOTES:
 1. RIGHT SIDE SHOWN. LEFT SIDE OPPOSITE.
 2. QUANTITIES SHOWN ARE FOR ENTIRE PSTOL-0001 ASSEMBLY, WHICH INCLUDES BOTH (RH) & (LH) FLAP; TWO FLAPS REQUIRED PER INSTALLATION.

DETAIL A
SCALE 1 : 2

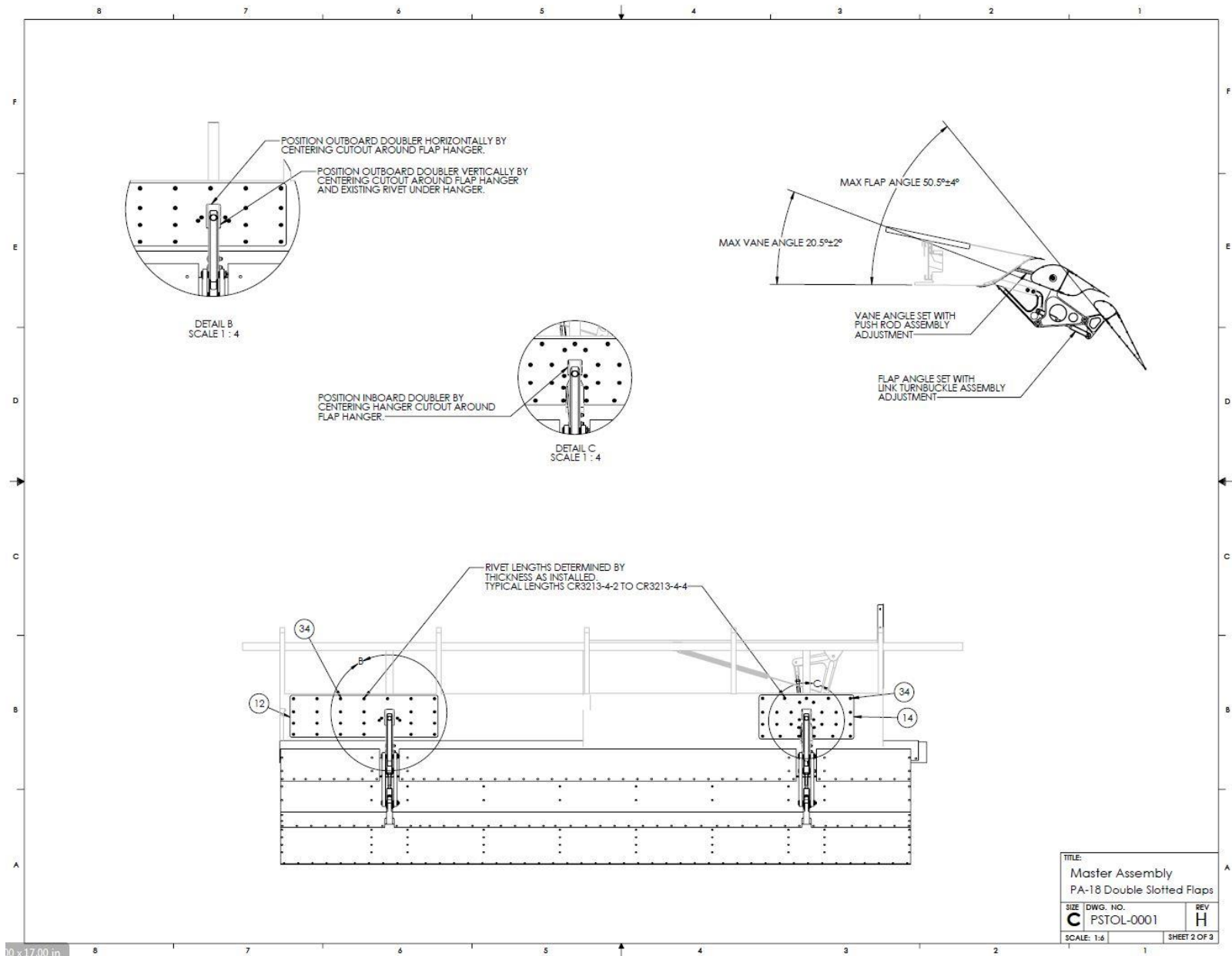
TOP VIEW
BOTTOM VIEW

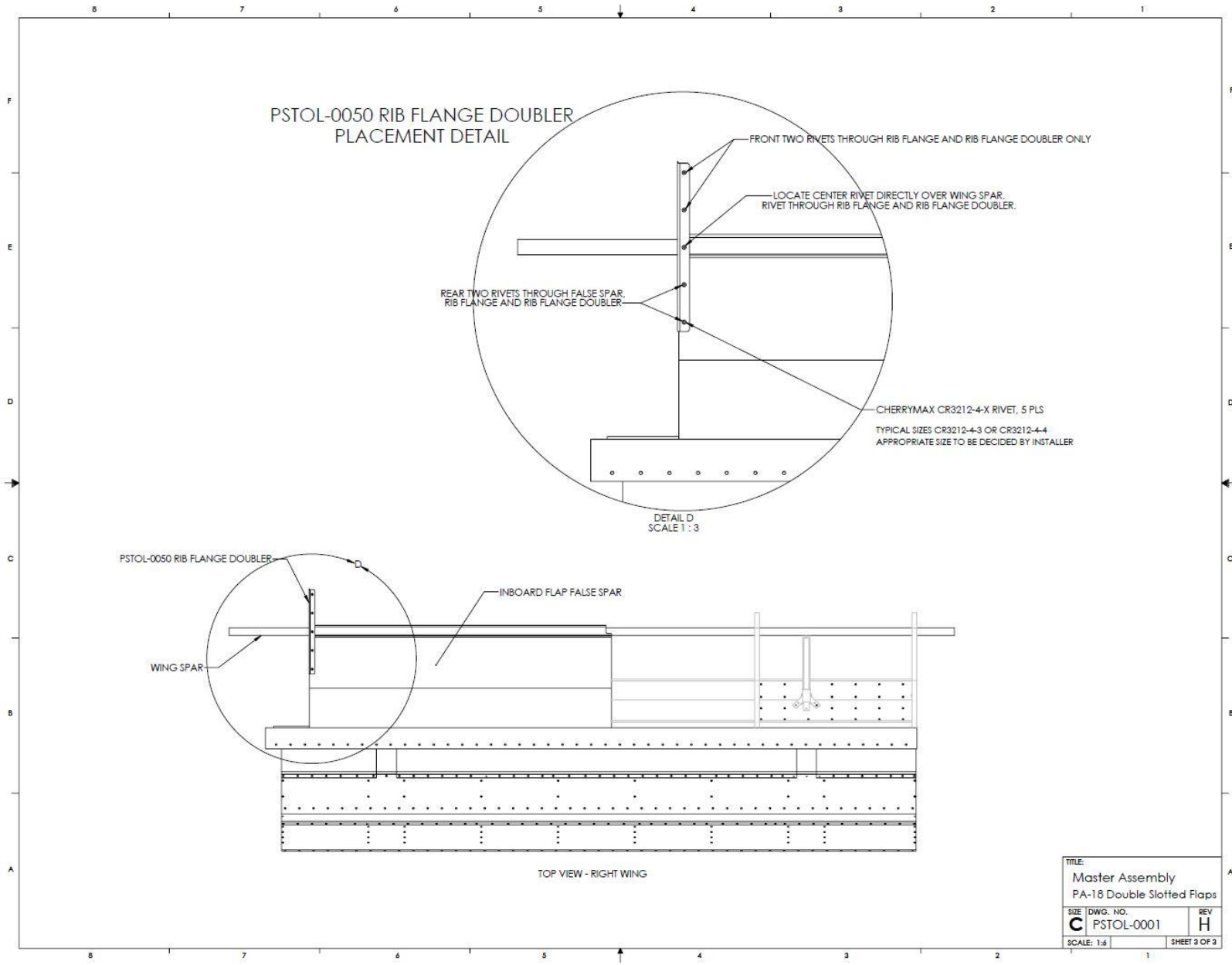
PERFORMANCE STOL

DESCRIPTION:
Master Assembly
PA-18 Double Slotted Flaps

DRAWN BY: REM	DATE: 7/8/14	THIS DRAWING IS THE PROPERTY OF PERFORMANCE STOL. IF IT CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION AND MAY NOT BE COPIED OR SHOWN TO THIRD PARTIES WITHOUT THE EXPRESSED WRITTEN PERMISSION FROM PERFORMANCE STOL.
CHECKED BY: XX	DATE: XX/XX/XX	UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.
PROJECT: PA-18 STOL KIT	DRAWING NO. PSTOL-0001	DO NOT SCALE DRAWING
SHEET 1 OF 3		REV. H

TOLERANCES UNLESS OTHERWISE SPECIFIED:
 UNFIN. ± .0050
 F. ± .0030
 H. ± .0020
 K. ± .0015
 L. ± .0010
 M. ± .0005
 N. ± .0002
 ANGLES:
 S. ± .15°
 T. ± .05°
 U. ± .02°
 V. ± .01°
 W. ± .005°
 FRACTIONS = 1/32





-END-