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480 RUDDIMAN DRIVE
NORTH MUSKEGON, MICHIGAN 49445-2783

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TRIO AUTO PILOT INSTALLATION INSTRUCTIONS
CESSNA MODEL 182E AND LATER INSTALLATION INSTRUCTIONS
NO PREVIOUSLY INSTALLED FACTORY NAVOMATIC AUTOPILOT

DATE:	Original Issue 13 October, 2017
WRITTEN BY:	A.J. Abdulshafi
APPROVED BY:	Jeffrey Odum



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The following documents form a part of this report. Unless a specific revision of one of these documents is specified, the revision in effect at the time of original issue of this document shall apply.

STC Group LLC Document Number 1006903 – Cessna 182 (Non-Navomatic) Illustrated Parts Catalog

Industry Specifications and Standards:

MMPDS-09 Metallic Materials Properties Development and Standardization
AC 43.13-1B Aircraft Inspection, Repair & Alterations

Other Data:

ER1006 – STC GROUP LLC Program Engineering Record.



- Cordless drill
- 90-degree air drill
- 45-degree air drill
- #17 (0.173") HSS drill bits - 6" and 12"
- #18 (0.1695") HSS drill bits - 6" and 12"
- #30 (0.1285") HSS drill bits - 6" and 12"
- #40 (0.098") HSS drill bits - 6" and 12"
- #17 ¼ x 28 threaded drill bits (HSS) - 6" and 12"
- #18 ¼ x 28 threaded drill bits (HSS) - 6" and 12"
- #30 ¼ x 28 threaded drill bits (HSS) - 6" and 12"
- #40 ¼ x 28 threaded drill bits (HSS) - 6" and 12"
- Silver Cleco P Series Temporary Fasteners
- Copper Cleco P Series Temporary Fasteners
- Side grip Cleco clamps
- Cleco pliers
- 24" ruler or tape measure
- 6" ruler
- Light
- Foam knee pad



ACRONYMS, ABBREVIATIONS, AND SYMBOLS

Autopilot	Trio Pro Pilot Autopilot
Clip	Part Number 1006237
C.G.	Center of Gravity
ER	Engineering Record
FAA	Federal Aviation Administration
ICA	Instructions for Continued Airworthiness
LH	Left Hand
OEM	Original Equipment Manufacturer
OTBD	Outboard
PCS	Pilot Controller Steering (Red) Button
Recover	Recover Button
RH	Right Hand
Servo	Trio Pro Pilot Gold Standard Servo
STC	Supplemental Type Certificate
WS	Wing Station
Autopilot	Trio Pro Pilot Autopilot



1.0 TRIO PRO PILOT AUTOPILOT INSTALLATION

This installation procedure provides information and data necessary to install bracketry and hardware provisions for mounting the Trio Auto Pilot Controller along with the Pitch and Roll servos in Cessna Aircraft Model 182 aircraft ***that did not come equipped with a factory Navomatic autopilot.***

The following models are addressed in Installation Instructions 1006003. 1962 Cessna Model 182E, S/N 18253599 through 1986 Cessna 182R S/N 18268586 that were shipped from the factory with ARC (Cessna) NavoMatic autopilots.

In 1961 the serial number format was changed with the model number being placed in front of the consecutive 5-digit serial number.

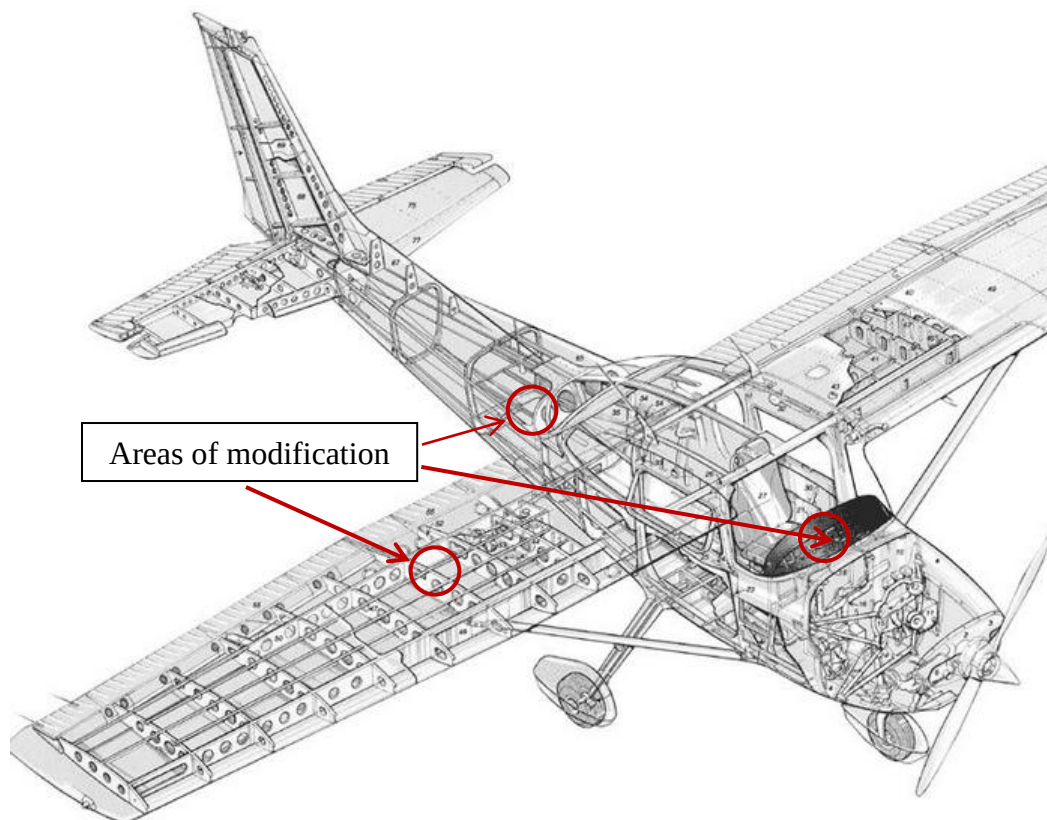


FIGURE 1-1 AUTOPILOT INSTALLATION



Thank you for your purchase of the TRIO Pro Pilot Autopilot for your aircraft. This document is written to ensure your installation is simple, safe, and professionally completed. Before you begin: Read All Instructions!

If your roll installation kit came with 1006233 REV A bracket or later revision, then see Appendix D for the Roll Installation.

Refer to Section 4.0 for the pitch servo installation.

The STC Group Technical Support is available 0800 to 1700 Monday through Friday Pacific Time:

+1 (231) 220-9296

+1 (888) 350-2998

Trio Avionics may be reached Monday through Saturday at +1 (619) 448-4619

NOTE:

Care should always be taken to avoid marring or scratching of any surfaces of autopilot assemblies including anodized surfaces. Painters tape may be used to prevent damaging hardware surfaces. Remove any previously installed autopilot and related servos, and harnesses. Record the station position of each component removed and weigh each component. This information will be used to update Weight & Balance data.

The STC Group LLC recommends that a flight test of the subject aircraft be conducted to assess aircraft rigging and handling characteristics prior to autopilot installation. Use Test 4 of The STC Group LLC Flight Test Cards, document F-1006-43. Documents can be found at The STC Group LLC website at www.thestcgroupllc.com/documents.

Pitot and static system leak checks are recommended be performed on the aircraft before any work begins. {i.e. FAR §43 Appendix E, Paragraph (a)}

Verify correct rigging of your aircraft in accordance with the Type Certificate Data Sheet and your aircrafts Maintenance Manual.



**If your roll installation kit came with 1006233 REV A bracket or later revision,
then see Appendix D for the Roll Bracket Installation.**

1. Remove RH wing inspection panels located at WS 103.5, 112.0, and 144.8, Ref Figure 3-1.
2. Lower the flaps.



FIGURE 3-1 WING ACCESS COVER LOCATIONS

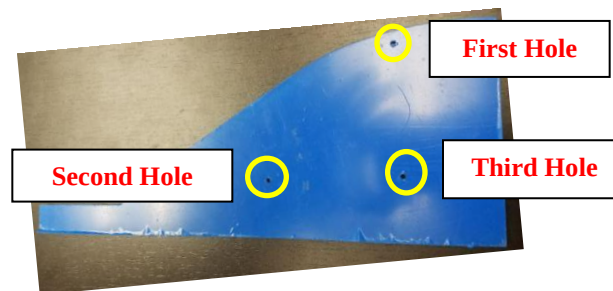


FIGURE 3-2 ROLL SERVO DRILL JIG SHOWING OUTBOARD DRILL POSITIONS



FIGURE 3-3 DRILL TEMPLATE MOUNTED AT WING STATION 100.5



3. Drill from outside the aircraft as depicted in Figure 3-4.
4. Position the drill template, supplied, over WS 100.5 and secure it into position with painter's tape. Refer to Figure 3-3.
5. The drill template holes have been drilled with a #40 HSS drill bit.
6. Using the drill template as a guide and a #40 HSS drill bit, center punch and drill the upper aft hole through the WS 100.5 trim piece. Refer to Figure 3-2 and Figure 3-4.
7. Secure the drill template into position using a 3/32" Silver P Series Cleco Temporary Fastener.
8. Drill the second hole as shown using the drill template. Refer to Figure 3-2.
9. Secure the drill template into position using a 3/32" Silver P Series Cleco Temporary Fastener.
10. Drill the third hole using the drill template as a guide. Refer to Figure 3-2.
11. Remove the drill template.
12. Enlarge all holes with a #30 drill bit.
13. Deburr all holes.
14. Insert the roll servo bracket, p/n 1006233-1, into the wing through the access hole. Refer to Figure 3-1 for the access location.
15. Cleco the roll servo bracket, p/n1006233-1, into position (from outside the aircraft) using 1/8" Copper P Series Cleco Temporary Fasteners.
16. The roll servo was drilled with two 0.250" rivet clearance holes for the trim piece riveted to WS 100.5. Refer to Figure 3-4 and 3-6.
17. It may be required to enlarge the rivet clearance holes due to differences in the rivet patterns between aircraft. Refer to Figure 3-8.
18. With the roll servo bracket secured into position locate the position of the two (2) trim piece rivet shop heads on the WS 100.5 rib.
19. Use a permanent marker and mark the trim piece rivet head positions on the Roll Servo Bracket.
20. Enlarge the rivet clearance holes, if required, on the roll servo bracket

Note:

It may be required to re-locate the clearance holes as shown in Figure 3-6.

21. From inside the wing center punch through the servo bracket forward upper nutplate into the W.S 100.5 rib. Refer to Image 3-6.
22. Move the bracket out of the way and pilot drill the punched site.
23. Enlarge the hole with #30 drill bit.
24. Deburr the hole.
25. Remove the servo mounting bracket.

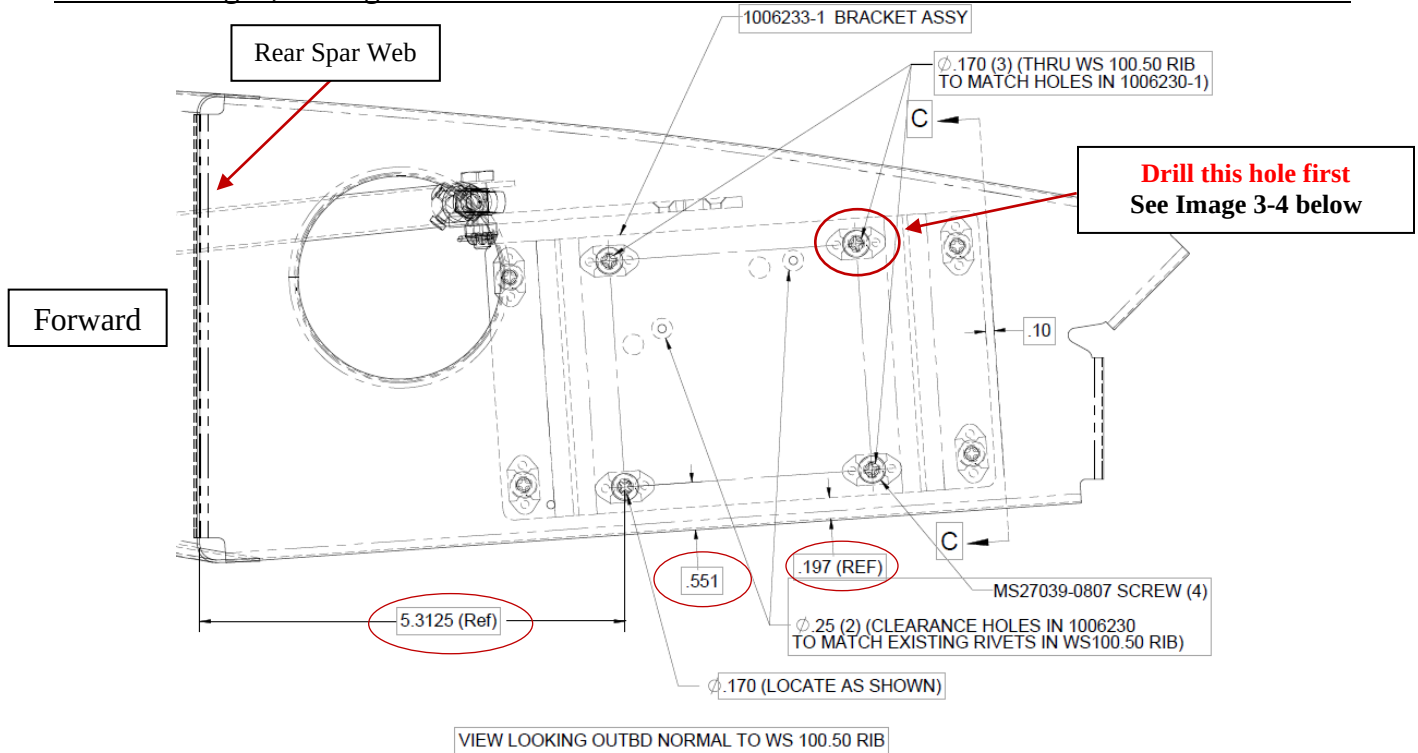


FIGURE 3-4 ROLL SERVO & MOUNTING PLATE INSTALLATION

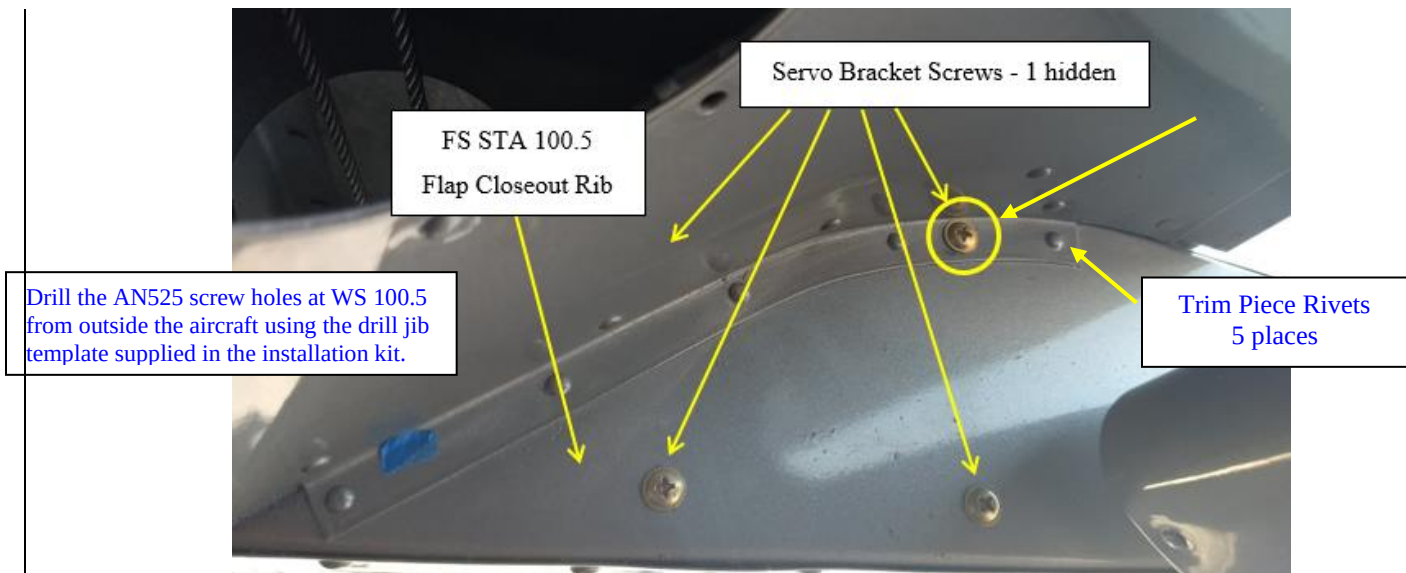


FIGURE 3-5 ROLL SERVO & MOUNTING PLATE INSTALLATION

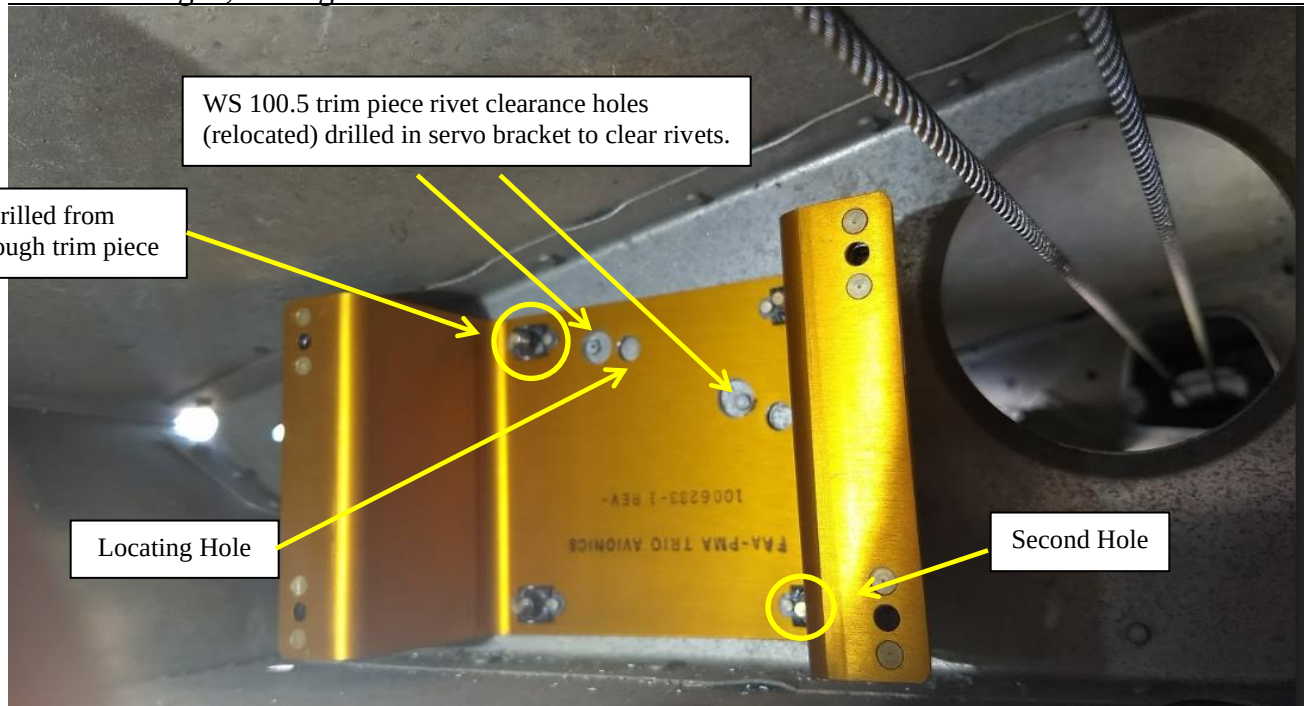


FIGURE 3-6 ROLL SERVO BRACKET ASSEMBLY AT FS STA 100.5

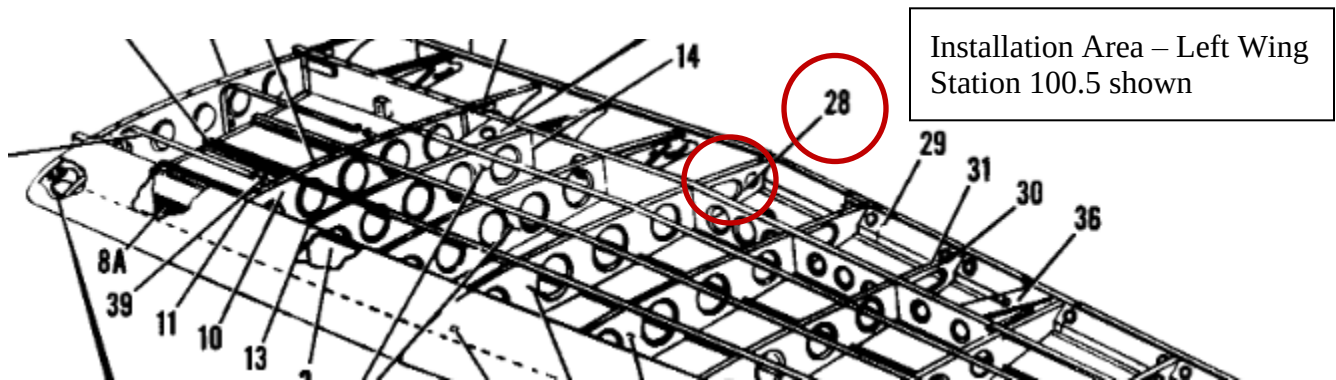


FIGURE 3-7 WS 100.5 SERVO MOUNT RIB LOCATION

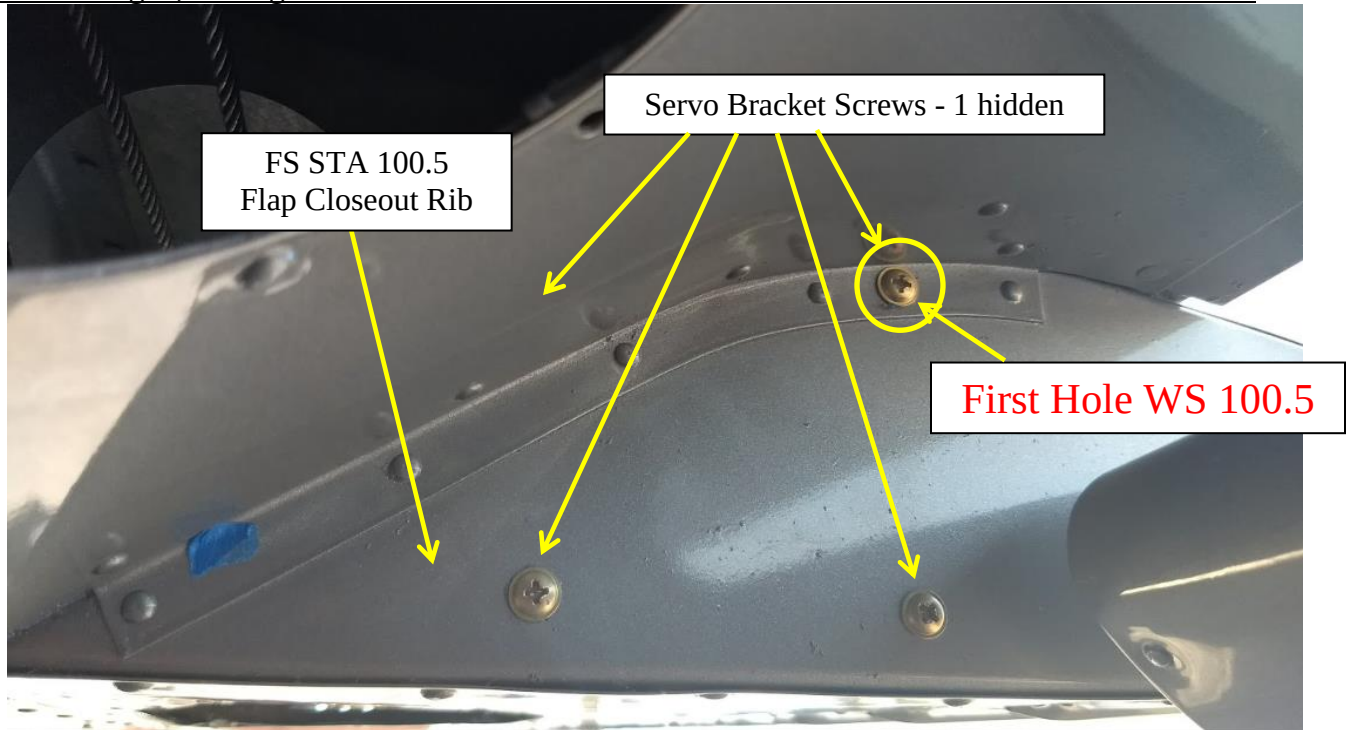


FIGURE 3-8 VIEW LOOKING OUTBOARD AT STA 100.5 RIB

Note:

If your aircraft does not have an access panel in the flap well at station 95 you will not be able to install the upper forward screw onto the roll servo bracket. In this case use the following:

Cleco the servo bracket into position and measure up 1.5" from the forward bottom hole. Drill a #40 hole centered in the angle. Refer to Image 3-7. Drill through the rib and the servo bracket

26. Four (4) M3 screws supplied in the autopilot hardware kit have been coated with Loctite 202 thread locker. DO NOT apply additional thread locker to the M3 screws.
27. Fasten the roll servo arm, p/n 1006402-3 / -5, to the servo hub using the four (4) M3 (metric) screws supplied.
28. Torque to the screws 8.8 - 9.0 lb.-in. using a calibrated screwdriver with the proper tip inserted.
29. The four (4) outer baseplate holes must be enlarged for #8 screws using a #18 drill bit. Refer to Figure 3-8.
30. The Roll Servo hardware kit contains four (4 ea.) 10085 #8 screw retainers. Refer to Image 3-7.
31. Affix the four (4) 10085 retainers to the MS27039 screws as shown in Image 3-7.
32. Mount the roll servo to the bracket assembly using the four (4) MS27039-0807 screws. The bracket assembly and servo must be joined together inside the wing.



Note

The Roll Servo hub roll pin hole must be aligned with the servo stop as depicted Figure 3-10 before attaching the crankarm to the hub.



FIGURE 3-9 10085 RETAINERS AFFIXED TO MS27038-0807 SCREWS

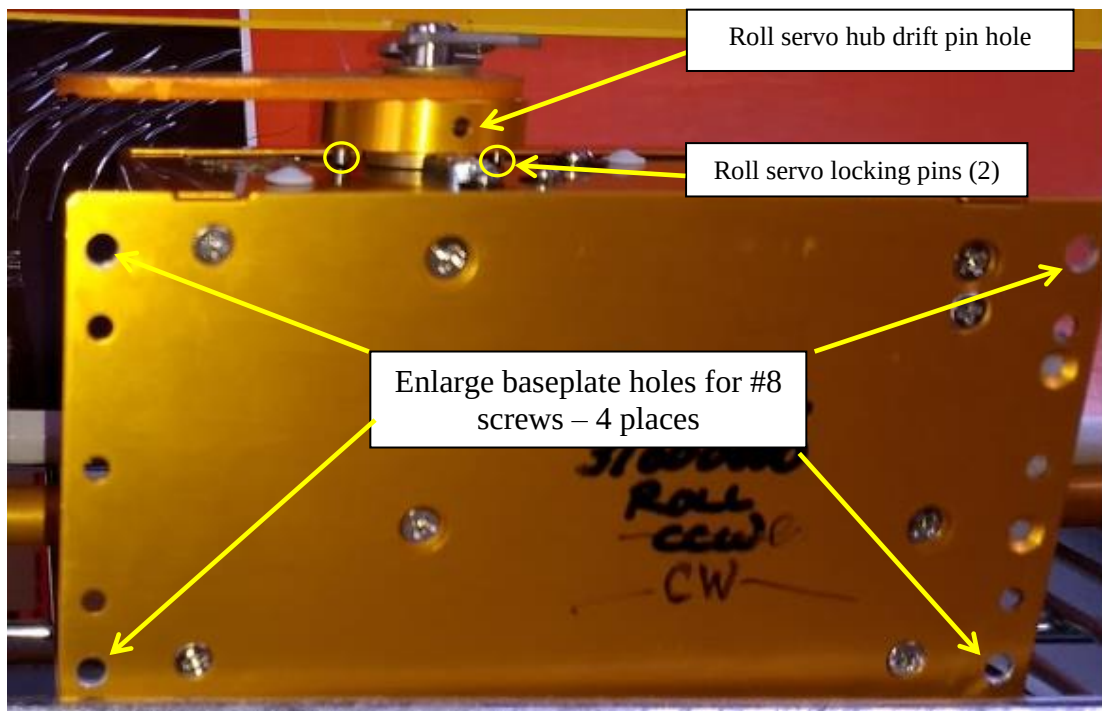


FIGURE 3-10 ROLL SERVO HUB PIN ALIGNMENT



Note:

The push pull tube assembly, p/n 1006231-1, has been terminated on a single end to allow for manufacturing variations between Cessna Aircraft 100 Series models.

33. Ensure that the aileron surfaces are locked in the neutral flight position. This can be accomplished with the control lock if desired.

Note:

The push pull tube must be protected from damage by using painters tape or equivalent.



34. Install the push pull tube, p/n 1006231-1, through the access hole at WS 144.80 with the rod end oriented towards the roll servo arm, p/n 1006239-1.
35. The MM-3 rod end should have four (4) threads showing.
36. Attach the push pull tube to the roll servo arm as shown in Figure 3-11 & 3-12.
37. The servo arm should be at a 90 degrees angle from the servo case, facing forward towards the rear spar web.
38. Measure the push pull tube from the center of the servo arm mounting bolt to the center of the aileron bellcrank mounting bolt. Refer to Figures 3-12, 3-14, and 3-15.
39. Mark the push pull tube with a permanent marker at this location on the painter's tape. This mark represents the center to center distance between rod ends. Refer to Figure 3-13.
40. Remove the push pull tube from the wing.
41. Measure from the center of the servo arm rod end to the mark that was made on the push pull tube.
42. This measurement will be the Center to Center Rod End measurement with four (4) rod end threads showing on each end.
43. Trim the push pull tube as required to meet the above center to center distance.
44. Deburr and smooth the push pull tube.
45. Insert the threaded rod end, p/n 1006405-1, provided in the hardware kit, into the unterminated (trimmed) end of the push pull tube and secure the with tape to prevent movement.
46. Using a V Block drill through the push pull tube using a #40 HSS drill bit and deburr. Refer to Figure 3-8 for rivet positioning.
47. Enlarge the hole above with a #30 HSS drill bit.
48. Insert the threaded rod end back into the push pull tube and secure with the two MS20470AD4-10 rivets. Be careful not to distort the rivets when squeezing.
49. Thread the rod end and jam nut into the threaded rod insert with four threads showing.
50. Tighten the jam nut (four threads showing) and mark with tamper proof torque seal.
51. Install the Push Pull tube assembly. Refer to Figures 3-12, 3-14, and 3-15.
52. The Servo arm should be next to upper wing skin as depicted.
53. Attach the DB9 connector to the servo DC9 connector after completing the Wiring harness installation in Appendix A.
54. Power on the Trio Pro Pilot autopilot and enter the Maintenance menu by pressing the Encoder knob and VMODE button simultaneously.
55. Turn, or Press, the Encoder knob until the LNAV SERVO SET screen is displayed.
56. Adjust the rod ends until the LNAV SERVO SET reading is 0.00 degrees.
57. Tighten the jam nuts, p/n AN315-3R, on the rod ends and mark both ends with tamper proof torque seal.



FIGURE 3-11 ROLL SERVO PUSH PULL TUBE ASSEMBLY

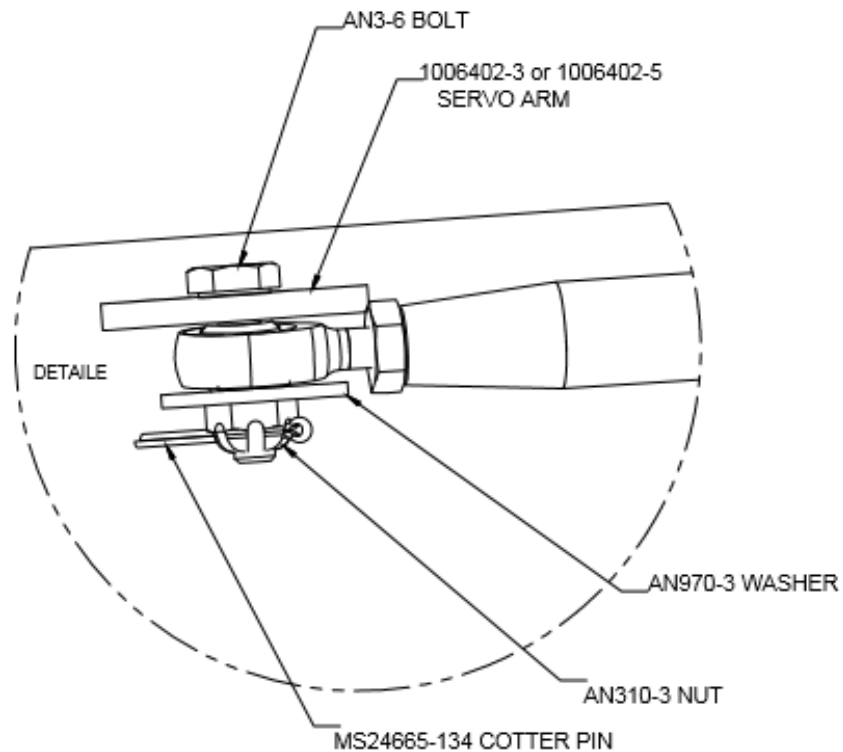


FIGURE 3-12 ROLL SERVO ARM INSTALLATION

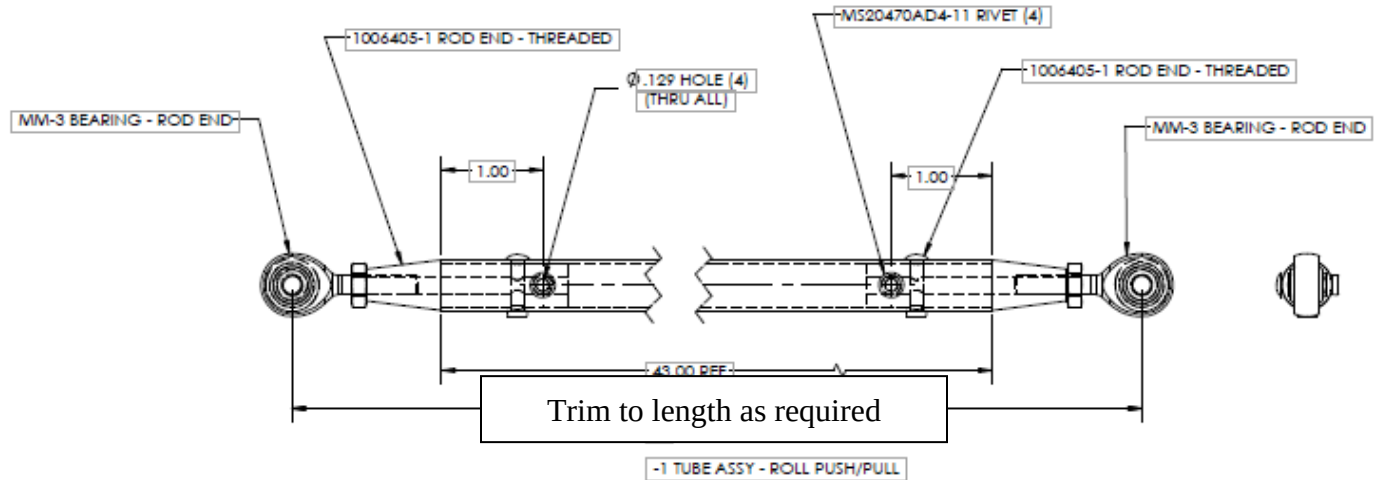


FIGURE 3-13 ROLL SERVO ARM INSTALLATION

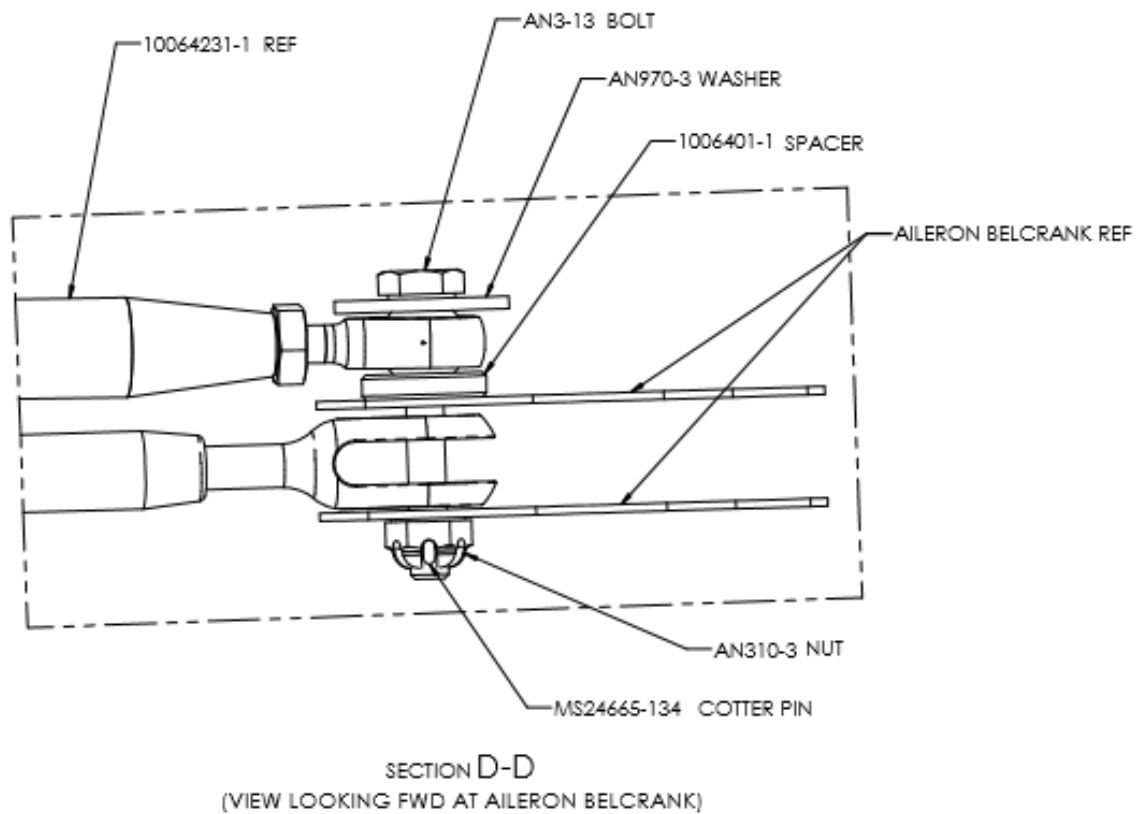


FIGURE 3-14 AILERON BELLCRANK INSTALLATION



Push Pull Tube attached at
rear aileron bellcrank position.

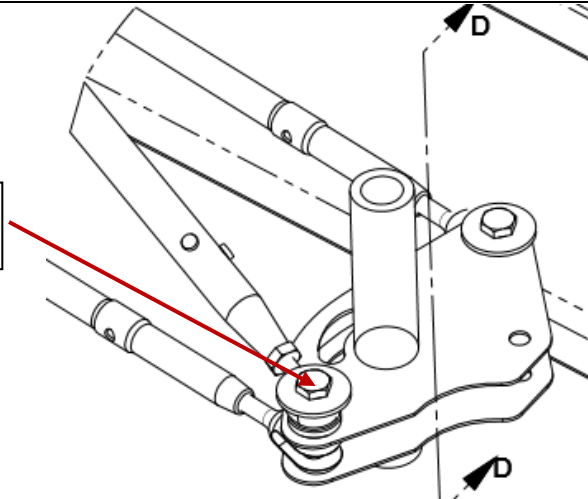


FIGURE 3-15 AILERON BELLCRANK INSTALLATION



FIGURE 3-16 AILERON BELLCRANK INSTALLATION

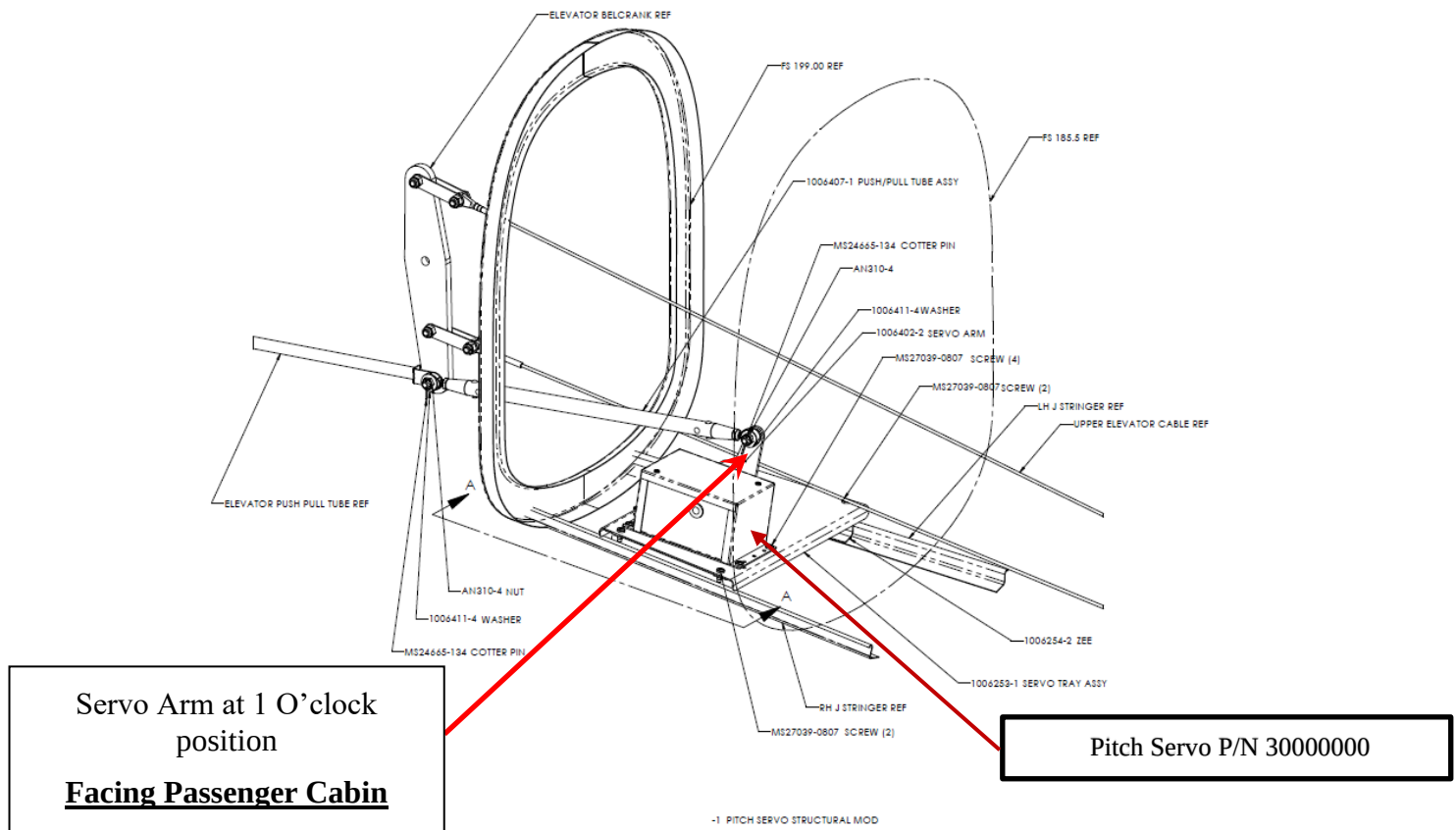


FIGURE 4-1 TRIO PRO PILOT PITCH SERVO INSTALLATION

1. Access the aft area of the aircraft by removing the baggage compartment cover.
2. Protect the elevator, trim cables, aircraft structure, and any avionics with padding and blankets.
3. The pitch servo assembly is installed in the fuselage between F.S. 185.5 and F.S. 199.00.
4. With the elevators locked into the neutral position the servo arm, P/N 1006402-4 / -6 must be positioned facing forward towards the passenger cabin at approximately the 1 o'clock position as a coarse adjustment. Refer to Figure 3-1.
5. The MM-4 rod ends are adjusted to position the servo arm between +8.5 to +12.5 degrees.
6. Servo arm position may be determined by powering ON the Trio Pro Pilot autopilot and entering the Maintenance Settings screen.
7. To enter Maintenance Settings, **press and hold** the Encoder knob and the VMODE button "at the same time".
8. Scroll to the VNAV servo set screen. The servo arm position will be displayed.
9. To Exit the Maintenance Setting screens, **press and hold** the Encoder Knob for three (3) seconds or power off the autopilot.
10. To find the correct position of the servo mounting position on the tray; dry fit all pitch installation parts.



11. Install the push/pull tube on the pitch bellcrank (Figure 3-12), cleco the pitch tray to the ZEE brackets (Figure 3-2), position the pitch servo on the tray and temporarily connect the push/pull tube to the servo arm (Figure 3-13).
12. Check for clearance between servo arm attaching hardware, push/pull tube, and the lower pitch cable. 0.125" clearance is sufficient.
13. Mark the servo position on the pitch tray.



Note:

The pitch servo tray, P/N 1006253 has been re-designed to accommodate all Cessna 180, 182, and 185 models. Refer to Figure 3-2.

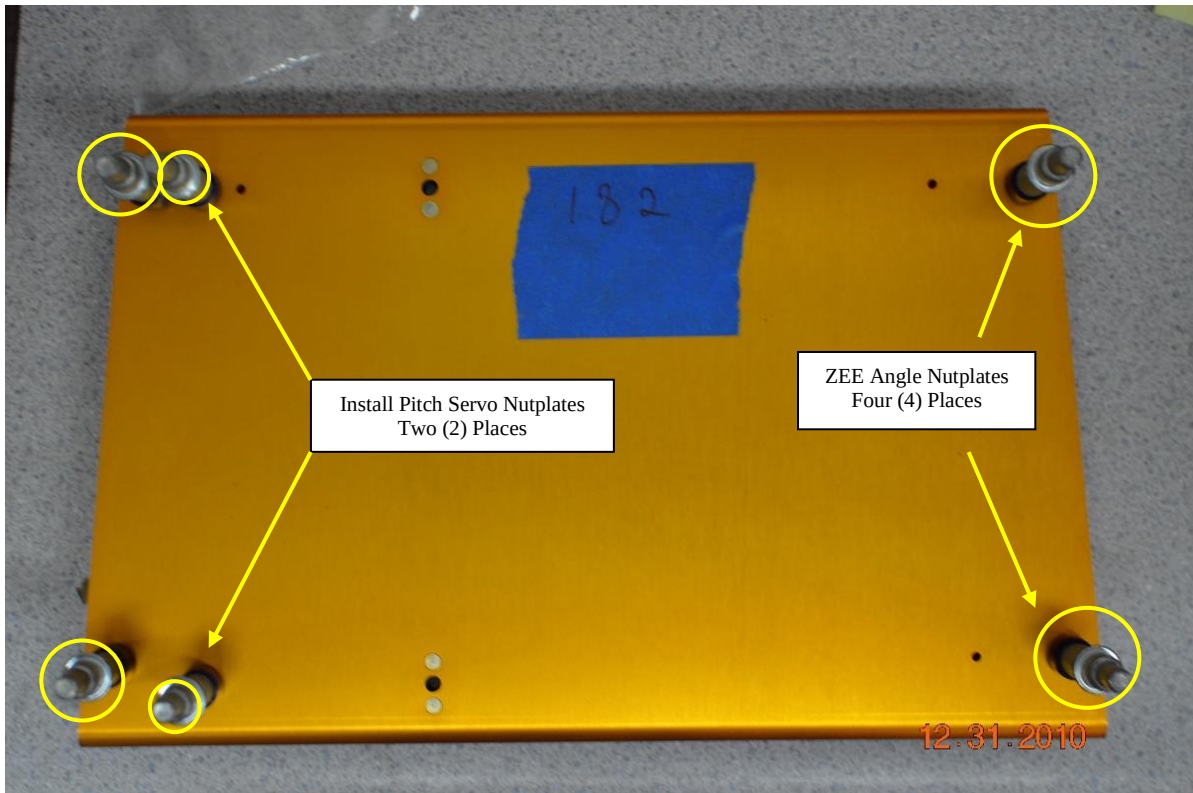


FIGURE 4-2 PITCH SERVO TRAY ASSEMBLED

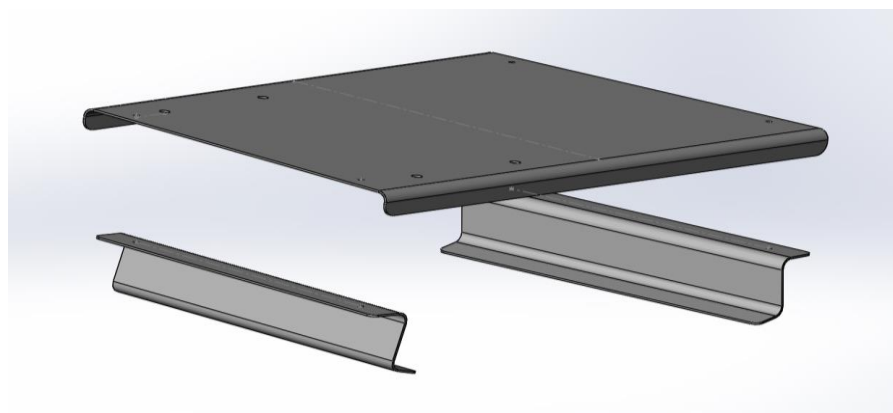


FIGURE 4-3 PITCH SERVO TRAY ASSEMBLY



1. The Pitch Servo Tray, P/N 1006253-2, and ZEE Angles, P/N 1006254-2, have been pilot drilled with #40 (0.098") holes.
2. Secure the Pitch Servo Mounting Tray, to the ZEE Angles, using four (4) Silver 3/32" P Series Cleco Temporary Fasteners. Refer to Figure 3-4 & 3-5.
3. The ZEE Angles should be positioned as shown in Figure 3-3, 3-4, & 3-5.

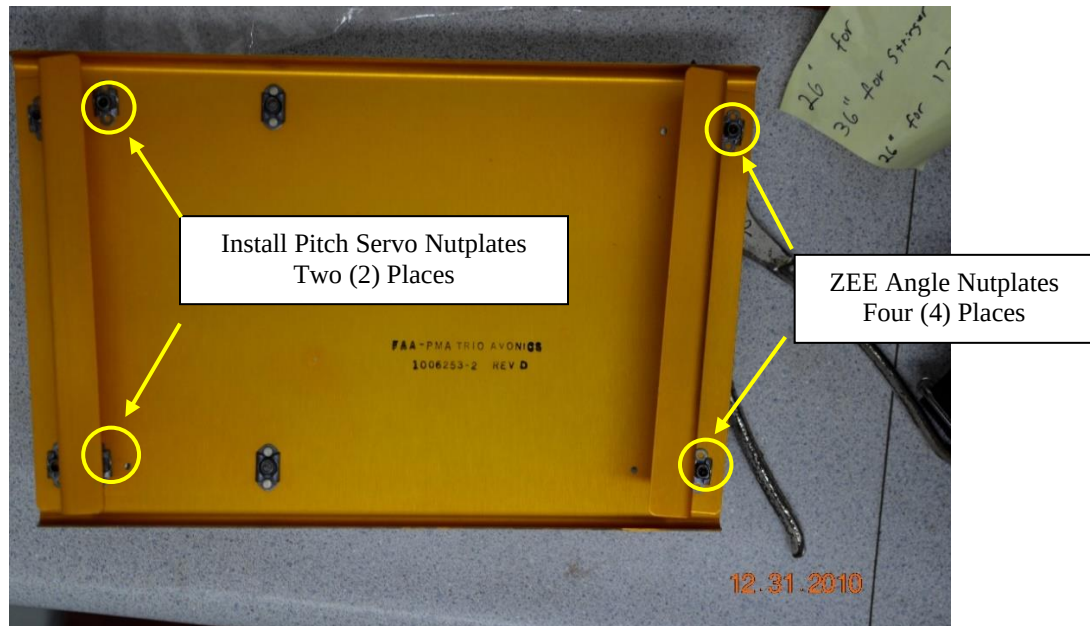


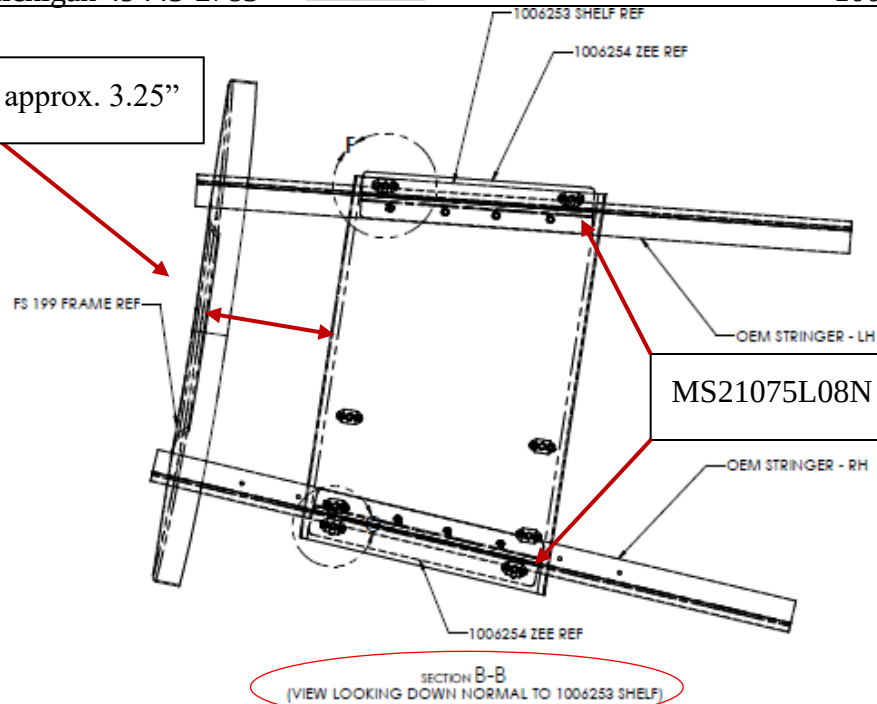
FIGURE 4-4 ZEE ANGLE POSITION



FIGURE 4-5 PITCH SERVO NUPLATE INSTALLATION



Edge of tray to F.S. 199.0 approx. 3.25"



MS21075L08N #8-32 nutplates (4)

FIGURE 4-6 PITCH SERVO TRAY INSTALLATION

4. Remove (10) fasteners that secure the bottom empennage access panel as shown in Figure 3-7.

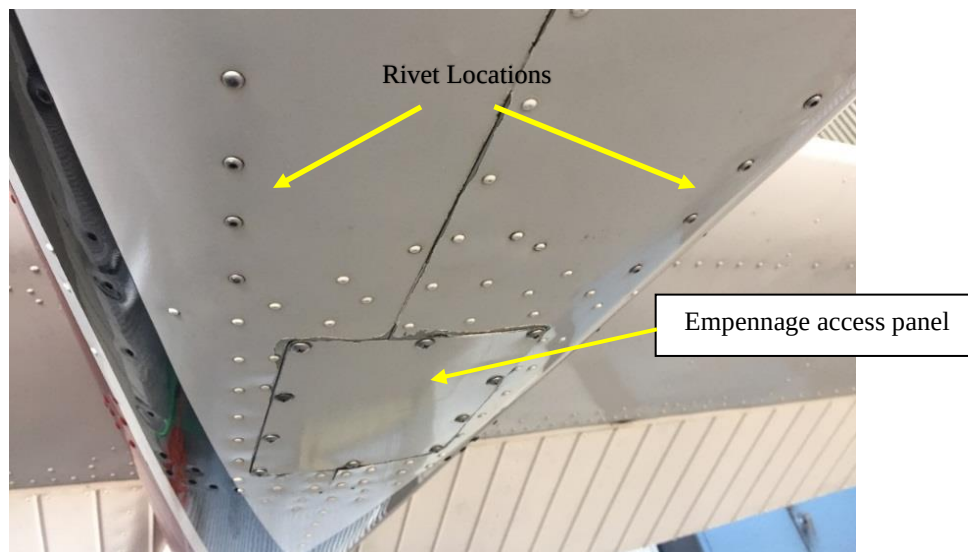


FIGURE 4-7 ACCESS PANEL SCREWS AND ZEE ANGLE RIVET LOCATIONS



5. Position the Pitch Servo Tray Assembly between the left hand and right-hand stringers and slide the assembly aft until the ZEE Angle vertical inner faces are coincident (snug) with the stringers as depicted in Figure 3-8 & 3-9.

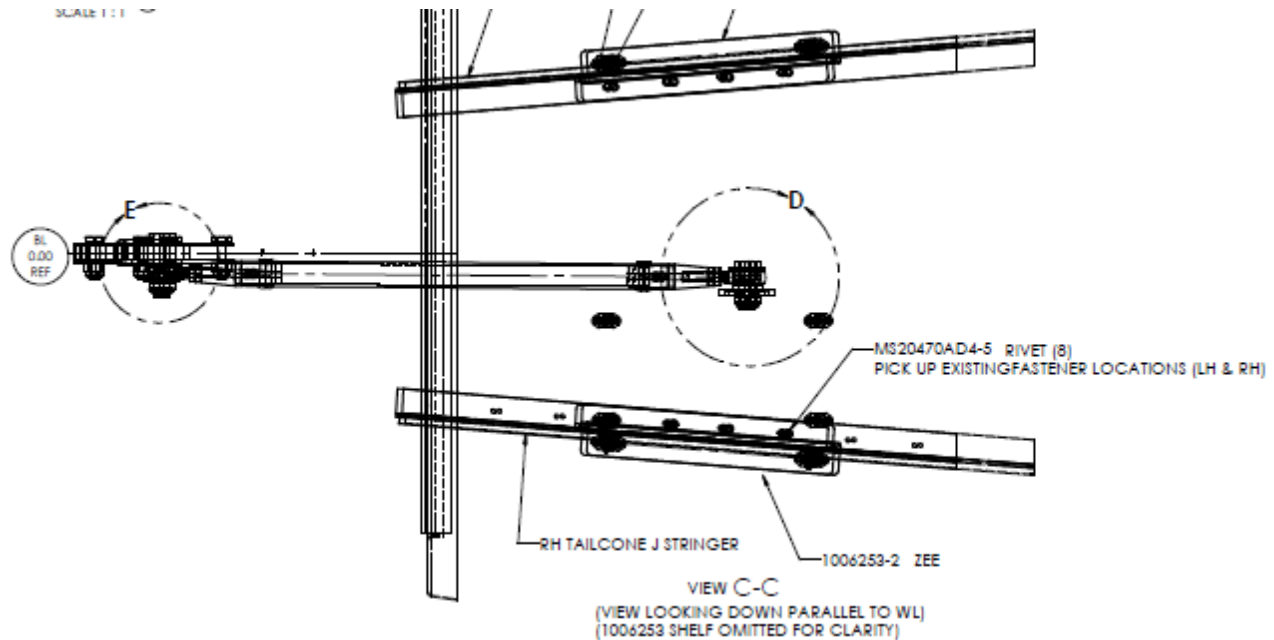
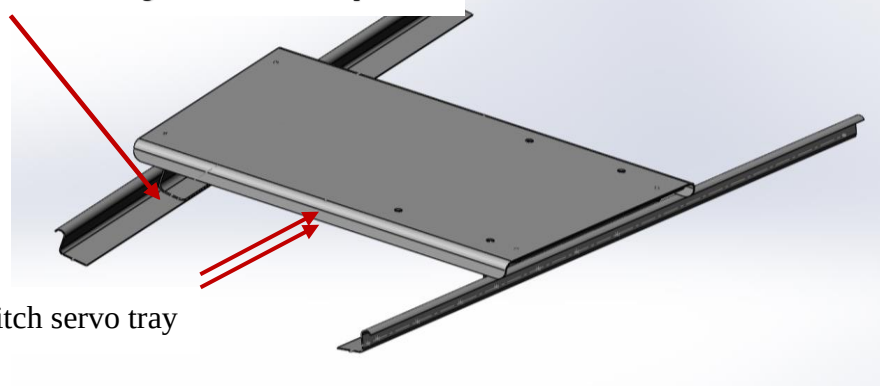


FIGURE 4-8 ZEE ANGLE LAYOUT

NOTE:

Verify that the distance between the aft end of the Pitch Servo Tray, P/N 1006253, and FS 199.00 frame web shown in View B-B in Figure 3-6 is approximately 3.25". Variations may occur between aircraft and are normal.

Mark position of Zee bracket edges fore and aft – 4 places



Aft edge of pitch servo tray

FIGURE 4-9 PITCH SERVO SHELF ASSEMBLY POSITIONING



6. Mark the AFT and FORWARD ends of the ZEE Angles on the aircraft stringers with a permanent marker or equivalent.
7. Identify the existing OEM belly skin-stringer fasteners that are present between the marks.

NOTE:

Skin-stringers fasteners must align with the ZEE angles with a minimum edge distance of 0.20 inch from the ends and edges of the ZEE angles.

Fasteners that will intersect the ZEE angles less-than 0.20 inches are to be omitted.

8. Remove a minimum of four (4) rivets between the marks on the LH and RH belly skin stringers as depicted in View C-C of Figure 3-8.

Caution:

Take care to prevent enlarging the fastener holes when removing rivet heads.

9. Replace the removed rivets with Silver 3/32" P Series Cleco Temporary Fasteners.
10. Re-position the Pitch Servo Tray and "back drill" the ZEE Angles using the removed belly skin-stringer rivet holes as locaters. Use a #40 drill bit for this step.

NOTE:

A Magnavon bushing, or equivalent drill guide should be used to drill through the fuselage skin rivet holes into the ZEE Angles. This practice will prevent hole enlargement.

11. It is recommended to drill through the forward rivet holes on each ZEE Angle first and secure the ZEE Angles to the fuselage and stringers using Silver P Series Temporary Fasteners.
12. After completing the forward holes back drill the AFT rivet holes and secure the ZEE Angles using Silver P Series Temporary Fasteners.
13. After completing the forward and rear holes back drill the remaining holes into the ZEE Angles and secure using Silver P Series Temporary Fasteners.
14. After back drilling is accomplished remove the Silver P Series Temporary Fasteners and remove the tray assembly from the aircraft.
15. Disassemble the tray assembly and enlarge all holes drilled above using a #30 drill bit.
16. Deburr all holes and remove debris before proceeding.
17. Match drill the (4) pilot holes in the 1006253-2 Pitch Servo Tray and 1006254-2 ZEE Angles using a #30 drill bit and securing with Copper P Series Temporary Cleco Fasteners.
18. Enlarging the holes with a #17 (0.173) drill bit.
19. Deburr all holes and remove a debris before proceeding.
20. Install two nutplates on each of the return flanges of the 1006254-2 ZEE angels as depicted in View B-B of Figure 3-6.

Note:

This operation will require drilling nutplate rivet holes.



21. Cleco the ZEE Angles into position and rivet using MS20470AD4-4 / -5, rivets
22. Cherry Max CR3213-4-04 / -05 rivets may be used in lieu of solid driven rivets.
23. Secure the servo tray to the ZEE Angles using four (4) MS27039-0807 screws supplied in the hardware kit.

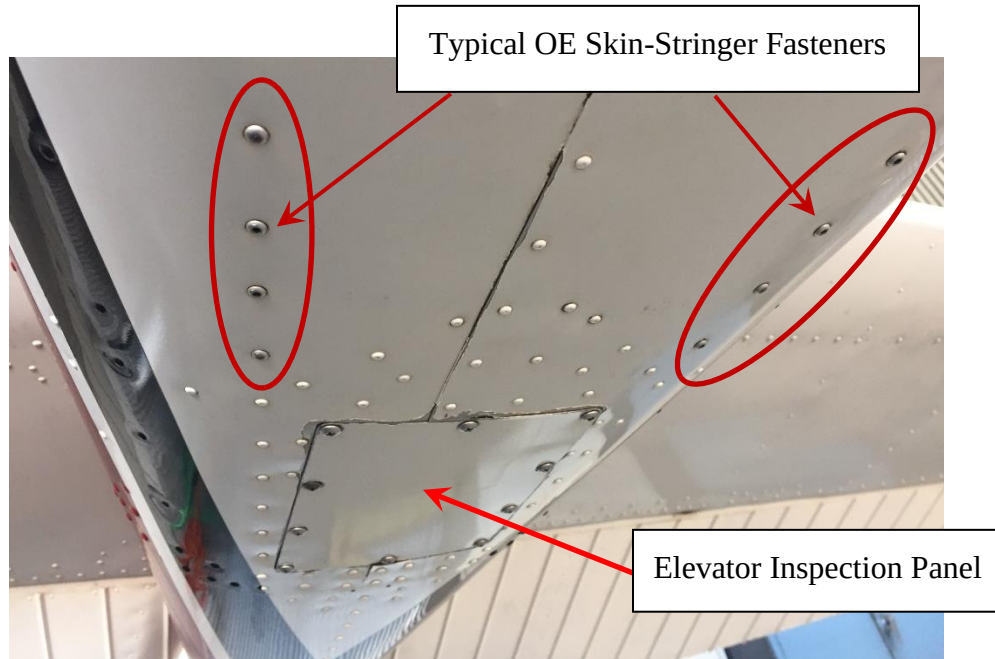


FIGURE 4-10 ZEE ANGLE RIVET LOCATIONS

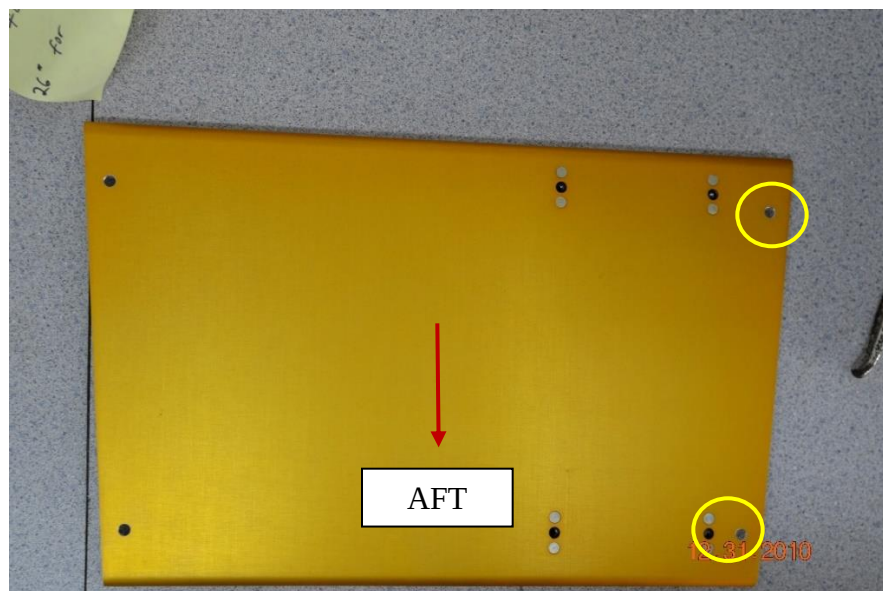


FIGURE 4-11 COMPLETED PITCH SERVO MOUNTING TRAY



4.2 Servo Tray, Push Pull Tube, Servo Arm Position

1. Drill and install the necessary servo attach nutplates.

Note:

It is acceptable for the AFT RH outboard servo mounting screw to be installed where the tray attaches to the RH Zee bracket.

2. Deburr and reinstall the pitch servo tray.
3. Mount the servo and recheck clearances.
4. Tighten down all servo attach screws.
5. Install the pitch servo to the pitch servo tray using the MS27039-0807 fasteners supplied in the pitch servo hardware kit.
6. Attach the push pull tube to the elevator idler bellcrank using the hardware supplied in the pitch servo kit. Refer to Figures 3-1 & 3-12.

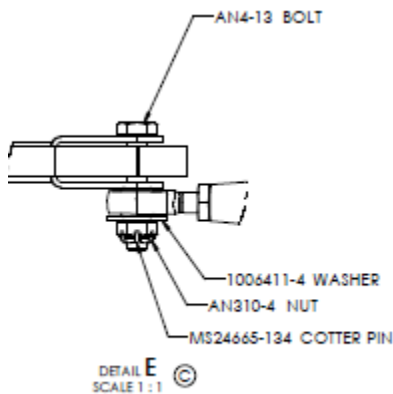


FIGURE 4-12 BELLCRANK INSTALLATION

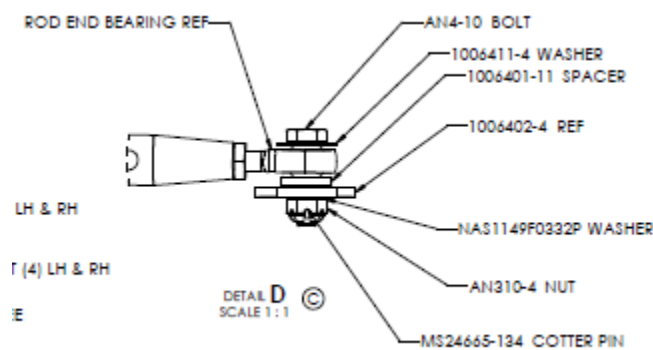


FIGURE 4-13 SERVO SIDE INSTALLATION

7. Attach the push pull tube to the servo arm using the hardware supplied. Refer to Figure 3-13.
8. Verify push pull tube has proper clearance from control cables. 0.125" clearance is sufficient.
9. Check for full range of motion on pitch controls and recheck for clearance on the cables.



10. With the elevators locked into the neutral position the servo arm, P/N 1006402-4 / -6 must face forward towards the passenger cabin at approximately the 1 o'clock position as a coarse adjustment. Refer to Figure 3-1.
11. The MM-4 rod ends may be adjusted to position the servo arm at approximately +12.3 degrees.
12. The pitch zero (center) setting may vary between aircraft but the servo arm throw in either direction must be equal to each other +/- 1°. (i.e. -44.2 & +44.2).



APPENDIX A – TRIO PRO PILOT AUTOPILOT INSTALLATION

NOTE

Prior to plugging harness DB9 or DB37 into servos or autopilot control perform a full power, ground, and data test on the harness by ringing the wires from plug to plug using PRO PILOT WIRING HARNESS DWG 41300008 or latest approved version. Refer to Appendix B.

Call Trio Avionics at +1 619-448-4619 if you have additional questions or need assistance.

The Trio Pro Pilot autopilot controller must be integrated with the aircraft pitot and static system. A pitot and static system test must be performed prior to opening the pitot and static system.

Roll Servo Harness Installation

1. Remove interior trim panels on cockpit passenger side
2. Remove existing Cessna factory autopilot wiring and set aside for weighing if so equipped.
3. Route Trio Harness Roll servo wiring along same path and using the same clamps as factory autopilot wiring.
4. Take care to protect harness pins at end of harness.
5. Terminate supplied DB9 connector per Trio diagram.
6. Attach DB 9 connector to Trio Roll Servo.
7. Secure harness cable.

Pitch Servo Harness Installation

1. Remove co-pilot seat
2. Route Trio Harness Pitch servo wiring under cockpit floor taking care to secure away from other aircraft wiring and moving components.
3. Route harness to Trio Pitch Servo location.
4. Take care to protect harness pins at end of harness.
5. Terminate supplied DB9 connector per Trio diagram.
6. Attach DB 9 connector to Trio Roll Servo.
7. Secure harness cable.

Trio Autopilot Controller

1. The Trio autopilot controller is ordered in Panel Mount or Instrument Mount versions.
2. The Trio autopilot controller will support 12 to 30 volts.
3. The Trio controller is provisioned with Pitot and Static ports.
4. A pitot static system check must be performed before installation to verify system operation and integrity.
5. The Trio Pro Pilot autopilot controller is provisioned with Pitot and Static ports on the rear of the controller.
6. The controller pitot and static ports must be integrated (plumbed) into the aircraft pitot and static systems.
7. Every aircraft Pitot and Static system is different. The following are for example only as the aircraft systems will vary.
8. The following components, or equivalent, will be used in most installations.:
9. Tygon tubing. 2 each x 24” pieces. Aircraft Spruce P/N 05-00944, or equivalent.



10. Nylo Seal fittings. 2 each. Aircraft Spruce P/N 264-N04.
11. Nylo Seal Inserts. 8 each. Aircraft Spruce P/N 259-N04.
12. Groen 1/4" constant pressure clamp or equivalent. 2 each. Refer to Image 5-1.
13. Extend the pitot & static hoses & cable connector through the tray and out through the front of the instrument panel to allow for ease of servicing.
14. Mate the pitot and static hoses to the control head.
15. Apply constant pressure clamps to secure pitot and static connections at the rear of the autopilot controller. Refer to Image 5-1.
16. Mate the 37 pin D connector to the control head using the screws provided.
17. If using an Instrument mount control head secure the control head using #6 brass instrument screws.
18. If using a Panel mount control head slide the control head into the tray, then tighten the securing screw. Do not over tighten control head in the tray.
19. It is required to do a static pressure system inspection/check in accordance with FAR 43 Appendix E paragraph (a) and although it is not required; we recommend that a pitot system leak check also be performed.
20. Install the controller using best practices in either panel or hole locations. Refer to AC 43-13 for this step and all following steps.
21. Utilize Trio DWG 413000XX and Appendix B for the following steps.
22. Install supplied 5 ampere circuit breaker within easy reach of the pilot and label per Illustrated Parts Catalog 1006903 Sheet 2 of 5.
23. If a Panel Mount unit is ordered install the supplied power switch and label.
24. Terminate supplied DB37 connector per Trio drawing in Step 3.
25. Terminate wiring with aircraft GPS or handheld.
26. If ARINC 429 is available from GPS terminate ARINC 429 connections.
27. Install the supplied PCS button on the left side of the pilots control yoke and label PCS.
28. Install Recover button in an available convenient location within easy reach of the pilot and label AP Recover.
29. Ensure that the analog alarm out is connected to the un-switched audio input on the Audio Panel.
30. Install Limitation Placard, P/N 1006450-1, supplied in plain view of Pilot.

Trio Autopilot Data Connections

1. For the RS-232 connection set the output at the GPS unit to "Aviation w/ no altitude" or NMEA 0183 OUT.
2. If your aircraft is equipped with a GPS that has ARINC 429, set unit to output "GAMA" Low or High Speed.
3. Prior to making the connections to the GPS unit in the aircraft determine what else is connected.
4. It may be necessary to parallel the connections.
5. If parallel connections are required, verify that the lines you are connecting to use, or can use, the same data format that is required.
6. Both the RS-232 and the ARINC 429 can be paralleled with like connections.

Trio Initial Setup and Checks

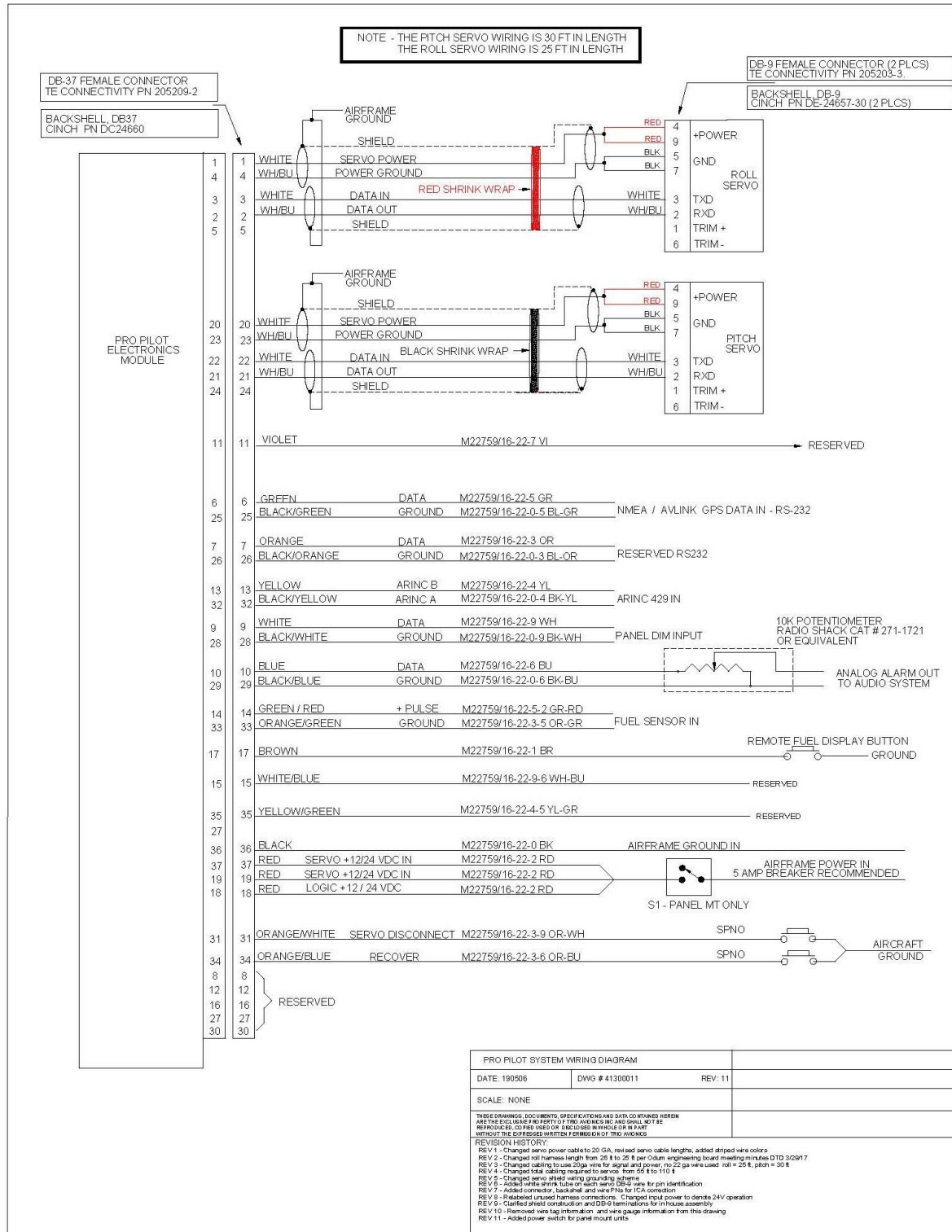


1. Refer to The Avionics Addendum Section 10 for initial checks and setup of the autopilot installation.
2. Autopilot gain settings have been programmed before shipment.
3. Individual aircraft may require fine tuning of servo gains on the first few check flights.
4. The Avionics Addendum may be downloaded at www.thestcgroup.net.

END

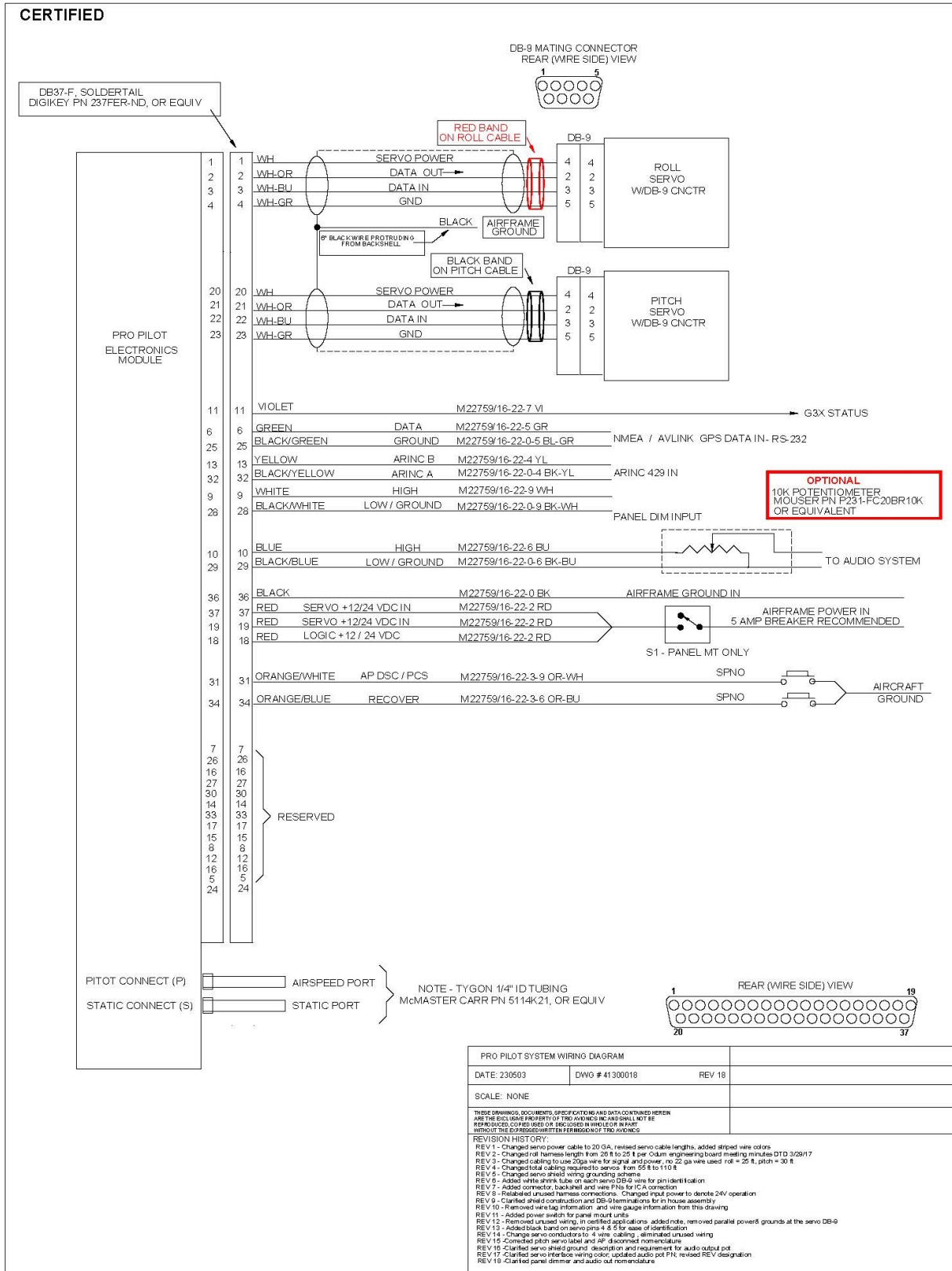


ORIGINAL WIRING DIAGRAM





NEW WIRING DIAGRAM





APPENDIX C - ROLL SERVO PUSH PULL TUBE MODIFICATION

Note:

The STC Group LLC is shipping a modified Push Pull Tube Assembly, P/N 1006231-1, has been terminated on a single end to allow for manufacturing variations between Cessna Aircraft 100 Series models. The 1006231-1 tube will require shortening to fit each specific aircraft.

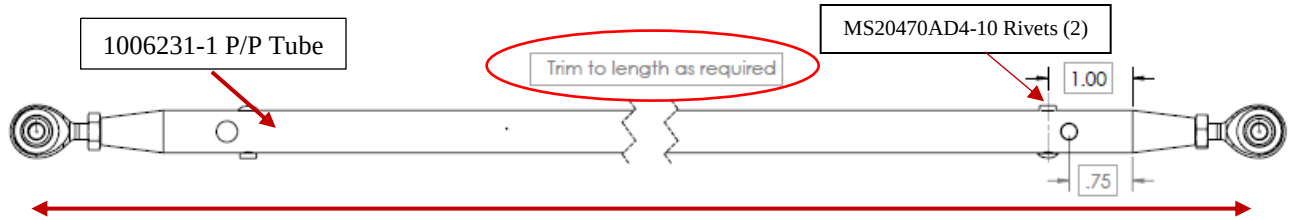
1. Ensure that the aileron surfaces are locked in the neutral flight position using padded blocks before starting this procedure.
2. Contact The STC Group LLC if you have any questions or require assistance with adjusting the 1006231-1 tube length.

Note:

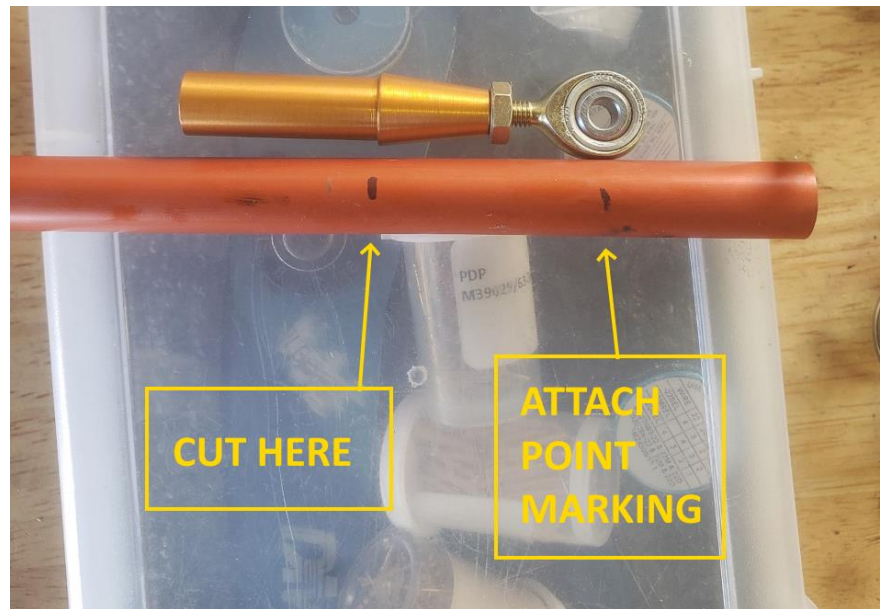
This is a critical operation.

P/N 1006231-1, Push Pull Tube, should be modified to closely resemble P/N 1006406-1 per the drawings depicted in Figure 0-1 using the 1006405-1 insert, MM3, AN315, and AD4-10 rivets supplied in the installation kit. These parts have been pre-assembled and bagged. A steel drill jig has been supplied to assist the installer with proper rivet hole locations and to ease drill operations.

3. The MM3 rod end should have four (4) threads showing at each end.
4. The modified push pull tube should be protected from marring using painters tape.
5. Insert the Push Pull tube assembly through the access panel at W.S 144.8.
6. Attach the push pull tube to the servo arm.
7. Attach the DB9 connector to the servo DB9 connector after completing the Wiring harness installation in Appendix B.
8. With servo electrically connected go to "LNAV SERVO SET" page and either set the servo arm to 0 degrees or turn the HNAV servo on to keep at 0 degrees. Alternatively, if you do not have the electrical side of the installation done then you can ensure the roll servo arm is facing forward at 90 degrees from its base .
9. With ailerons in the neutral position mark the RH aileron attach point on the open end of the tube with a sharpie, or equivalent marking device. Refer to Figure 0-2.
10. Remove the 1006231-1 tube from the aircraft and on the open end of the tube place the provided rod-insert bolt hole next your mark. (with 4 threads showing on the rod end). Make a new marking on the tube at the base of the taper of the insert. Cut the tube at the new marking. Refer to Figure 0-2.
11. Install rod end insert with the rivets and drill guide provided.
12. Power on the Trio Pro Pilot autopilot and enter the Maintenance menu by pressing the Encoder knob and VMODE button simultaneously.
13. Turn, or Press, the Encoder knob until the LNAV SERVO SET screen is displayed.
14. Adjust the rod ends until the LNAV SERVO SET reading is 0.00 degrees.
15. Tighten the jam nuts, P/N AN315-3R, on the rod ends and mark both ends with tamper proof torque seal.



C- 1 PUSH PULL TUBE MODIFICATION



C- 2 PUSH PULL TUBE TRIMMING



APPENDIX D – MODIFIED ROLL SERVO BRACKET PLACEMENT

NOTE:

If your RH flap closeout rib (W.S. 100.5) differs from the one pictured in Figure D-1, please contact The STC Group LLC before proceeding.

1. On the right-hand wing W.S. 100.5, drill out the rivet pictured in Figure D-1 using the appropriate drill bit for the existing rivet.
2. Oversize and debur the removed rivet hole using a #16 drill bit.



D- 1 ROLL SERVO MOUNTING BRACKET RIB

NOTE:

If your flap closeout skin does not have an access panel to access the upper forward nutplate, then the upper forward nutplate will have to be removed from the bracket. Acceptable replacement hardware;

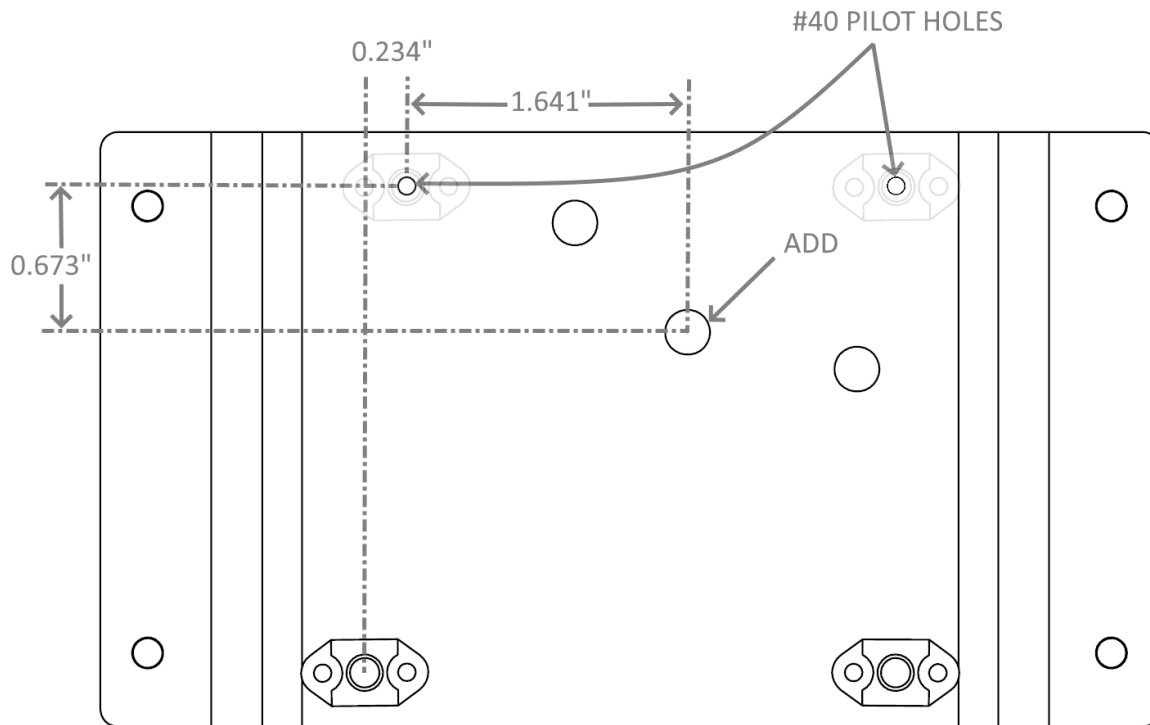
a AN525-832R7 screw with a AN9730-3 washer (on bracket side) and MS21044N08 nut or a AN525-832R7 screw, a AN9730-3 washer (on bracket side) with a CN614CR08P clickbond nutplate secured to inboard side (W.S. 100.5). **Refer to Figure D-4.**

3. If your kit came with roll servo bracket PN: 1006233 Revision – remove the aft upper nut plate pictured in Figure D-2.
4. **If your kit came with roll servo bracket 1006233 Revision A or later revision, install the aft upper nutplate on the bracket then put the bracket in the wing and secure using one AN525-832R7 screw and skip to step 9.**



D- 2 ROLL SERVO BRACKET

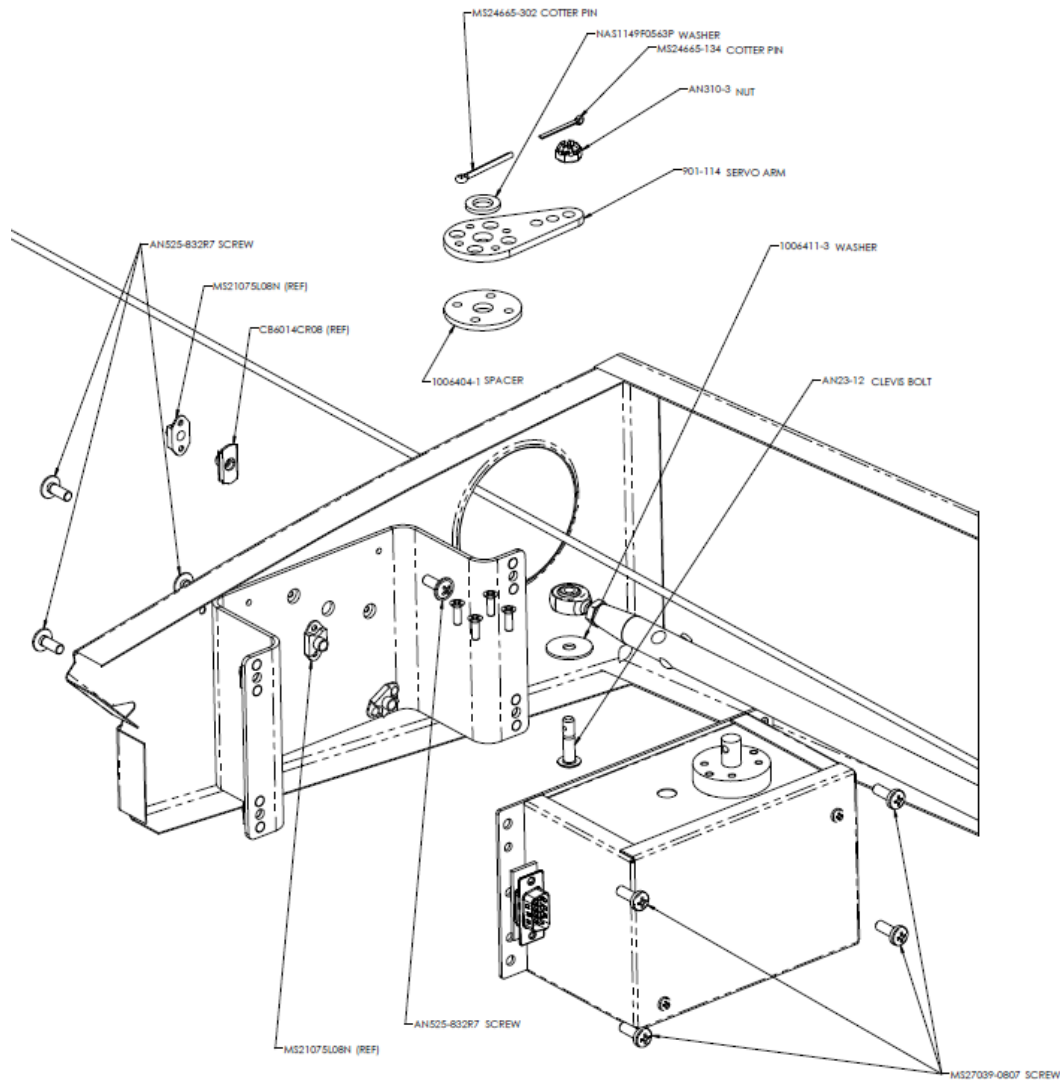
5. The forward rivet of the removed nutplate will be the pilot hole for the mounting screw.
6. Oversize and debur the forward rivet hole using a #16 drill bit.
7. Add the extra rivet clearance hole (minimum 0.25" diameter) depicted in Figure D-3.
8. Put the bracket in the wing and secure using one AN525-832R7 screw, one AN9730-3 washer (on bracket side), and a MS21044N08 nut.
9. With the bracket parallel to the bottom wing skin pick up the remaining mounting holes using the nutplates as guides with a #30 drill bit. Alternatively, you can measure and mark the remaining mounting holes using the template shipped with your kit. Refer to Figure D-3 & D-8.



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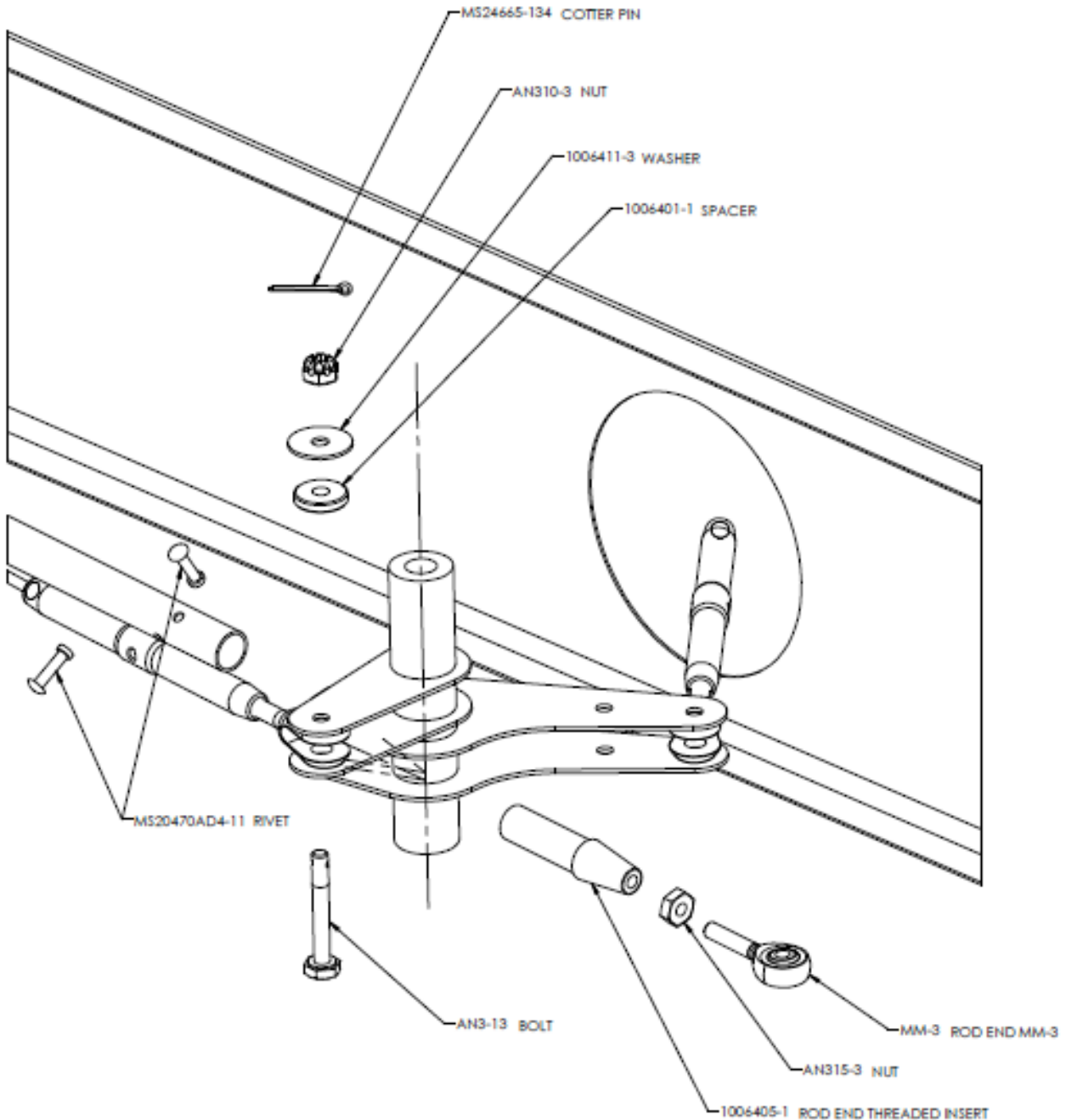
D- 3 ROLL SERVO MOUNTING HOLES

10. Remove the bracket from the wing.
11. Oversize and debur the remaining holes with a #16 drill bit.
12. Install and torque (12-15 inch-pounds) the roll servo bracket with the hardware supplied.
13. Install the hardware on the servo hub in accordance with Figures D-4, D-6 and the Illustrated Parts Catalog Document # 1006903.

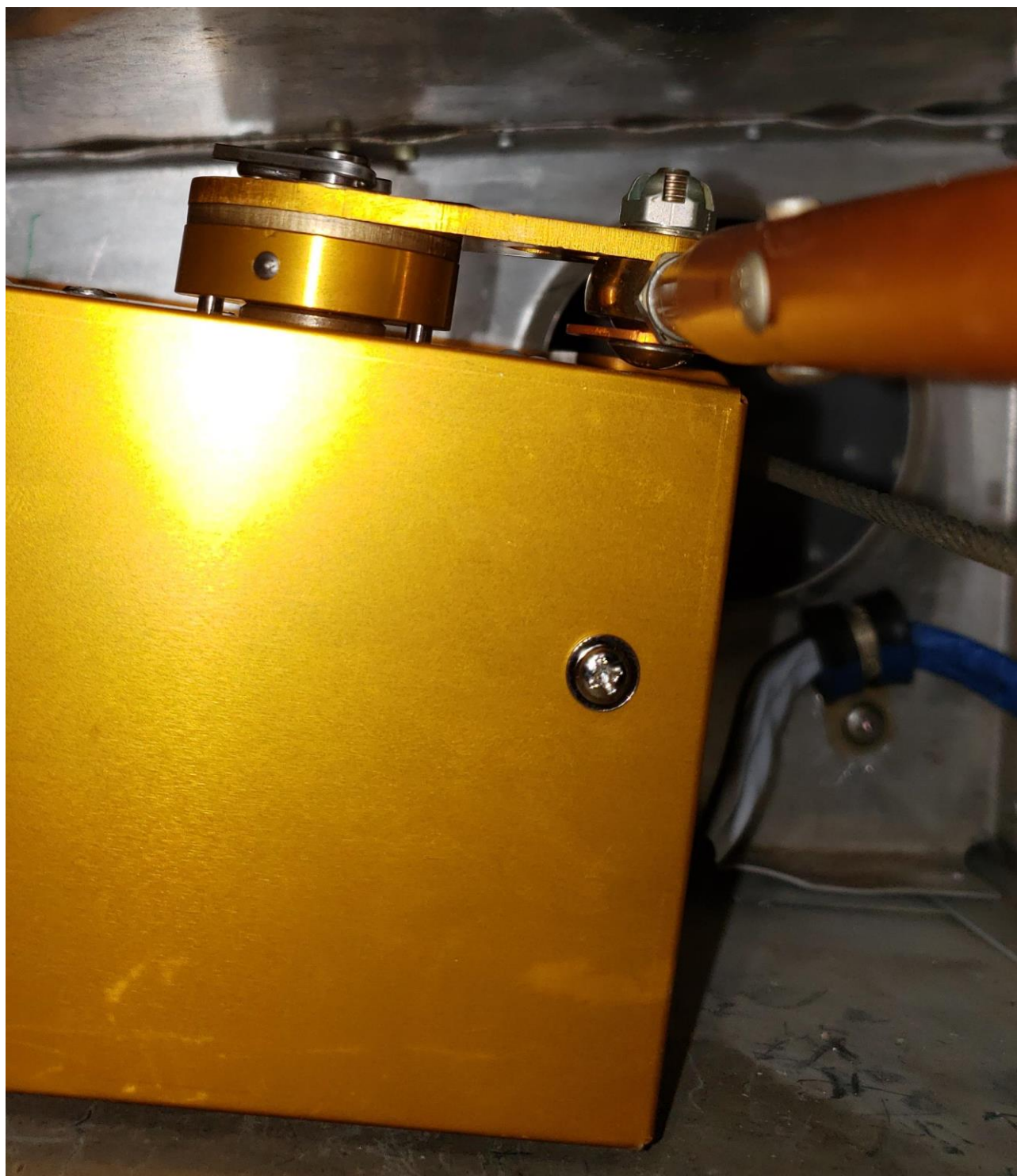


D- 4 ROLL SERVO HARDWARE

14. With the ailerons in neutral, record the carry through cable tension.
Aileron carry through cable tension: _____.
15. Trim the push pull tube to length in accordance with Appendix C.
16. Remove the safety wire and loosen the carry through cable.
17. Install the push-pull tube through the access panel at W.S. 144.80 and attach to the servo arm and bellcrank with the hardware pictured in Figures D-4, D-5, D-6, D-7 and the Illustrated Parts Catalog Document # 1006903.
18. Re-tension and safety the carry through cable in accordance with your aircrafts Maintenance Manual.
19. Continue to Pitch Installation Section 4.0 or completion then setup in Appendix A.



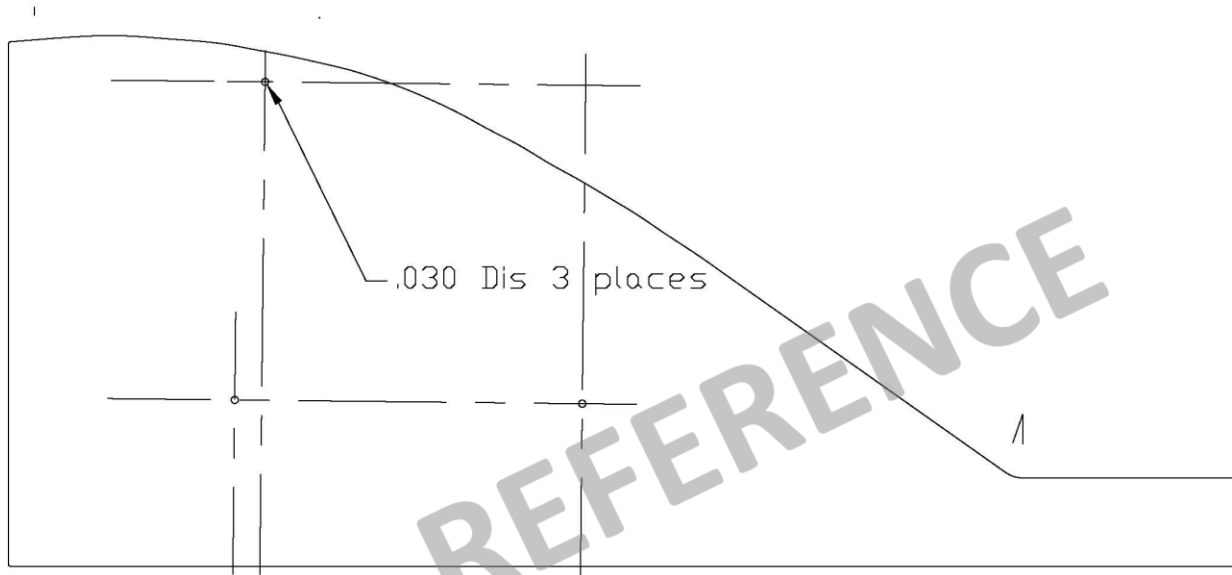
D- 5 BELLCRANK ATTACH HARDWARE



D- 6 ROLL SERVO HARDWARE STACKUP



D- 7 ROLL PUSH PULL TUBE BELLCRANK HARDWARE STACKUP



D-8 W.S. 100.5 ROLL BRACKET DRILL TEMPLATE