

STC GROUP LLC
480 RUDDIMAN DRIVE
MUSKEGON, MICHIGAN 49445

REPORT NO. 1006003
REVISION J
FAA STC SA04230CH

TRIO AUTO PILOT INSTALLATION INSTRUCTIONS
CESSNA MODEL 182
CESSNA FACTORY NAVOMATIC EQUIPPED AIRCRAFT

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Revision	Section
All	Initial Release
Rev A	Added Red Arrow and NOTE to Page 13. Changed roll to pitch. Page 16 NOTE. Removed references to 10062XX documents. Changed arrow types and colors. Added NOTE boxes to some depictions. Updated TOC page numbers.
Rev. B	Copied G-1006-51 Rev. M document into 1006003 and changed to Rev. B.
Rev. C	Formatting changes
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Rev. E	Title Page, Section 1.0, Sec. 2.0, 3.0, add Appendix D. Appendices.
Rev. F	Image number corrections in all sections. Tools Needed.
Rev. G	Changed roll servo mount location, Appendix C, Added C182 MOD-KIT Appendix D
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Rev. I	Sections 1.0, 2.0, 3.0, Appendices A, B, C, D, Renamed Images to Figures



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Section 3.0



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Figure 0-2 PUSH PULL TUBE TRIMMING

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REFERENCES

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.

DWG 413000XX Trio Pro Pilot System Wiring Diagram

STC Group LLC Document Number 1006902 Cessna 182 (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.



RECOMMENDED TOOLS

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



ACRONYMS, ABBREVIATIONS, AND SYMBOLS

ASSY	Assembly
Autopilot	Trio Pro Pilot Autopilot
C.G.	Center of Gravity
ER	Engineering Record
FAA	Federal Aviation Administration
ICA	Instructions for Continued Airworthiness
INCH	Inches
LH	Left Hand
OEM	Original Equipment Manufacturer
OUTBD	Outboard
PCS	Pilot Controlled Steering
Recover	Recover Button
RH	Right Hand
Servo	Trio Gold Stand Servo
STC	Supplemental Type Certificate
WS	Wing Station



1.0 GENERAL

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!

This installation procedure provides information and data necessary to install bracketry and hardware provisions for mounting the Trio Auto Pilot Pitch and Roll servos in Cessna Aircraft Model 182. 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.

Check all items included in the kit to ensure all parts are accounted for. You may compare the contents of the kit with the Illustrated Parts Catalog. Please contact us if there are missing items.

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.

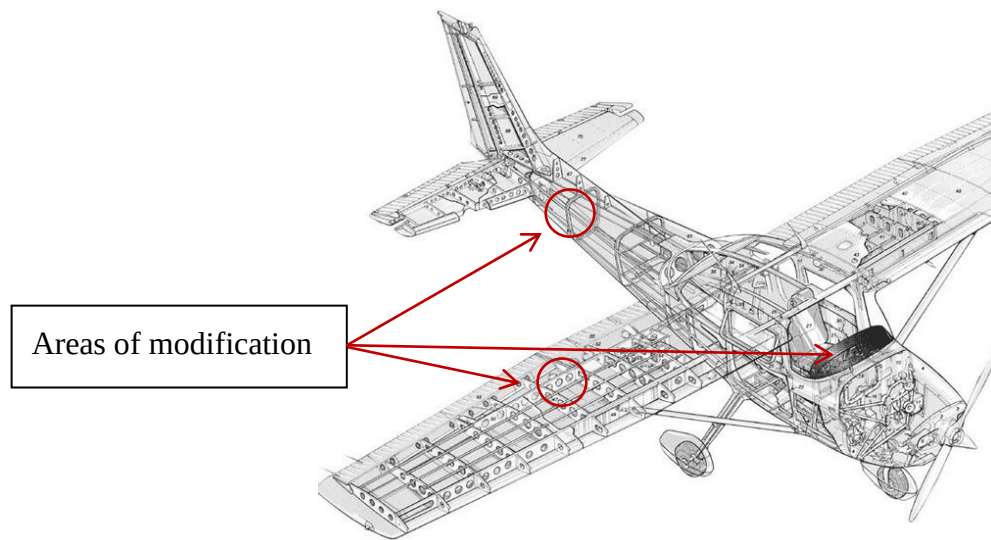


FIGURE 1-1 CESSNA 182 SERIES INSTALLATION LOCATIONS



2.0 OEM ROLL SERVO REMOVAL

1. Remove RH wing inspection panels located at WS 103.5, 112.0, and 144.8, Refer to Figure 2-1.
2. If the airplane is equipped with the OEM installed servo, disconnect the servo electrical harness connector and servo drive cable. Remove the servo, and servo bracket installed at W.S. 108.00.
3. Remove the cable guide wheel and bracket, located at RH WS 118.25 by removing the attachment bolts or drilling out the attachment rivets common to the guide wheel bracket and the aft spar web.
4. Cap, coil, and stow the servo wiring harness forward of the aft spar for use as a pull string when installing the TRIO roll servo wire harness.
5. Record and weigh all removed parts for weight and balance calculations.
6. Retain the old autopilot components in a suitable storage container.

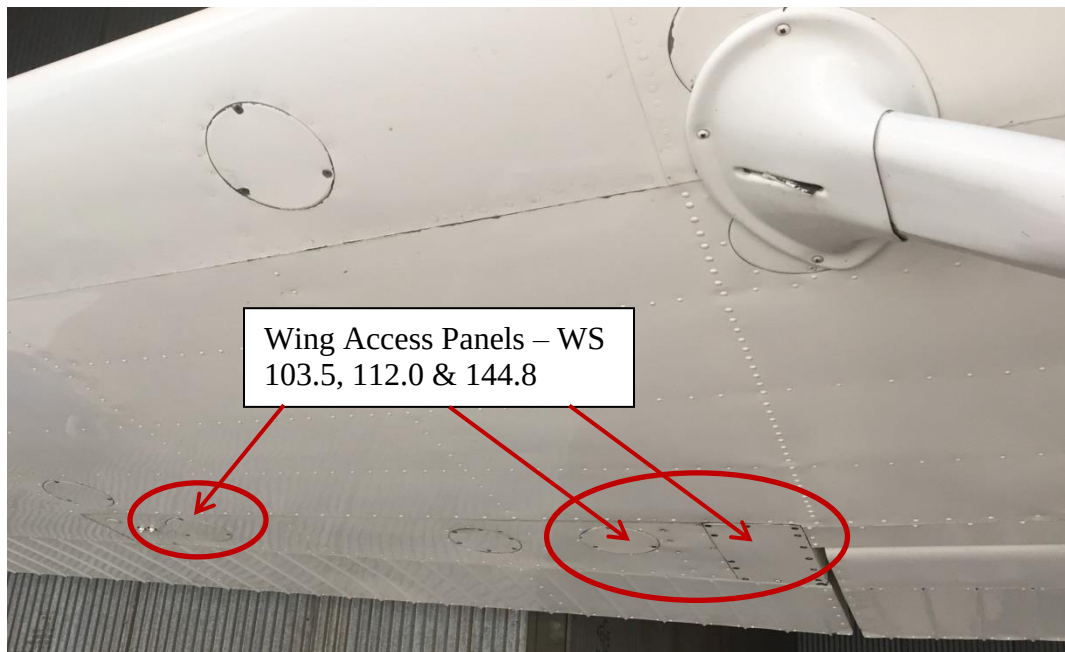


FIGURE 2-1 ROLL SERVO ACCESS PANELS

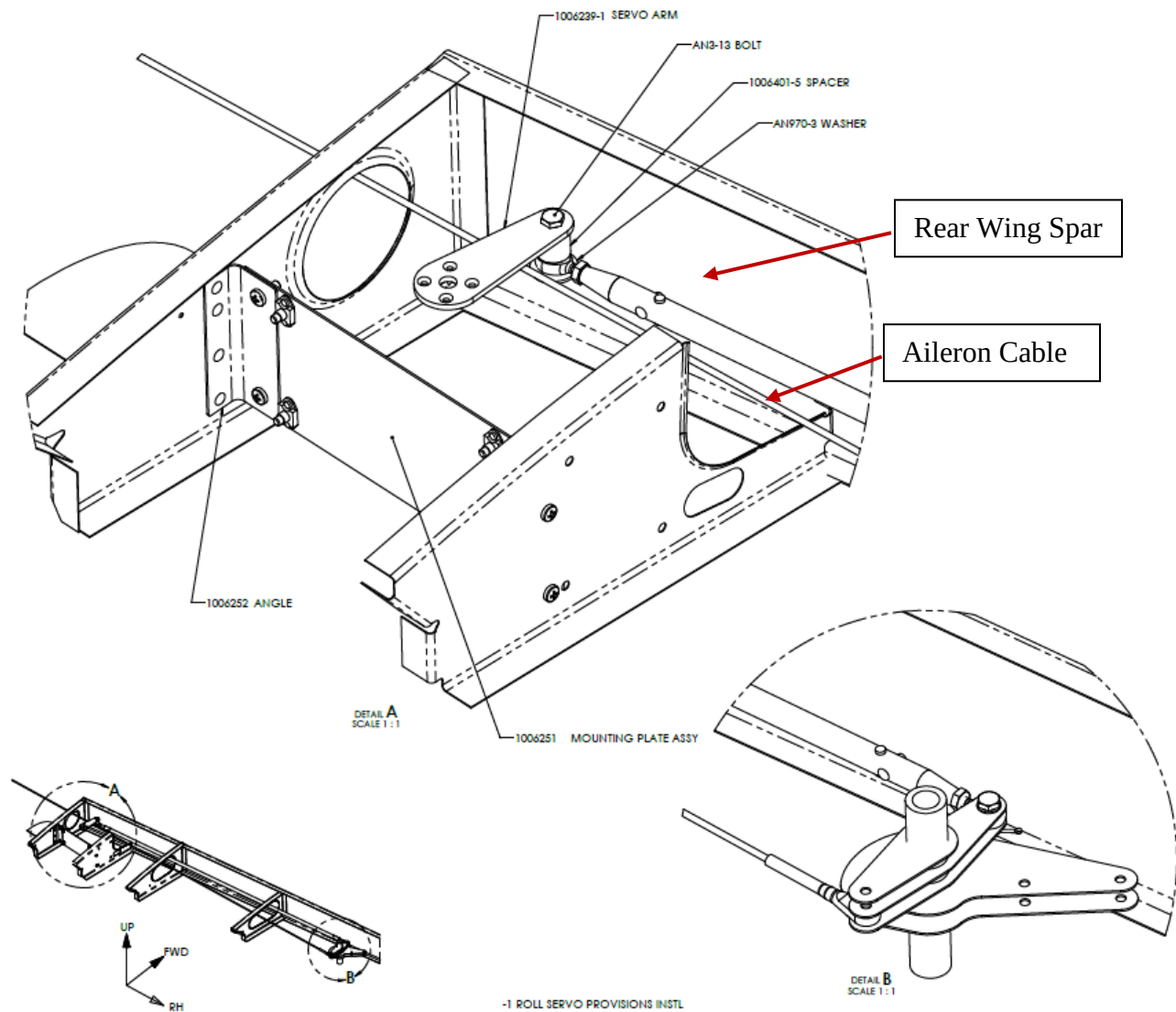


FIGURE 2-2 TRIO PRO PILOT ROLL SERVO INSTALLATION



2.1 Prepare The Servos

1. Enlarge the 4 corner mounting holes on both servo baseplates using a #16 drill bit or equivalent. Refer to Figure 2-4.
2. With the servo hubs in the center of travel align the servo arms to face the top of the servo and secure the servo arms with the M3 screws supplied in the hardware kit. Refer to Figure 2-3.

Note:

For both servos; the servo hub roll pin hole must be aligned with the servo stop as shown in Figure 2-3 before attaching the crankarm to the hub.

3. M3 screws supplied in the autopilot hardware kit have been coated with Loctite thread locker. DO NOT apply additional thread locker to the M3 screws.
4. Torque to the screws 10-13 lb.-in. using a calibrated screwdriver with the proper tip inserted.
5. Install the NAS1149F0563P washer on the hub and MS24665-302 cotter pin through the hub hole. Refer to Figure 2-3.

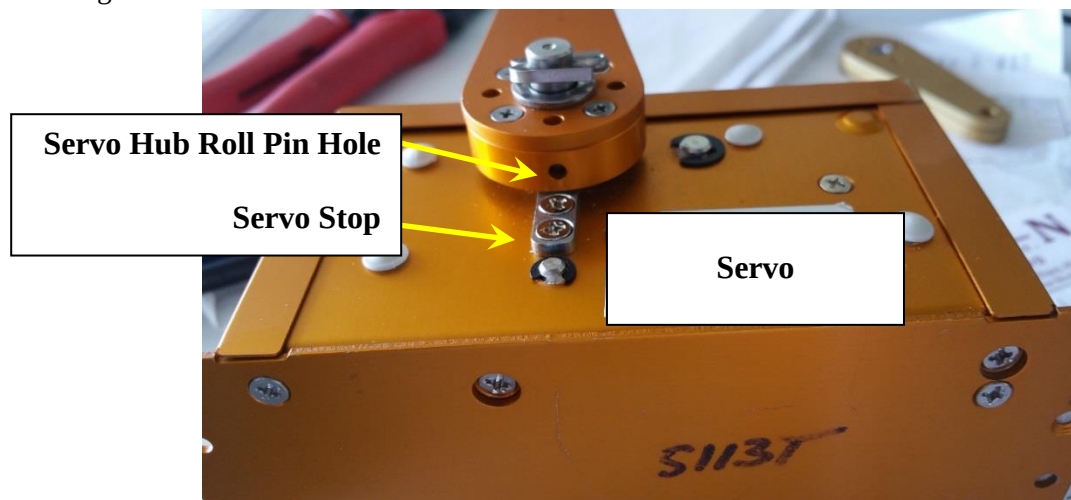


FIGURE 2-3 SERVO HUB ROLL PIN ALIGNMENT

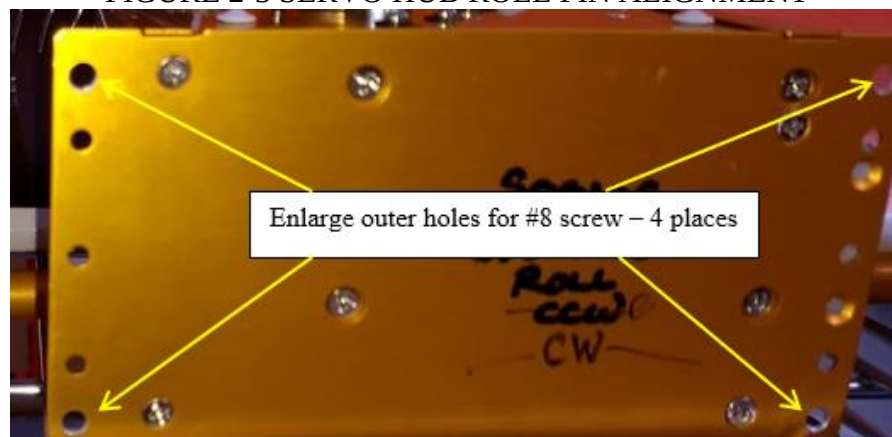


Figure 2-4 BASEPLATE HOLES TO BE ENLARGED FOR #8 SCREW



2.2 TRIO Auto Pilot Roll Servo Mount Installation

2.2.1 1006252 Roll Servo Angle Installation

1. Temporarily insert the servo arm bolt in the servo arm.
2. Temporarily assemble the two roll servo brackets with clamps and install the roll servo on the primary mounting bracket.
3. Dry fit the assembly in the wing to ensure that the aileron cable is approximately 0.25" – 0.375" forward of the top case of the servo and 0.25" – 0.375" under the roll servo arm.
4. Move the aileron through its full travel to ensure that the aileron cable will remain within the previous tolerance. The aileron cable will be parallel to the top case of the servo and under the roll servo arm.
5. Ensure the second from top pilot hole on the inboard mounting angle will be in the middle of the flap closeout. Refer to Figure 2-2. Alternatively, all pilot holes could be outside of the flap closeout as depicted in Figure 2-6.
6. Mark the positions of where the brackets will mount to the rib structures.

Note:

It may be necessary to trim the inboard side of the inboard mounting angle to have clearance with the nutplates on the outboard mounting plate.

7. Remove the roll assembly.

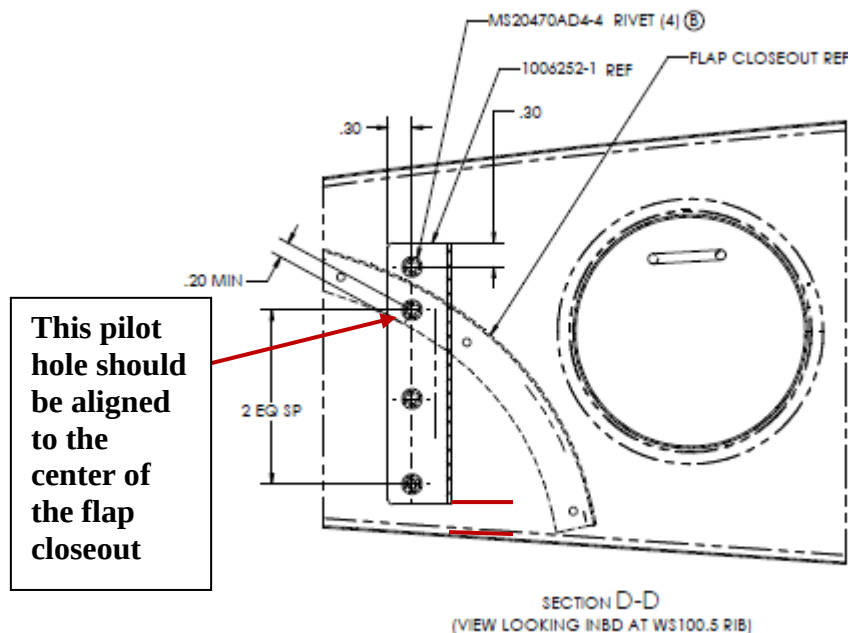


FIGURE 2-5 ROLL SERVO MOUNTING ANGLE INSTALLATION

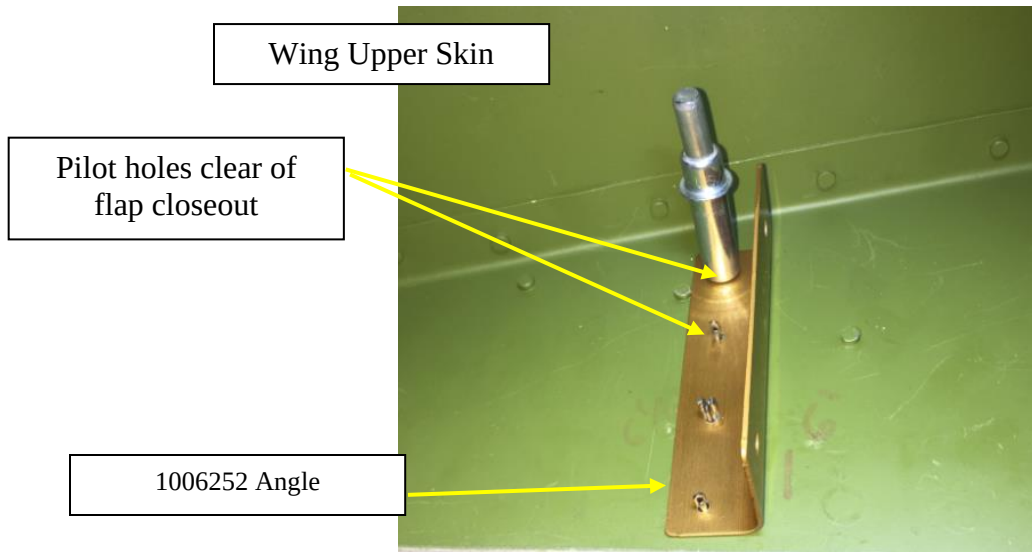


FIGURE 2-6 1006252 INBOARD MOUNTING ANGLE INSTALLATION

8. The 1006252 Angle on WS 100.5 rib is depicted in Figures 2-5, 2-6, 2-8, & 2-10.

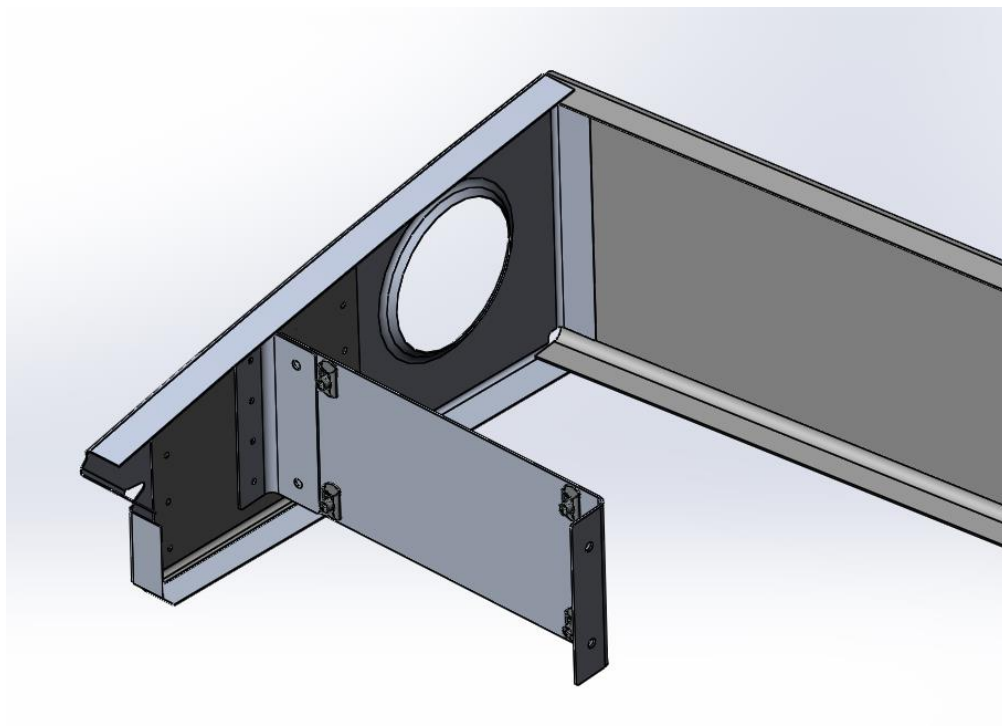


FIGURE 2-7 ANGLE AND MTG PLATE

9. Using the 1006252 angle as a drill locator, drill four (4) #40 holes through the Angle and WS 100.5 rib as depicted in Figure 2-5 or 2-6.
10. Secure the 1006252 Angle in position using 3/32" Silver P Series Cleco Temporary Fasteners. Refer to Figure 2-6.



11. Enlarge all holes using a #30, 0.1285", drill bit.
12. Remove the 1006252 Angle and deburr all four (4) angle and W.S. 100.5 holes.
13. Reposition the angle and secure it into position using 1/8" Copper P Series Temporary Cleco Fasteners.
14. Install four (4) MS20470AD4-4 rivets through W.S. 100.5 into the Angle at W.S. 100.5 rib. Refer to Figure 2-8.
15. It may be necessary to install a single Cherry 3213 into the upper hole.

Note:

If there is no access to the upper rivet or the wing was previously modified with flap gap seals, CR3213 Cherry Max rivets may be used in lieu of driven fasteners at all blind locations. Flap gap seals may be removed and reinstalled if driven rivets are desired.

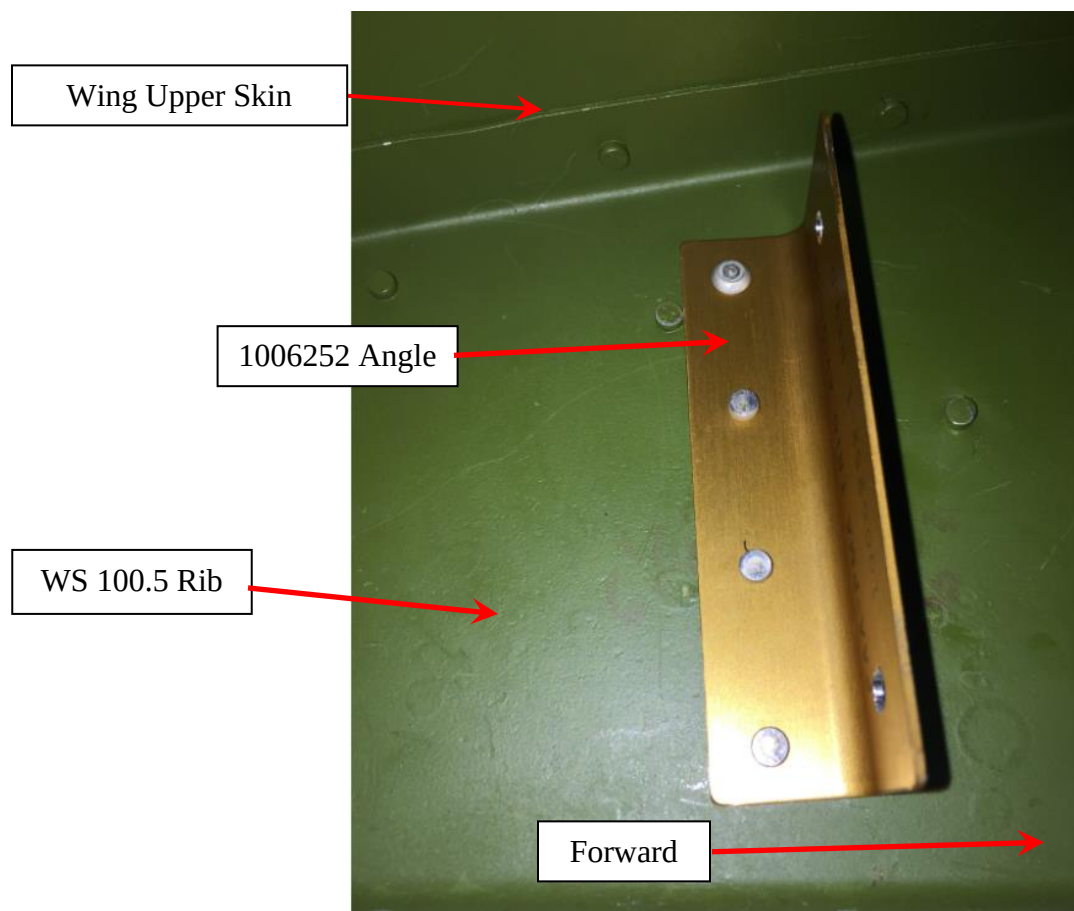


FIGURE 2-8 INBOARD ANGLE INSTALLATION AT WS 100.5



2.2.2 1006251 Mounting Plate - Roll Servo Installation

1. Position the 1006251 mounting plate and align the outboard flange of the plate with the previous markings on WS 108.0 rib as depicted in Figures 2-7, 2-9, & 2-11.

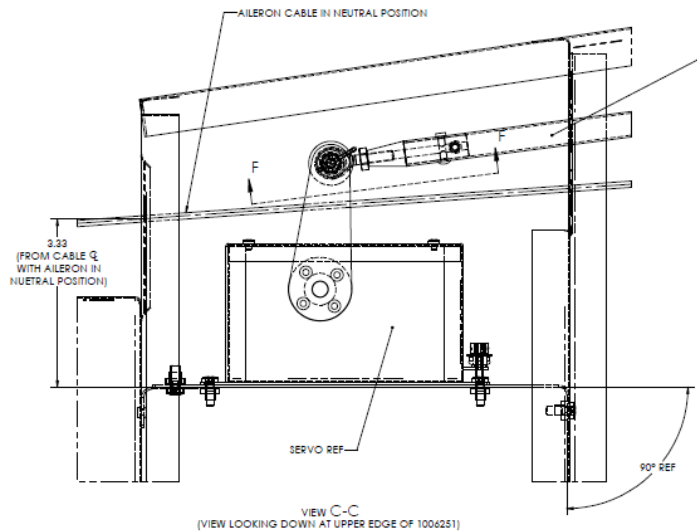


FIGURE 2-9 ROLL SERVO MOUNTING PLATE INSTALLATION

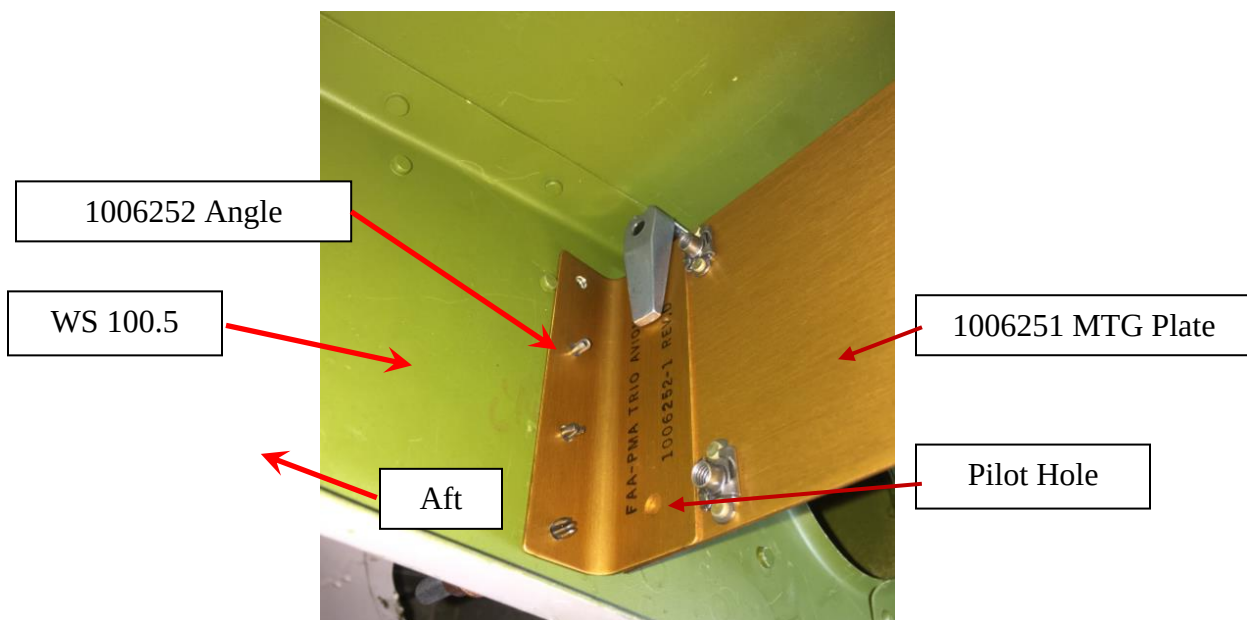


FIGURE 2-10 1006252 ANGLE AND 1006251 MOUNTING PLATE INSTALLATION

2. Verify the inboard and outboard ends of the 1006251 mounting plate line up with the inboard angle and markings on W.S. 108.0.

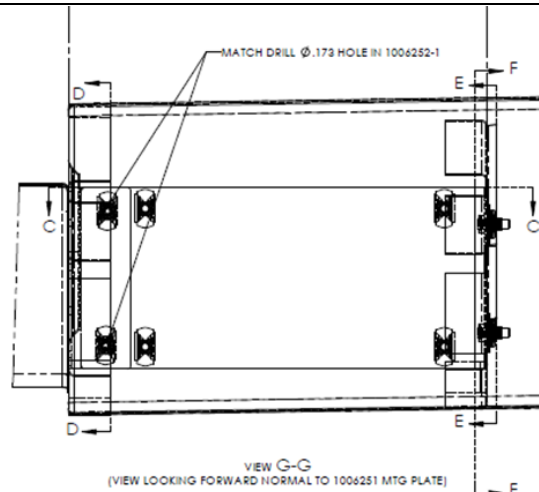


FIGURE 2-11 ROLL SERVO ANGLE TO MOUNTING PLATE ATTACHMENT

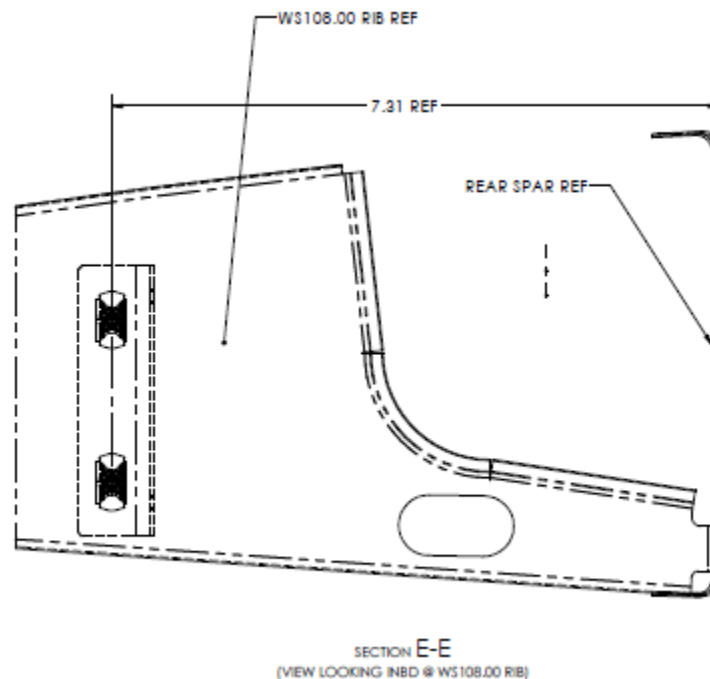


FIGURE 2-12 ROLL SERVO MOUNTING PLATE AT WS 108.0 INSTALLATION

3. Using the 1006252 angle holes as a guide use a center punch, or equivalent, to mark the hole locations into the W.S. 108.0 rib. Refer to Figure 2-7 & 2-11.

Note:

It may be necessary to add shims to PN 1006251 or W.S. 108.0 if certain Navomatic installations previously had mounting bolt/spacer indentations.

4. Remove the mounting plate and drill (2) #17 drill size holes at the marks using the three-step method. #40 (0.098"), #30 (0.1285"), and #17 (0.173") drill bits.



5. Secure the mounting plate to the angle using the appropriate clamps or as shown in Figure 2-10.

Note:

A drill press is preferred for this operation. Accuracy is critical for this step.

6. Center punch, or mark, through the 1006251 mounting plate holes to the angle piece. Refer to Figures 2-10 & 2-11.
7. Drill two (2) #40 (0.098") pilot holes.
8. Enlarge the holes using a #17 (0.173") drill bit.
9. Remove the servo mounting plate and deburr all drilled holes.
10. Install the roll servo to the mounting plate with the servo arm bolt inserted.

Note:

It is recommended to install the DB9 servo connector before the next step.

11. Reinstall the servo and mounting plate using the supplied hardware. Torque to 12 – 15 inch-pounds.

Note:

If your installation kit shipped with Push Pull Tube Assembly, P/N 1006231-1, complete the instructions in Appendix C.

12. Install the Trio Roll Servo and Push Pull tube assembly. Refer to Figures 2-13, 2-14, 2-15, & 2-16.
13. Optionally, apply torque seal to all jam nuts and screws after tightening. This applies to entire installation.
14. All bolts and nuts that retain the spherical rod ends should be set for the proper preload (backlash) before the cotter pins are installed.
15. With the ailerons locked into the neutral position the servo arm must face forward towards the rear wing spar web. Refer to Figure 2-13.
16. The MM-3 rod ends may be adjusted to precisely position the servo arm at 0.0 +/- 1 degree.
17. Servo arm position may be determined by powering ON the Trio Pro Pilot autopilot and entering the Maintenance Settings screen.
18. To enter Maintenance Settings, press and hold the Encoder knob and the VMODE button at the same time.
19. Scroll to the LNAV servo set screen. The servo arm position will be displayed.
20. Lateral navigation servo operation may be tested by pressing the HMODE button and engaging the HNAV servo.
21. To Exit the Maintenance Setting screens, press and hold the Encoder Knob for three (3) seconds or turn off the autopilot.

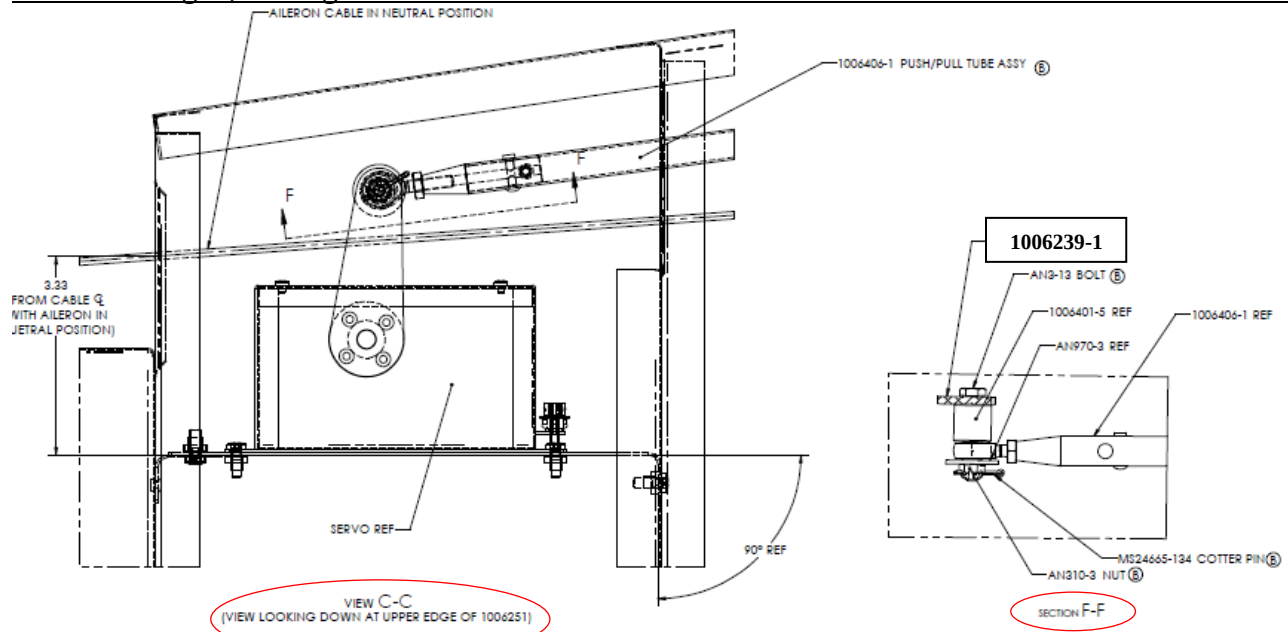


FIGURE 2-13 ROLL SERVO AND PUSH-PULL TUBE INSTALLATION

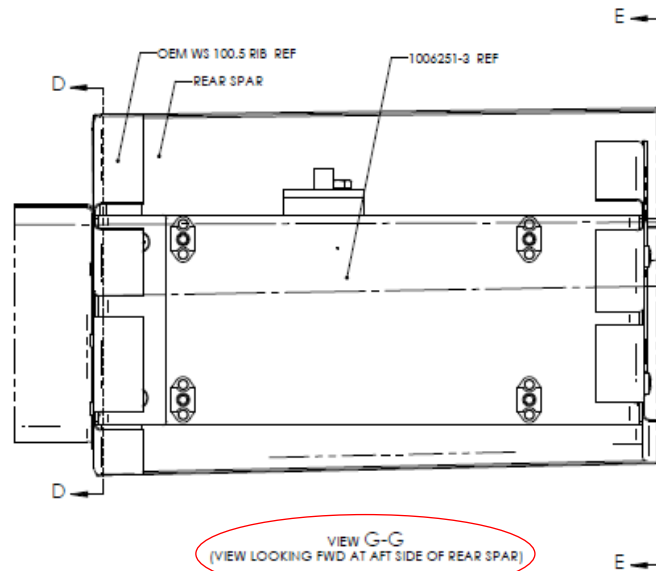


FIGURE 2-14 ROLL SERVO INSTALLATION ON MOUNTING PLATE

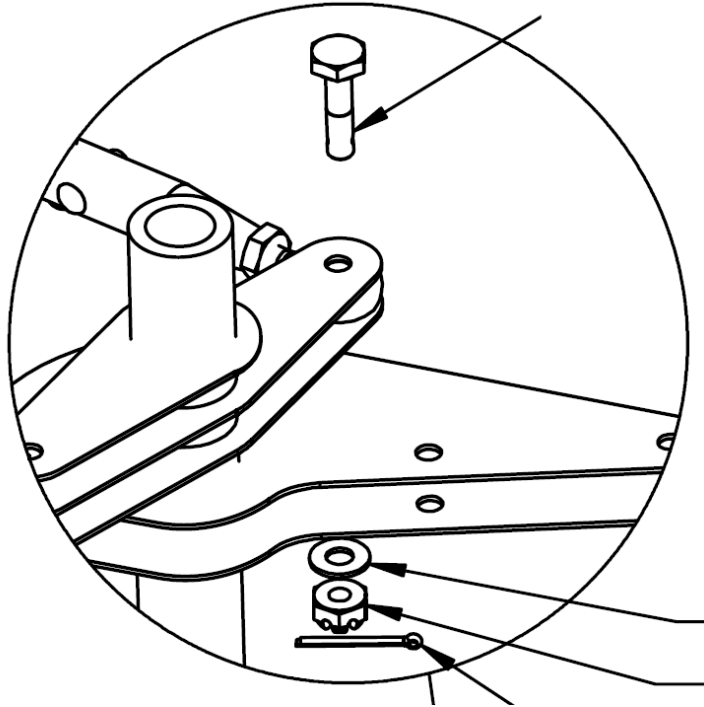


FIGURE 2-15 PUSH-PULL TUBE ASSEMBLY – AILERON BELLCRANK

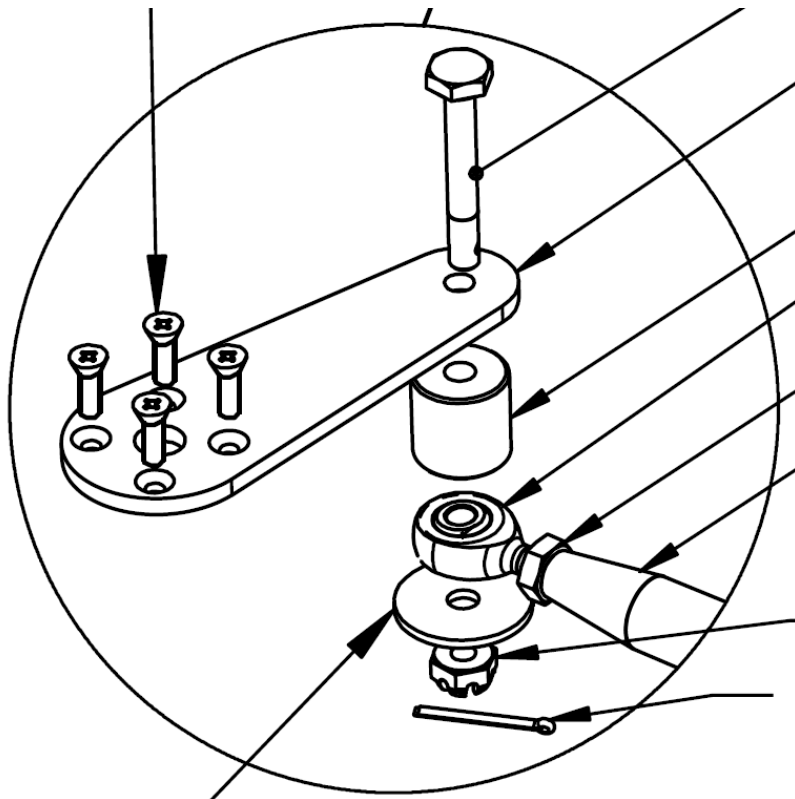


FIGURE 2-16 PUSH-PULL TUBE ASSEMBLY – SERVO ARM



3.0 TRIO PITCH SERVO INSTALLATION

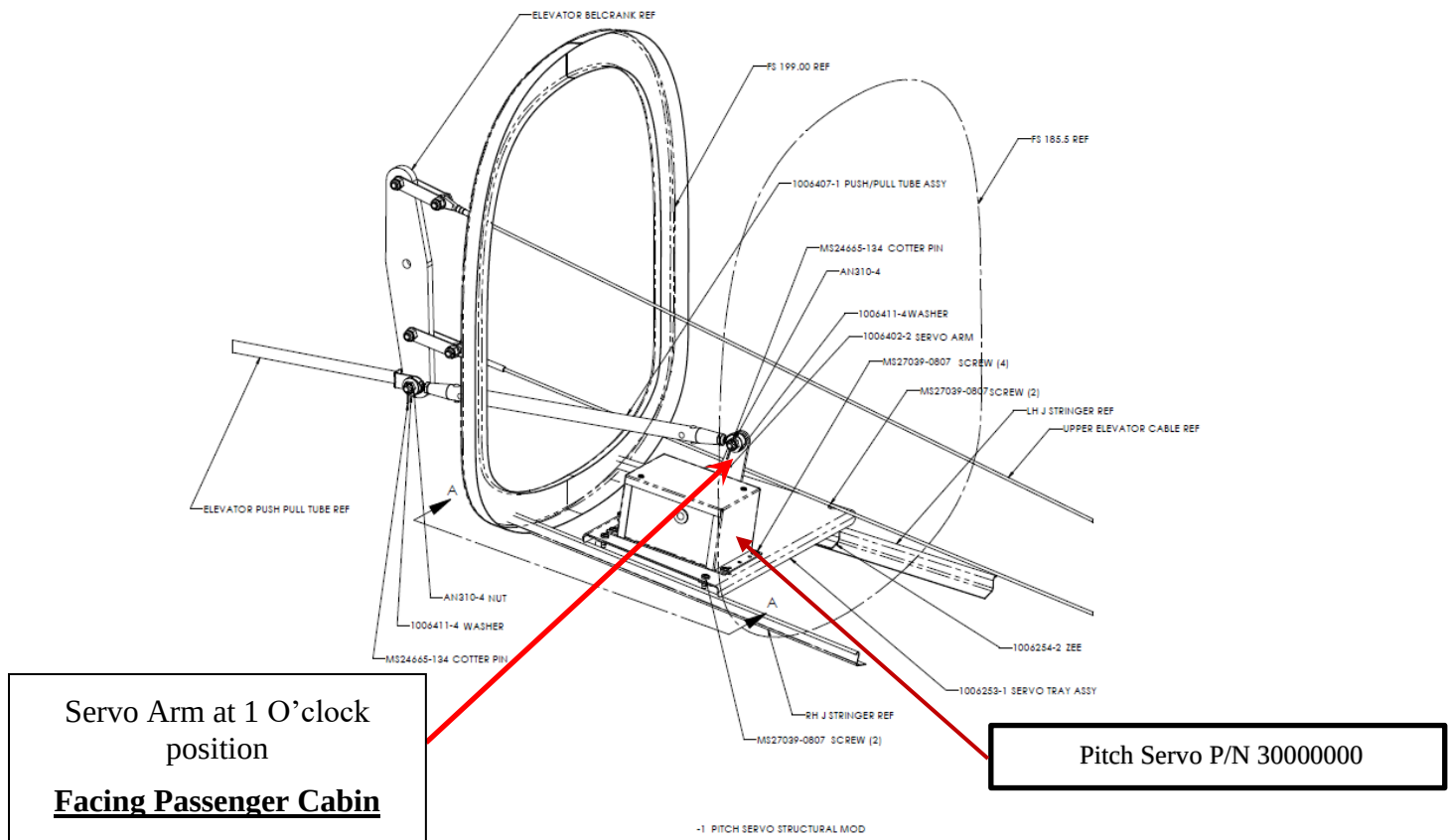


FIGURE 3-1 TRIO PRO PILOT PITCH SERVO INSTALLATION

NOTE:

The following aircraft serial numbers utilize a 1006402-9 servo arm:

182R/T182: 18267302, 18267716 through 18268586

R182/TR182: R18200975, R18201629 through R18202041

182S/182T/T182T: All Serial Numbers

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 / -9 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.



3.1 Pitch Servo Mount Installation

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.

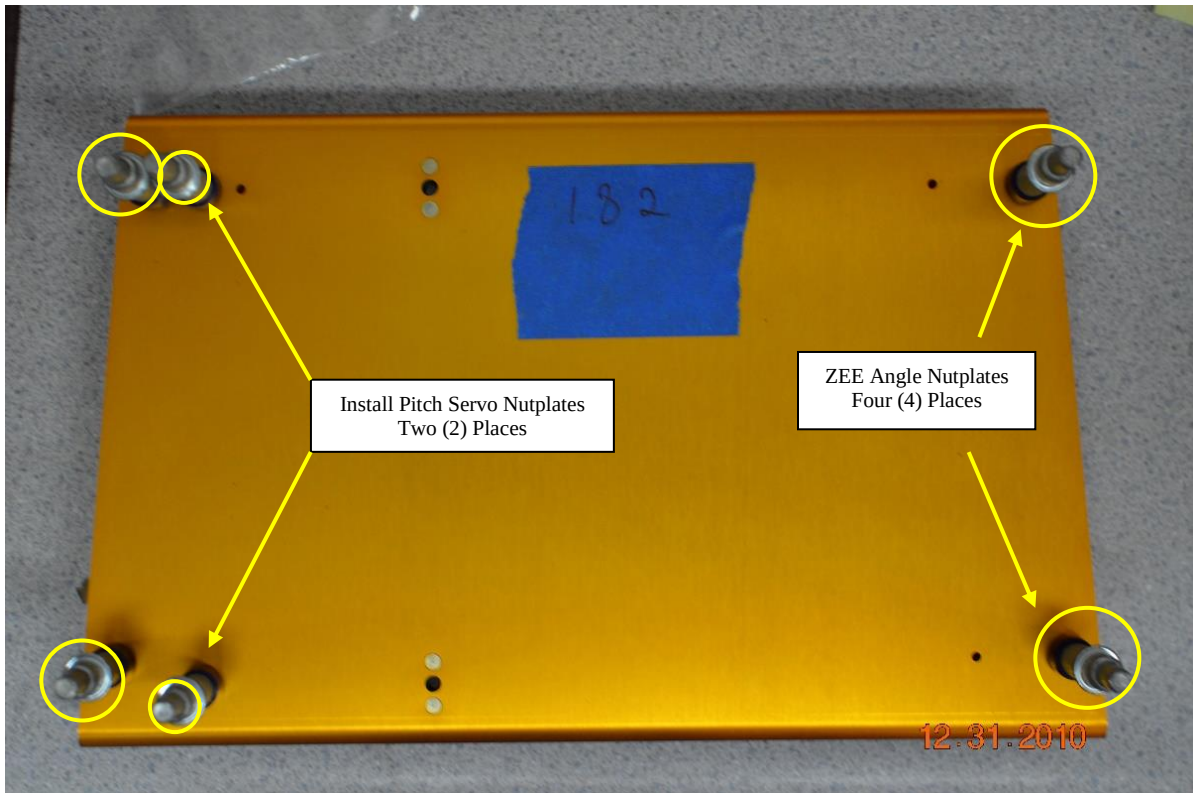


Figure 3-2 PITCH SERVO TRAY ASSEMBLED

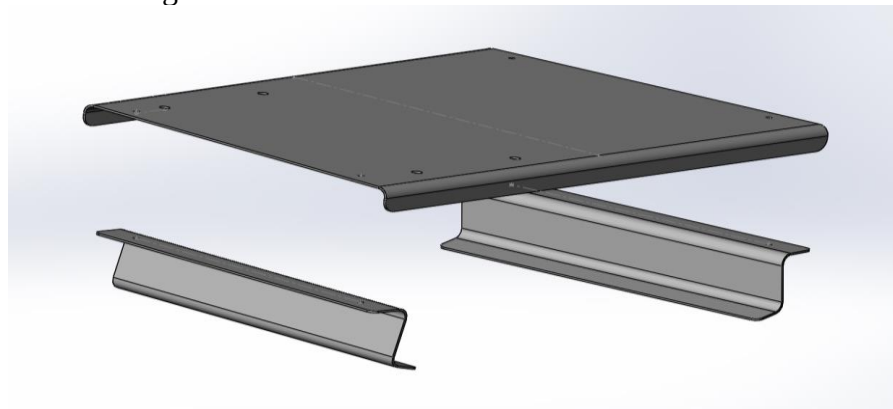


FIGURE 3-3 PITCH SERVO TRAY ASSEMBLY

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.

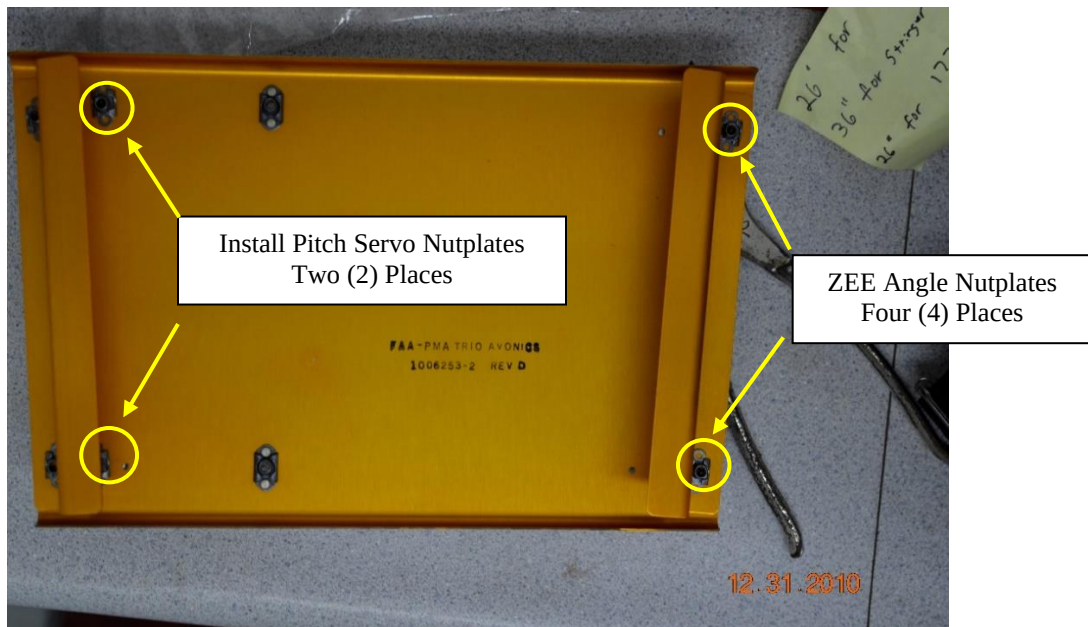


FIGURE 3-4 ZEE ANGLE POSITION



FIGURE 3-5 PITCH SERVO NUPLATE INSTALLATION

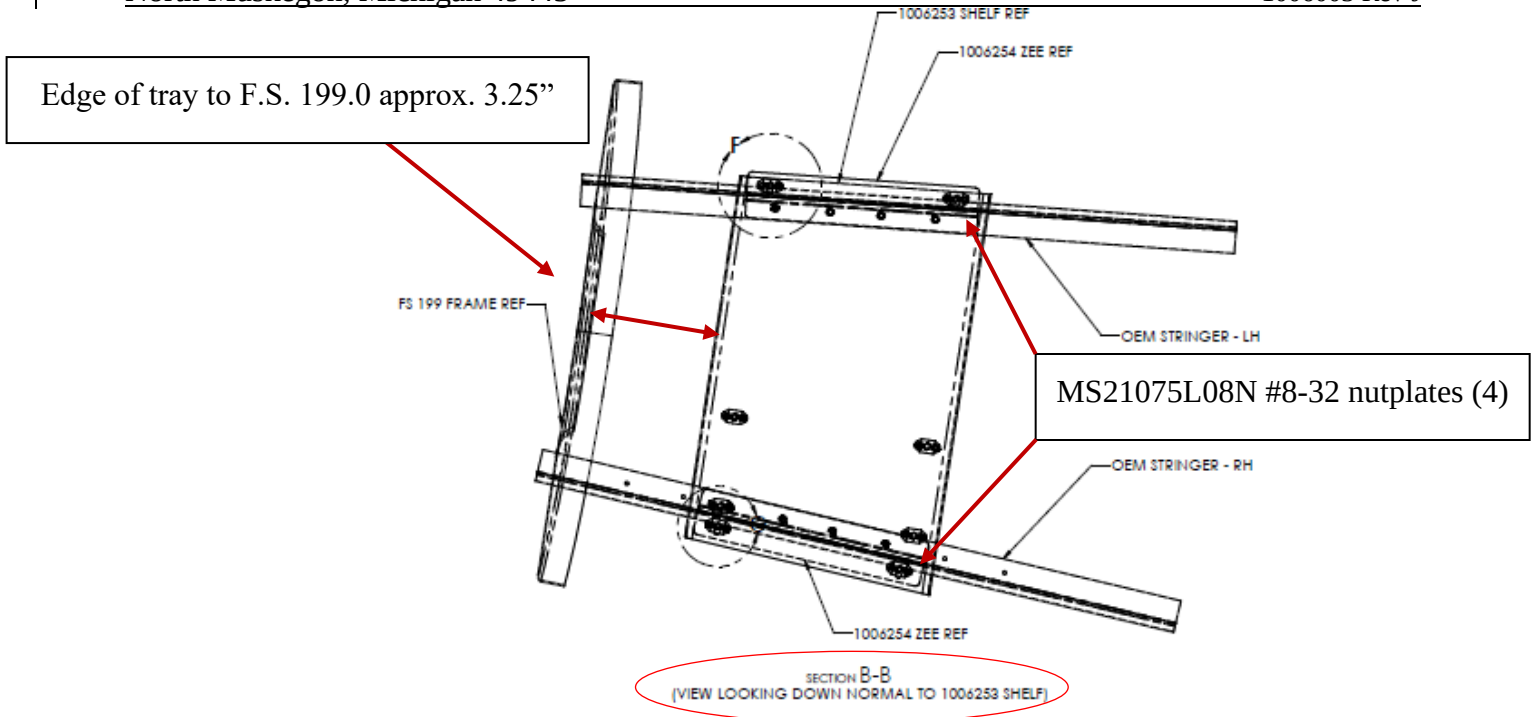


FIGURE 3-6 PITCH SERVO TRAY INSTALLATION

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

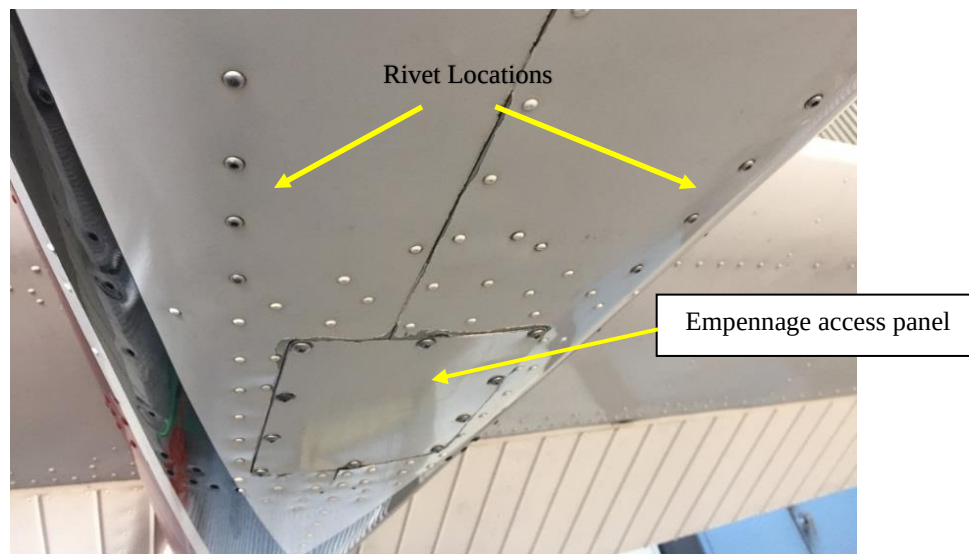


FIGURE 3-7 ACCESS PANEL SCREWS AND ZEE ANGLE RIVET LOCATIONS



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.

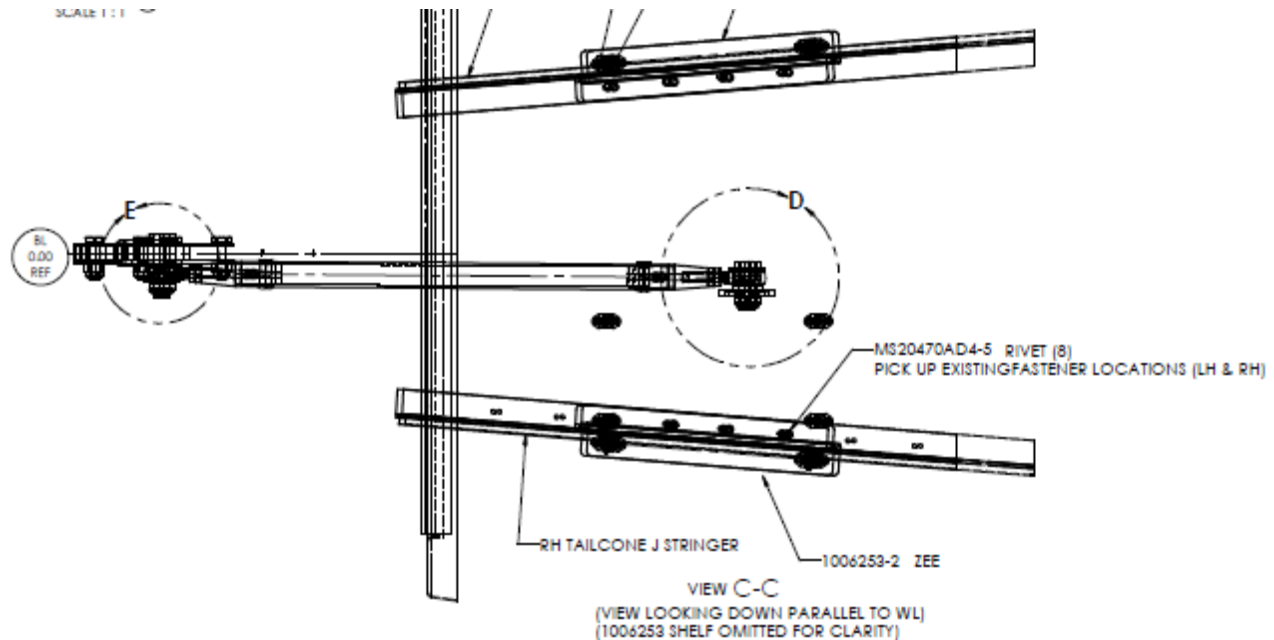


FIGURE 3-8 ZEE ANGLE LAYOUT

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

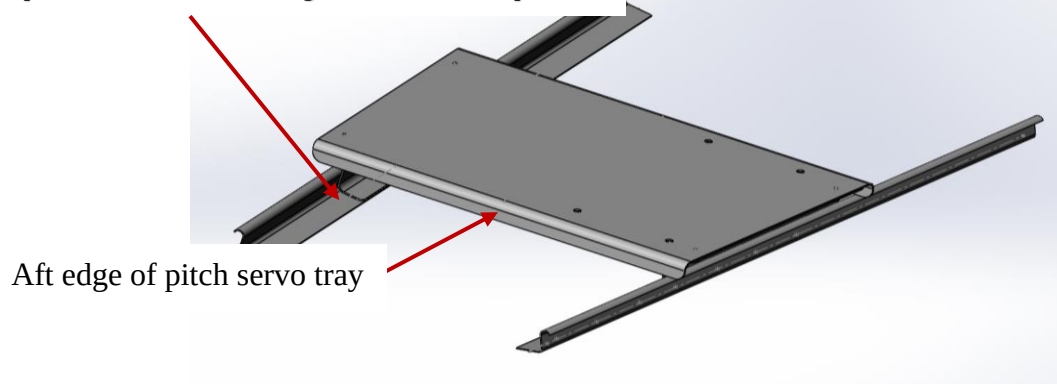


FIGURE 3-9 PITCH SERVO SHELF ASSEMBLY POSITIONING



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.

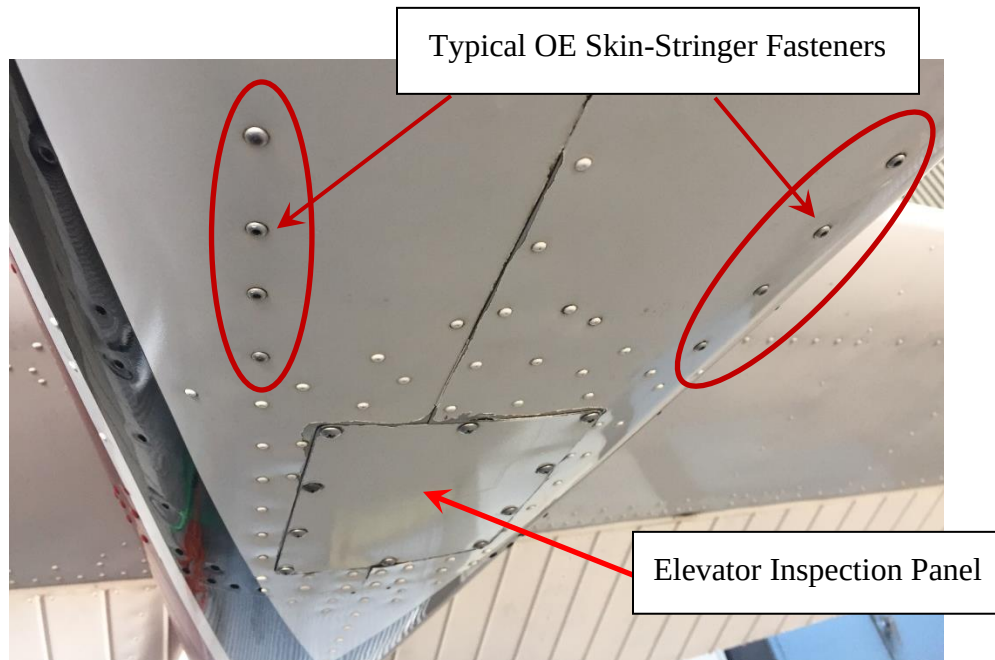


FIGURE 3-10 ZEE ANGLE RIVET LOCATIONS

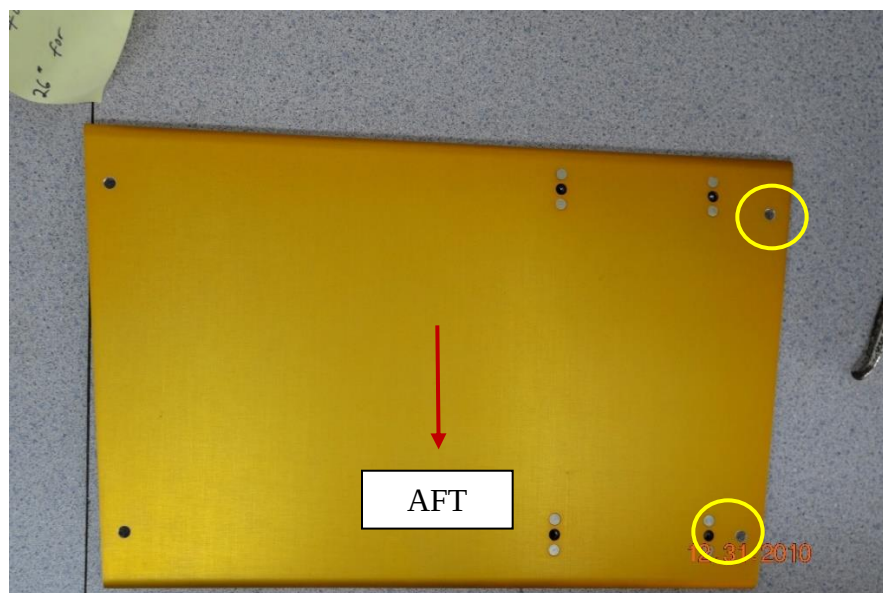


FIGURE 3-11 COMPLETED PITCH SERVO MOUNTING TRAY



3.2 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.

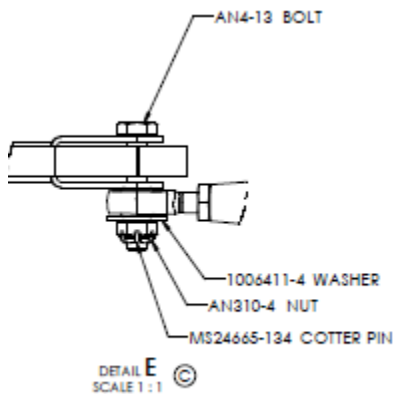


FIGURE 3-12 BELLCRANK INSTALLATION

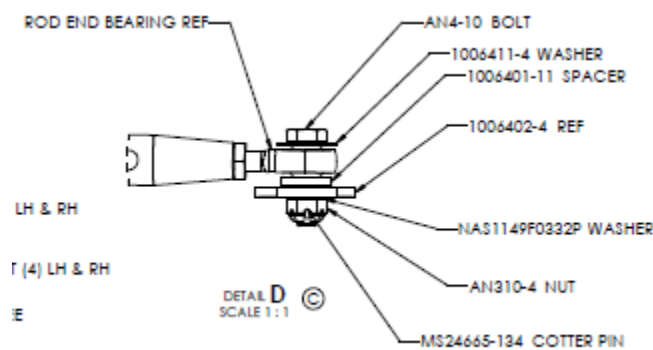


FIGURE 3-13 SERVO SIDE INSTALLATION

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.



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10. With the elevators locked into the neutral position the servo arm, P/N 1006402-4 / -6 / -9 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.

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.:
 - a. Tygon tubing. 2 each x 24” pieces. Aircraft Spruce P/N 05-00944, or equivalent.
 - b. Nylo Seal fittings. 2 each. Aircraft Spruce P/N 264-N04.
 - c. Nylo Seal Inserts. 8 each. Aircraft Spruce P/N 259-N04.



- d. 1/4" constant pressure clamp or equivalent. 2 each.
9. 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.
10. Mate the pitot and static hoses to the control head.
11. Apply constant pressure clamps to secure pitot and static connections at the rear of the autopilot controller.
12. Mate the 37 pin D connector to the control head using the screws provided.
13. If using an Instrument mount control head secure the control head using #6 brass instrument screws.
14. 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.
15. 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.
16. Install the controller using best practices in either panel or hole locations. Refer to AC 43-13 for this step and all following steps.
17. Utilize Trio DWG 413000XX and Appendix B for the following steps.
18. Install supplied 5 ampere circuit breaker within easy reach of the pilot and label.
19. If a Panel Mount unit is installed the supplied power switch and label.
20. Terminate supplied DB37 connector per Trio drawing in Step 3.
21. Terminate wiring with aircraft GPS or handheld.
22. If ARINC 429 is available from GPS terminate ARINC 429 connections.
23. Install the supplied PCS button on the left side of the pilots control yoke and label PCS.
24. Install Recover button in an available convenient location within easy reach of the pilot and label AP Recover.
25. Ensure that the analog alarm out is connected to the un-switched audio input on the Audio Panel.
26. 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 will require fine tuning of servo gains on the first few flight checks.
4. The Avionics Addendum may be downloaded at www.thestcgroupllc.com/documents.

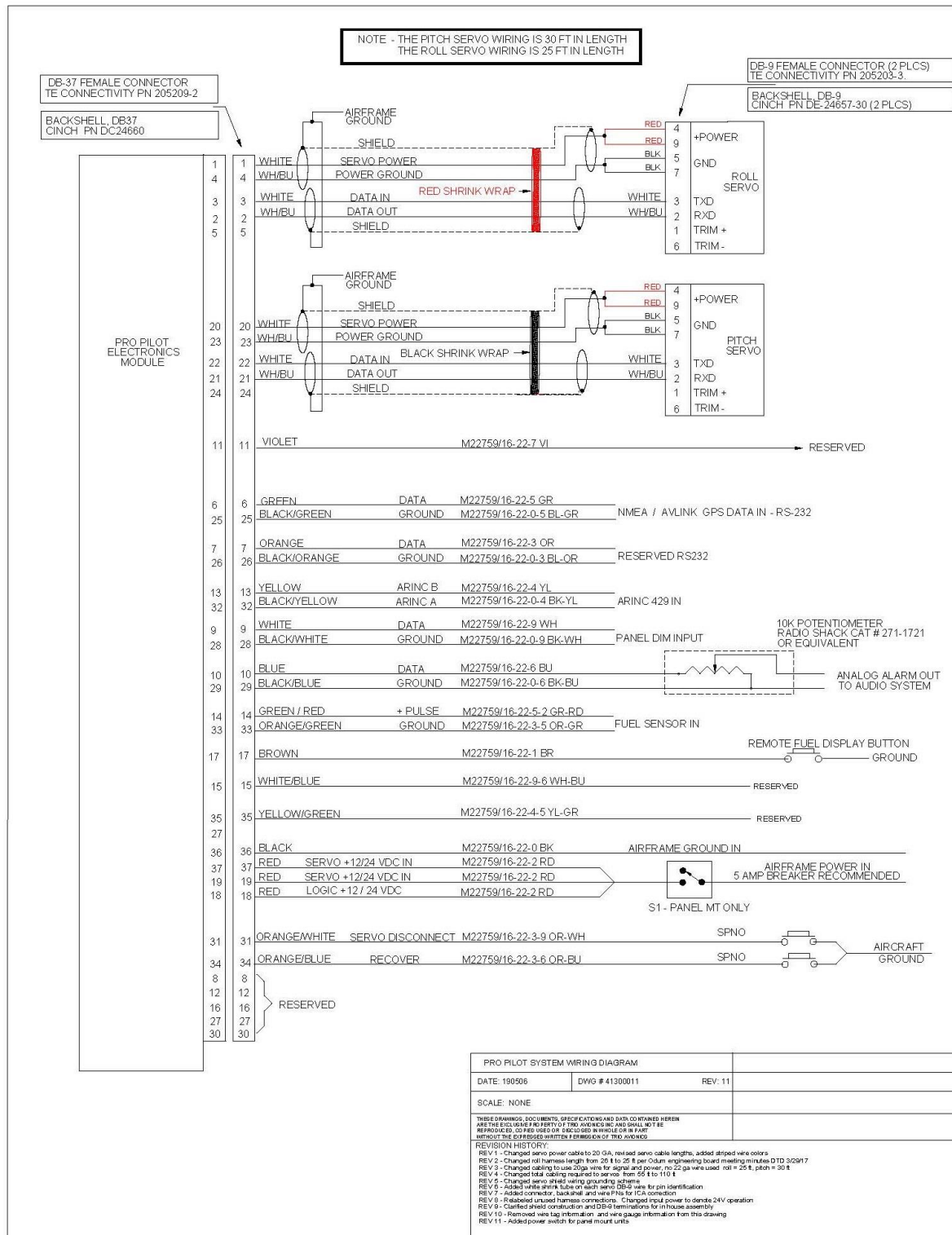


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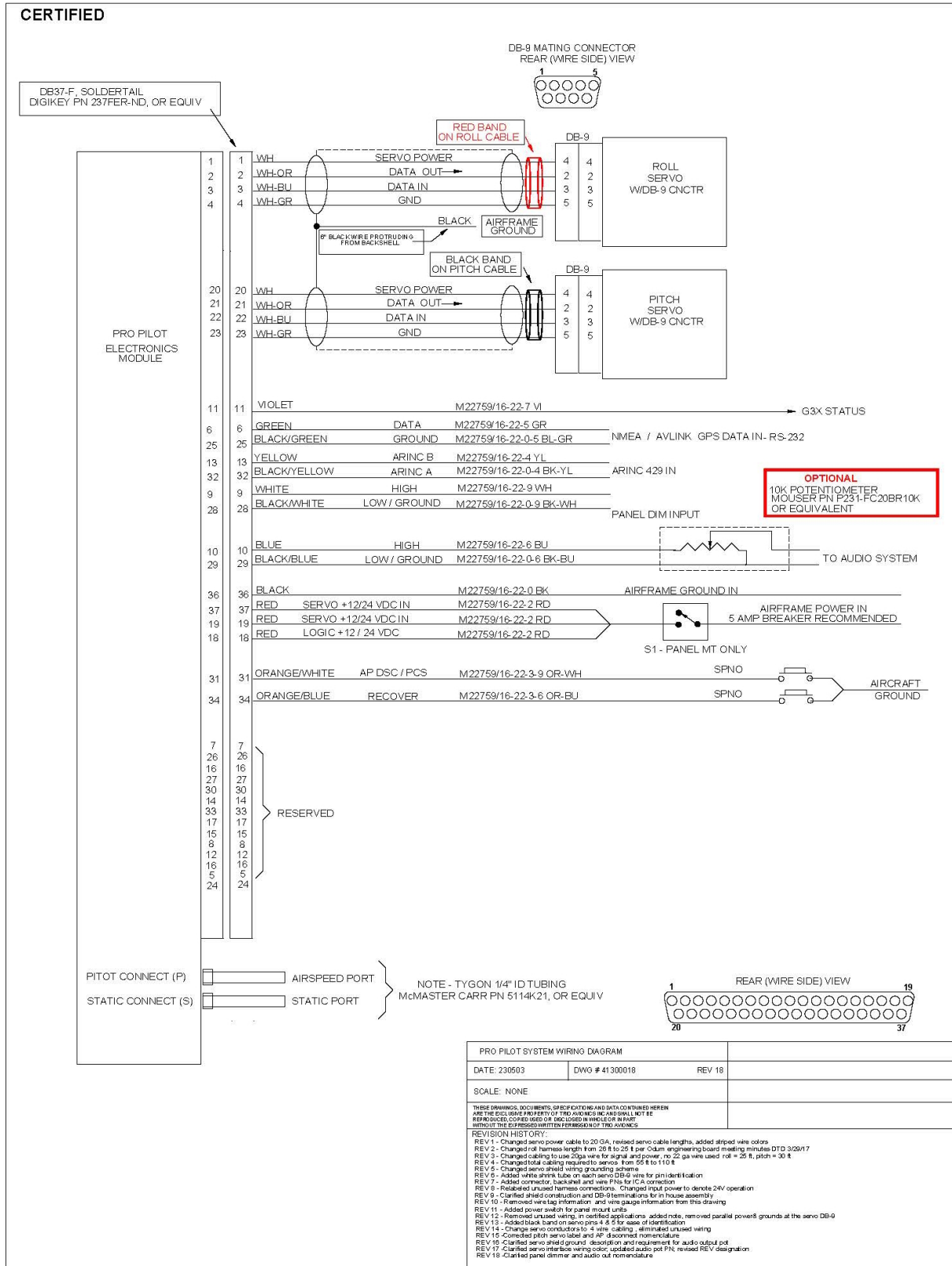
APPENDIX B – TRIO PRO PILOT WIRING DIAGRAM

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.

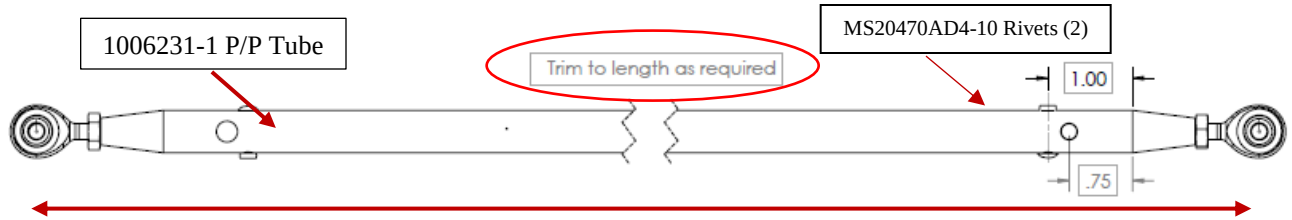


FIGURE 0-1 PUSH PULL TUBE MODIFICATION

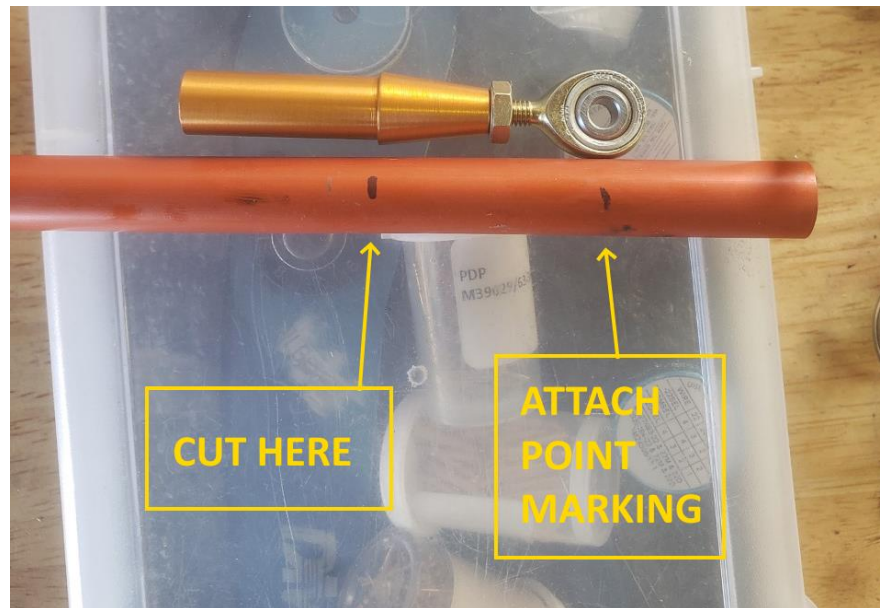


FIGURE 0-2 PUSH PULL TUBE TRIMMING



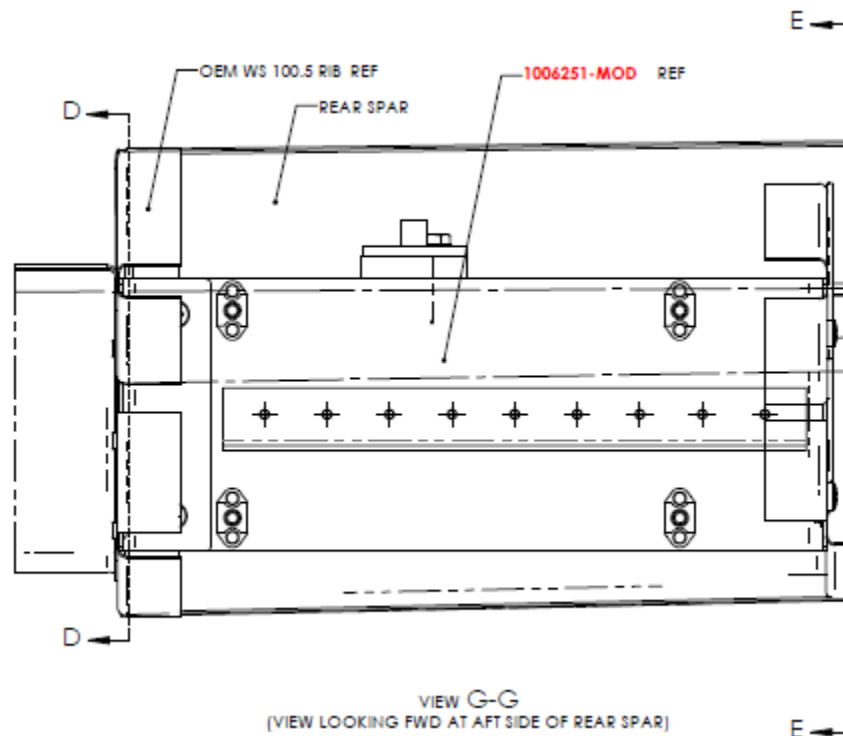
APPENDIX D – ROLL SERVO MOD KIT P/N 1006201-MOD

Note:

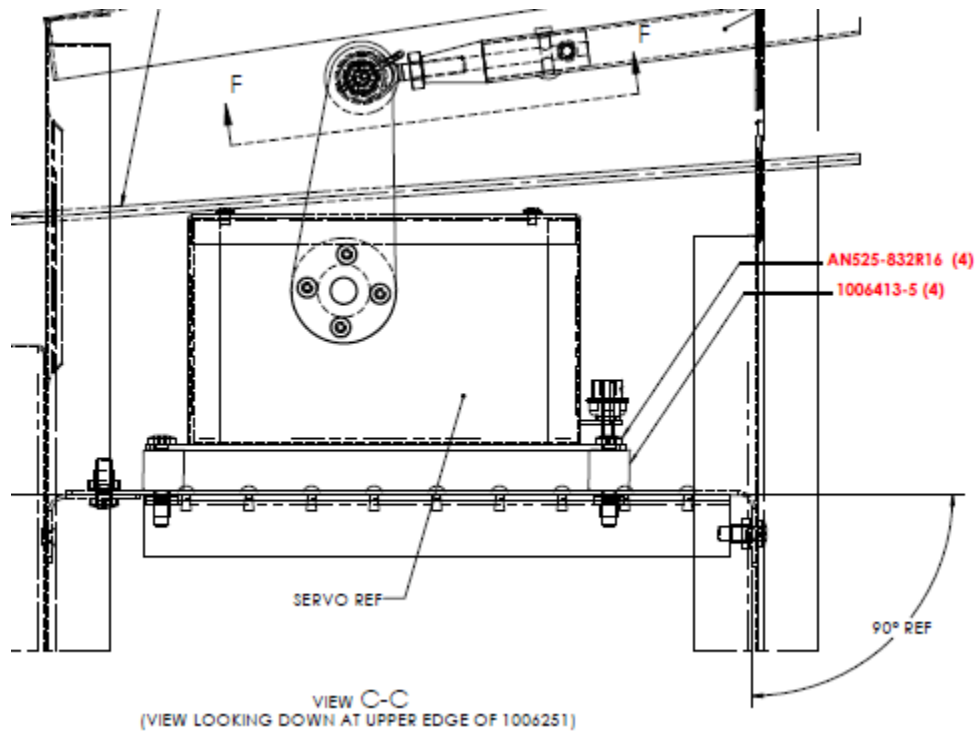
The STC Group LLC has found that on “certain” aircraft installation of a shorter servo arm, P/N 1006239-1, improves overall servo performance in the roll axis.

These instructions detail the installation of a MOD-Kit.

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.
3. Remove the roll servo inspection panel at W.S. 100.8.
4. Remove the servo push pull tube from the servo arm.
5. Remove the roll servo mounting plate assembly from the aircraft.
6. Remove the Trio roll servo from the servo mounting plate, P/N 1006251.
7. Install the angle stiffener, P/N 1006243-7 onto the mounting plate. Refer to View G-G.



8. Install the Trio roll servo using the MOD-Kit hardware supplied. Refer to View C-C.



9. Install the mounting plate and roll servo back into the aircraft
10. Attach the roll servo push pull tube using the original hardware and new cotter pins supplied. Refer to View C-C.
11. Loosen the roll servo push pull tube jam nut.
12. Power on the Trio Pro Pilot autopilot controller.
13. Enter the Maintenance Settings.
14. Using the Encoder knob advance to the LNAV Servo Set screen.
15. Adjust the roll servo push pull tube rod end so the LNAV Servo Set reading is at, or near 0.00°.
16. Tighten the push pull tube rod end jam nut and mark with torque seal.
17. Install the inspection plate.

END