

Introduction

This manual provides instructions for installing SkyView Autopilot servos and bracketry in the following Mooney aircraft:

- M20C-F with 1.5in diameter pitch/yaw pushrods with tapered ends

Information about wiring autopilot servos to the SkyView Network is provided in the *SkyView System Installation Manual*; procedures to calibrate autopilot servos and Instructions for Continued Airworthiness (ICA) are provided in the *SkyView General Maintenance Manual* document at dynoncertified.com/docs.

This document is released, archived, and controlled according to the Dynon's document control process. To revise this document, a letter is submitted to the FAA with the revision. The FAA then accepts and approves any revision to the Airworthiness Limitations section. After FAA acceptance/approval, Dynon posts the revised document for customer use at dynoncertified.com/docs, and STC owners and installers are notified of the new revision via an official Dynon Marketing email release.

Dynon does not provide a printed version of this document. However, Dynon grants permission to third parties to print this document, as necessary. It is important to use the most recent version when installing SkyView autopilot components. The most recent PDF version is available for download at dynoncertified.com/docs.

This manual is intended for FAA-certified Airframe and Powerplant Technicians. It assumes technicians have the typical aircraft knowledge and training required to perform the procedures in this manual.

All mechanical drawings included in this manual are for reference purposes only. They should not be scaled or copied and used as templates or patterns.

All dimensions are in inches.

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AUTOPILOT SERVO INSTALLATION MANUAL

Mooney M20C-F with 1.5in tapered pushrods

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Document Revision History

| REV | DATE | CHANGE DESCRIPTION |
|-----|------------|--|
| A | 08/13/2025 | Initial Release |
| B | 10/23/2025 | Changed roll pushrod initial set length and rod attachment from inside hole to middle hole on servo arm. Added nylon washer to aft pitch/yaw hardware stacks that attach clearance brackets to bellcranks. Added additional detail views and expanded some views to new sheets to give more clarity. |
| C | 11/20/2025 | Revised 504309-003 tray depiction on sheets 7-9. |
| D | 03/02/2026 | Revised the note on sheet 2 about installation compatibility to be more clear and detailed. |

Dynon Referenced Documents

- 103261-000 - SkyView System Installation Manual
- 103221-000 - SkyView General Maintenance Manual
- 103272-000 - SkyView Airplane Flight Manual Supplement
- 103777-000 - SkyView Equipment Installation Record

Visit dynoncertified.com/docs to download the latest revision from the Dynon website.

Important Note Regarding Installation Compatibility

Before purchasing or installing the Dynon Mooney M20C-F Autopilot Kit, verify the aircraft's installation compatibility. This kit is only compatible with M20s equipped with 1.5-inch diameter tapered pushrod ends. It is not compatible with M20s equipped with 1.0-inch diameter straight pushrod ends. To confirm aircraft configuration, visually inspect the tail control pushrod tubes. This is typically accomplished via the access port on the pilot's side at the wing root. If the aircraft has incompatible 1.0-inch diameter straight pushrod ends, please contact Dynon for more information.

Compatible



Contact Dynon



Airworthiness Limitations

For any Airworthiness Limitations associated with installing SkyView autopilot servos, see the *SkyView General Maintenance Manual* document at dynoncertified.com/docs. It is the principal ICA document for the SkyView system.

Basic Control and Operation

Operating instructions and control descriptions are found in the *SkyView Airplane Flight Manual Supplement* document at dynoncertified.com/docs. Operating limitations for the SkyView Autopilot are also found in the *SkyView Airplane Flight Manual Supplement* document.

Product Delivery and Registration

Upon delivery, visually inspect all SkyView Autopilot components, brackets, fasteners, cable harnesses, and accessories for damage and loss that may have occurred during shipping (see Materials on Sheet 10). If loss or damage has occurred, contact Dynon Technical Support.

Register SkyView Autopilot components at dynoncertified.com/register. Product registration verifies ownership, expedites warranty claims, and allows Dynon to send notification when product Service Bulletins and Technical Advisories are published. This site also allows owners and installers to register to receive news and product announcements from Dynon.

Installation Compliance

If the airplane receiving the installation has been modified, it may be difficult to use the information in this manual to completely substantiate the installation in compliance with this STC. **Therefore, it is the installer's responsibility to make the final determination of applicability for each individual airplane.**

Prior to completing the installation, and before returning the airplane to service, the installer must complete and submit a completed Form FAA 337 - Major Repair & Alteration (Airframe, Powerplant, Propeller, or Appliance) to the appropriate FAA Aircraft Registration Branch. The form must include the following:

- Description of the autopilot servo installation.
- Description of how the autopilot servos interface with existing equipment and systems.
- Appropriately approved or acceptable data that demonstrates compliance.

Refer to AC 43.9-1G - Instructions for Completion of FAA Form 337 for additional information.

Important Installation Information

Always install avionics equipment in accordance with the instructions in this manual and the guidance and approved engineering methods outlined the following FAA documents:

- AC 23.1311-1C - Installation of Electronic Display in Part 23 Airplanes
- AC 43.13-1B - Acceptable Methods, Techniques, and Practices - Aircraft Inspection
- AC 43.13-2B - Acceptable Methods, Techniques, and Practices - Aircraft Alterations

The instructions in this manual assume the aircraft areas affected by the autopilot servo installation are unmodified from the factory-delivered configuration.

The technician who will authorize the airplane's return to service should agree with the installation plan (i.e., methods, component locations, wiring harness routing, etc.) before installation activities begin. This will help avoid potential rework should any part of the installation be found non-compliant. The technician performing the installation should record where the autopilot components are installed in the airplane. This information should then be entered into airplane's permanent record, including any weight and balance calculation changes. Dynon provides a document template to record this information. Download the *SkyView Equipment Installation Record* document at dynoncertified.com/docs.

Ensure the following before and during installation activities:

- Make sure all flight control bellcranks are lubricated in accordance with manufacturer's instructions.
- Remove any previously installed autopilot equipment, including rivets and other hardware, that may interfere with the new servo installation.
- Remove any non-essential insulation or interior materials that may interfere with the servo installation.
- Always disconnect aircraft battery before starting installation activities.
- Always deburr drilled holes.
- Unless otherwise noted, torque fasteners per the following table. Measure the fastener prevailing torque. If the prevailing torque is 1/3 or greater of the minimum recommended torque, add it to the recommended torque, do not exceed maximum noted torque.

| THREAD | TORQUE (IN-LBS) | MAX TORQUE (IN-LBS) |
|-----------|-----------------|---------------------|
| 6-32 UNC | 6-8 | 12 |
| 8-32 UNC | 12-15 | 20 |
| 10-32 UNF | 20-25 | 40 |

The following non-typical tools are needed to complete the installation:

- Drill fixture for MS21047L08 nutplates,
- Calibrated tensiometer for 1/16" diameter control cable

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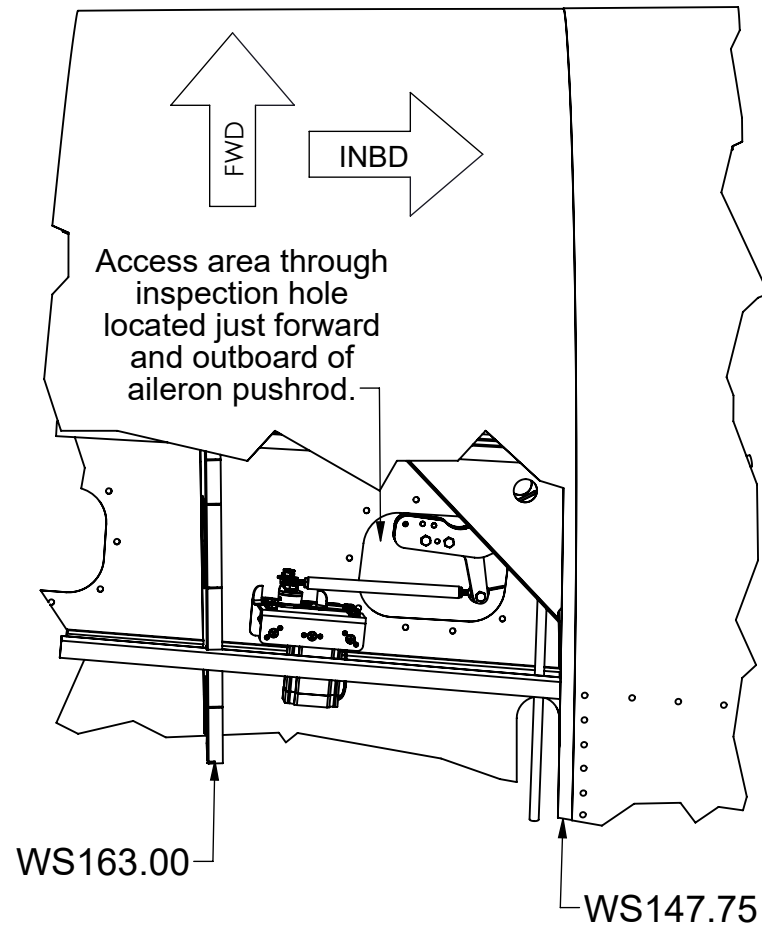
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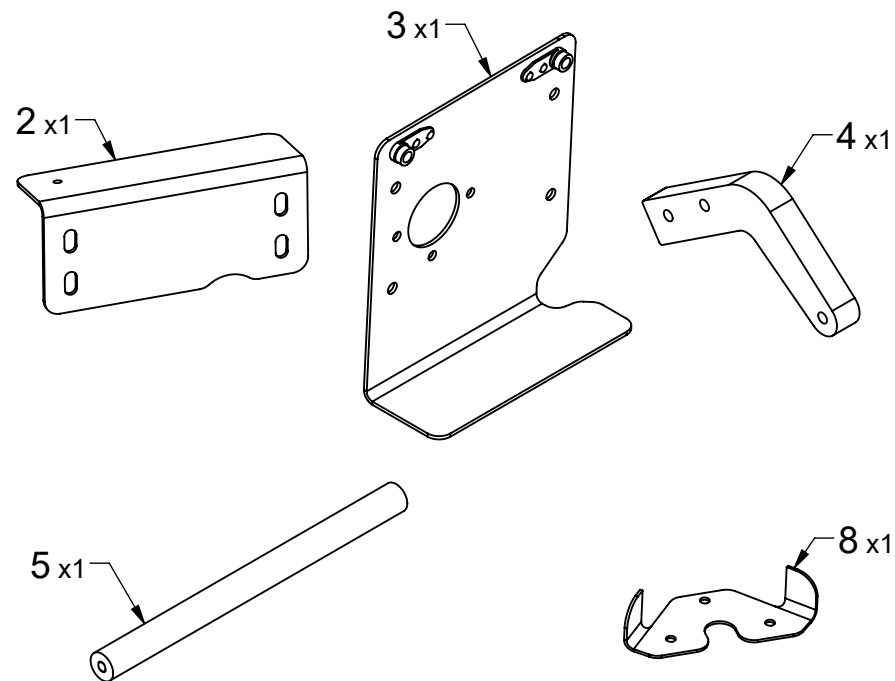
Mooney M20C-F with 1.5in tapered pushrods

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Roll Servo Installation



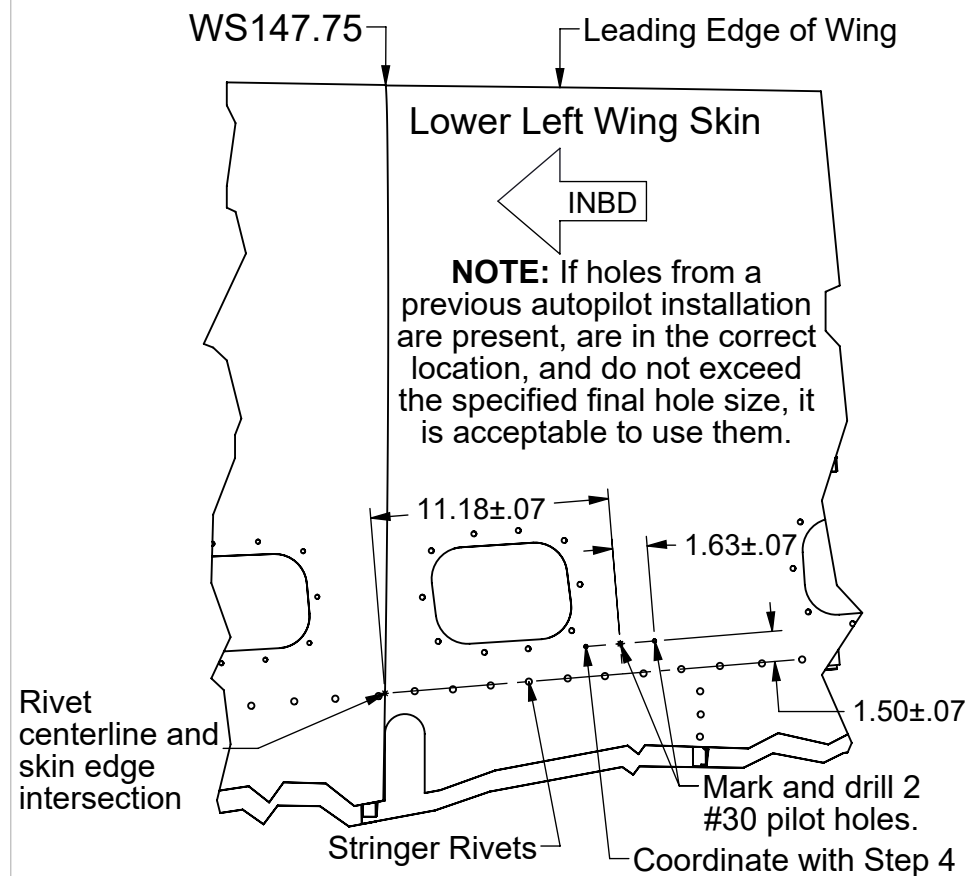
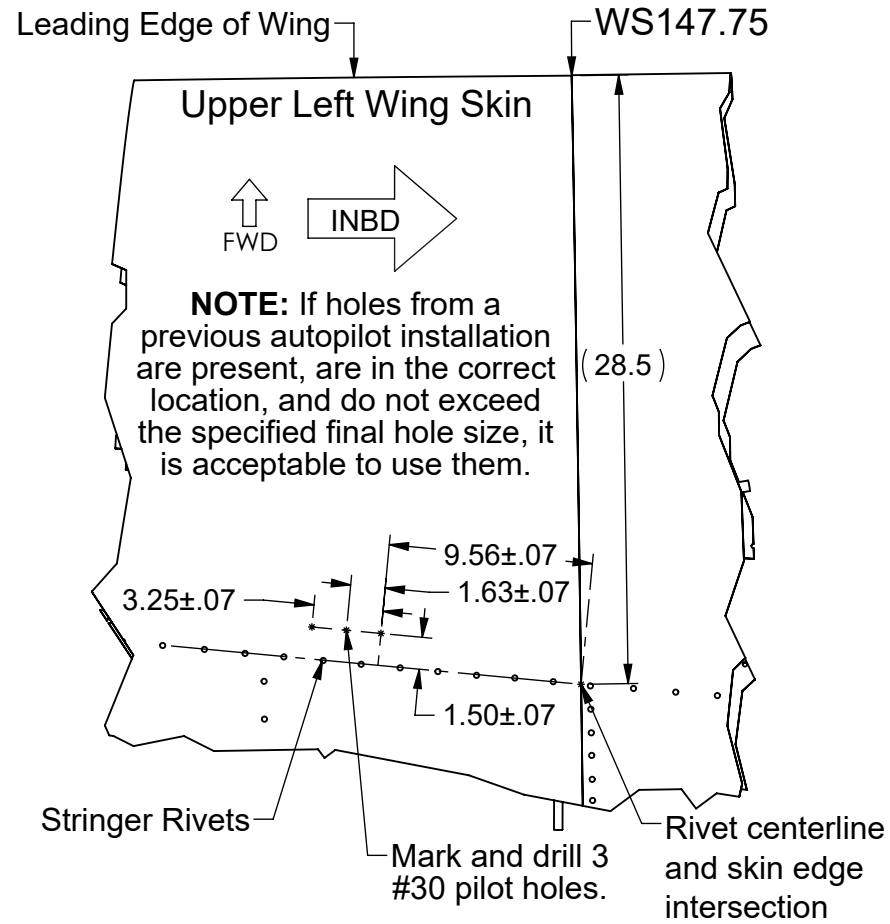
Roll Servo Complete Installation



Roll Servo Assembly Parts

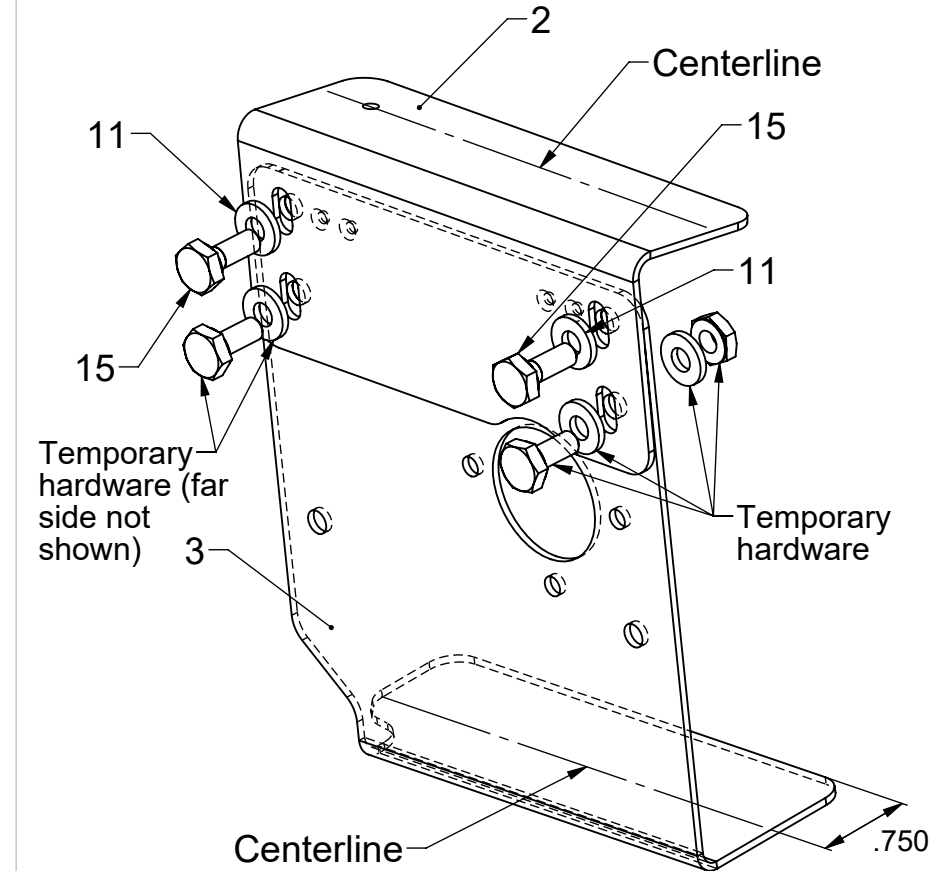
STEP 1: Secure ailerons in center of travel.

STEP 2: Measure, mark, and drill pilot holes in upper and lower wing skins.



STEP 3: Prepare brackets for installation:

- A. Assemble brackets as shown below. Place additional hardware through lower slots and holes to ensure holes do not get blocked by upper bracket during fitment of bracket assembly in wing. Do not fully tighten hardware at this time. Ensure bracket faces are contacting but can slide vertically.
- B. Mark a centerline on the top of upper roll bracket using pre-drilled pilot hole as reference.
- C. Mark a centerline on the bottom of lower roll bracket 0.75" from outside edge.



| ITEM # | DESCRIPTION |
|--------|--|
| 2 | ROLL SERVO UPPER BRACKET |
| 3 | ROLL SERVO LOWER BRACKET |
| 4 | ROLL SERVO BELLCRANK ARM |
| 5 | ROLL SERVO PUSHROD |
| 8 | SERVO ARM LIMITING BRACKET |
| 11 | FLAT WASHER #10 (AN960-10/NAS1149F0363P) |
| 15 | HEX BOLT #10-32 (AN3-4A) |



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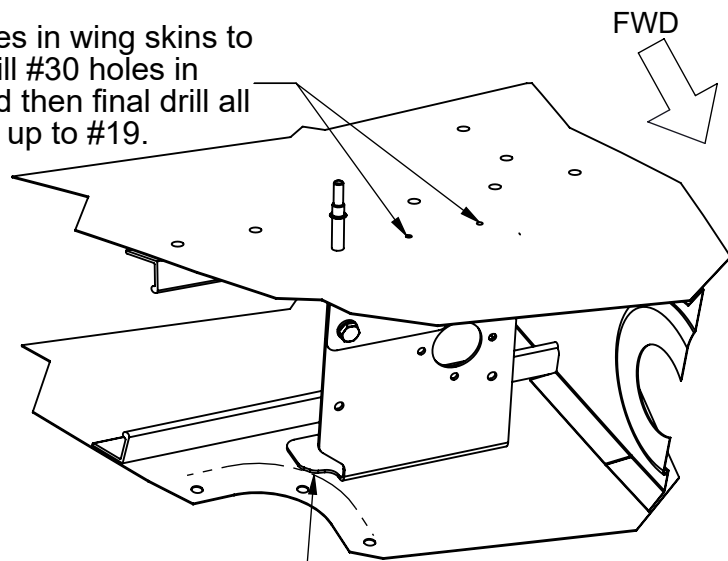
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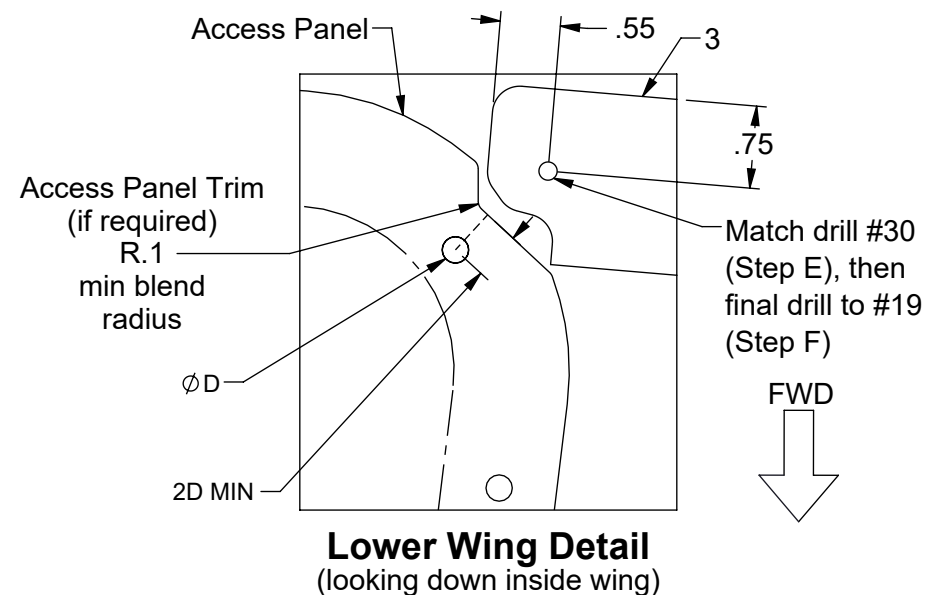
STEP 4: Position bracket assembly in wing:

- Insert bracket assembly in wing and slide upper bracket as needed so bracket assembly contacts upper and lower wing skins.
- Temporarily fasten bracket using pre-drilled hole in upper bracket and align centerlines on brackets through pilot holes in wing skins.
- Clamp bottom bracket to wing skin.
- Use pilot holes in wing skins to match drill #30 holes in upper and lower brackets.
- Locate inboard hole on lower bracket as shown below. Match drill #30 hole through bracket and skin.
- Using temporary fasteners as needed, final drill all holes up to #19.
- Tighten upper bracket hardware, and then mark position of upper bracket on lower bracket.
- If required, trim access panel as shown.

Use pilot holes in wing skins to match drill #30 holes in brackets, and then final drill all holes up to #19.

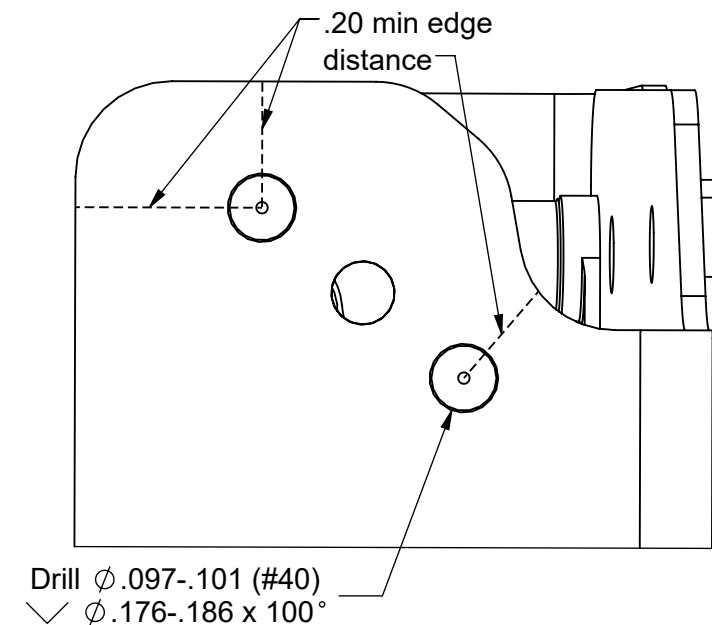
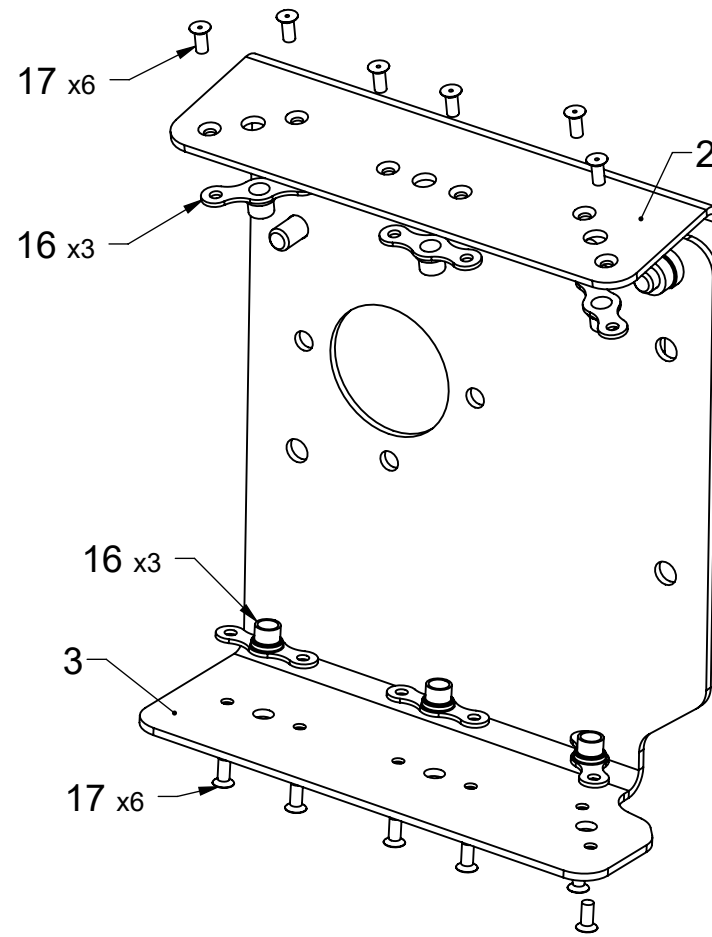


NOTE: Check access panel fit. If required, trim panel to ensure clearance to bracket as shown.



STEP 5: Attach nutplates to upper and lower brackets:

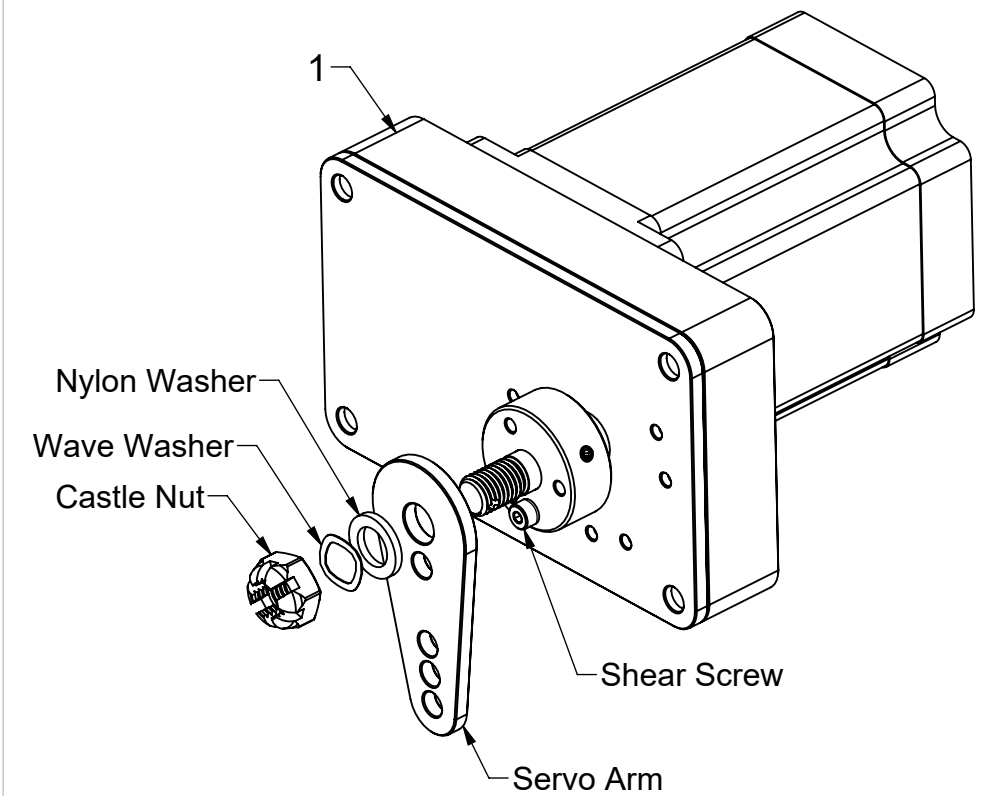
- Remove bracket assembly from aircraft.
- Use a #8 nut plate drill fixture to drill nut plate rivet holes thru upper and lower brackets only. Drill #40 drill size as shown, ensure nut plate rivet minimum edge distance as shown, orientation not critical.
- Counter sink nut plate rivet holes as shown.
- Install nut plates using Item 17 as shown.



Typical Nutplate Rivet Installation

STEP 6: Temporarily remove servo arm from roll servo.

IMPORTANT: *DO NOT* remove shear screw from servo disc!



| ITEM # | DESCRIPTION |
|--------|-------------------------------------|
| 1 | ROLL SERVO |
| 2 | ROLL SERVO UPPER BRACKET |
| 3 | ROLL SERVO LOWER BRACKET |
| 16 | NUTPLATE #8-32 (MS21047L08) |
| 17 | RIVET 3/16"L, 3/32"D (MS20426AD3-3) |



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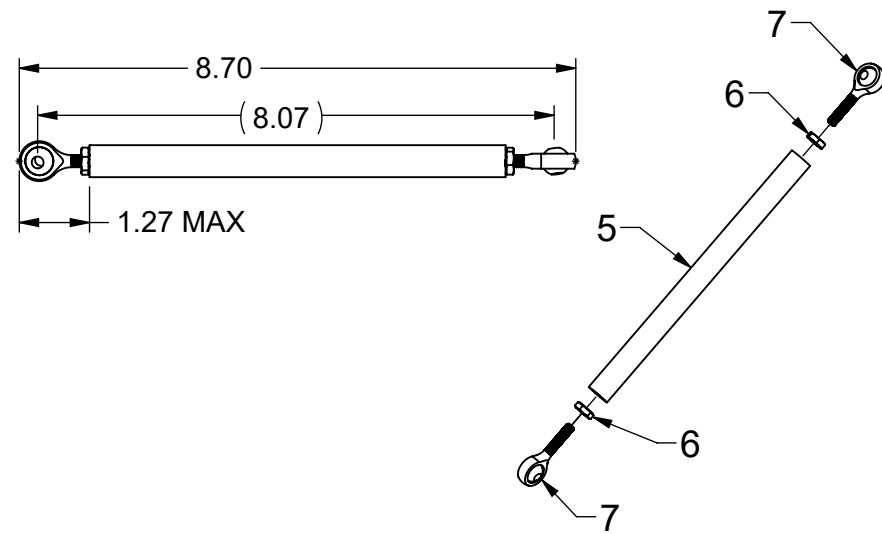
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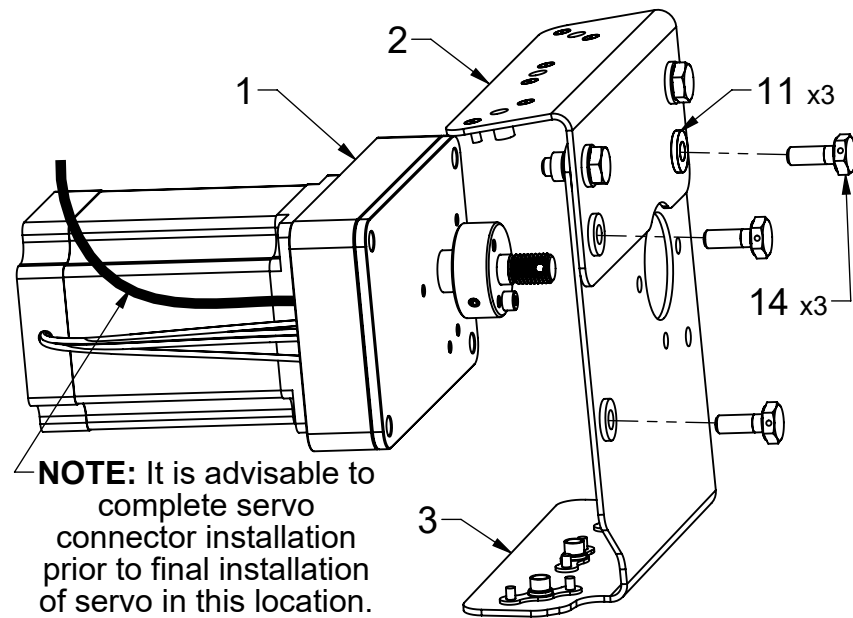
Mooney M20C-F with 1.5in tapered pushrods

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STEP 7: Assemble roll servo pushrod and set to length.



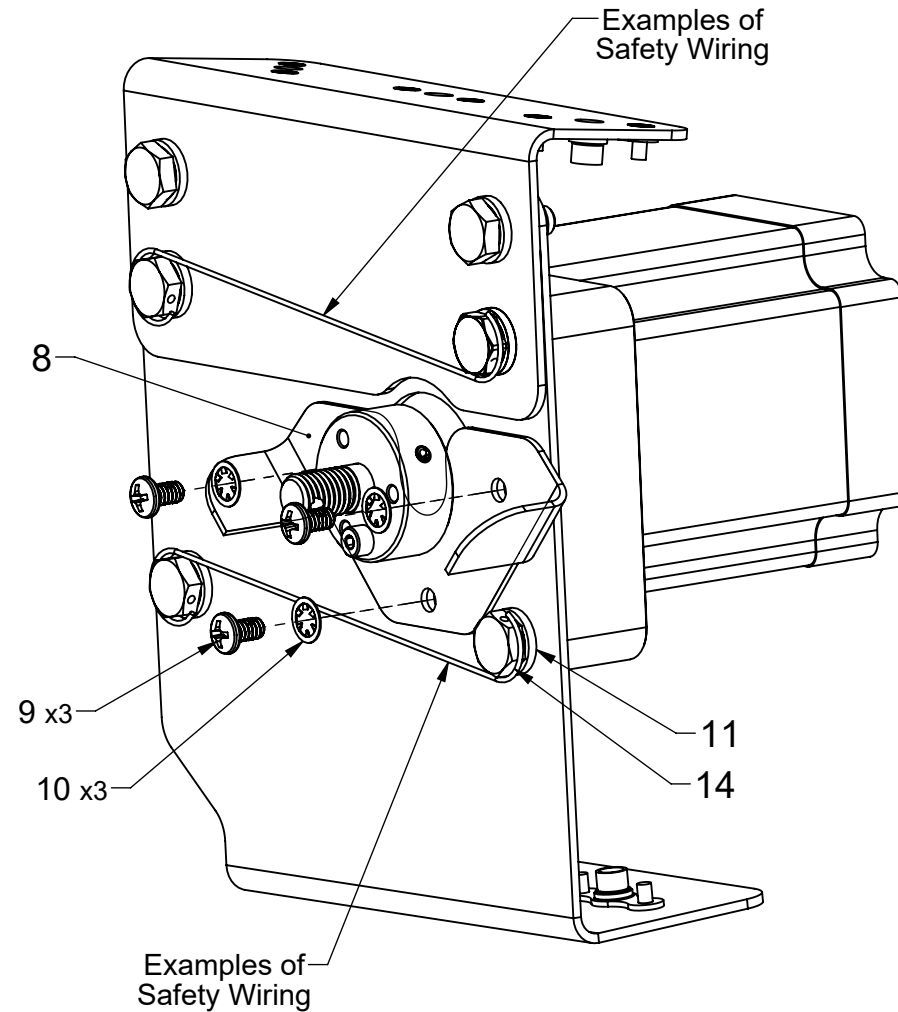
STEP 8: Attach roll servo to bracket assembly.



NOTE: It is advisable to complete servo connector installation prior to final installation of servo in this location.

STEP 9: Complete servo/bracket assembly:

- A. Attach servo arm limiter to roll servo.
- B. Install fourth servo bolt.
- C. Use 0.032" wire to safety wire servo bolts.



| ITEM # | DESCRIPTION |
|--------|---|
| 1 | ROLL SERVO |
| 2 | ROLL SERVO UPPER BRACKET |
| 3 | ROLL SERVO LOWER BRACKET |
| 5 | ROLL SERVO PUSHROD |
| 6 | JAM NUT #10-32 |
| 7 | BEARING ROD END #10-32RH, MALE |
| 8 | SERVO ARM LIMITING BRACKET |
| 9 | PHIL PAN HEAD SCREW #6-32, 1/4"L, NYLOCK |
| 10 | INT STAR LOCK WASHER #6 (MS535333-37P) |
| 11 | FLAT WASHER #10 (AN960-10/NAS1149F0363P) |
| 14 | HEX BOLT #10-32, 17/32"L, 1/8"G, DRILL HEAD |



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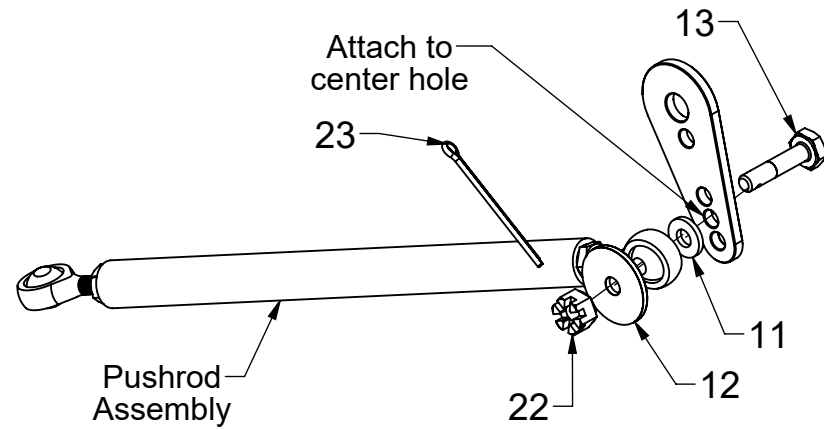
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Mooney M20C-F with 1.5in tapered pushrods

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STEP 10: Attach roll servo pushrod assembly to servo arm.

IMPORTANT: It is critical to an airworthy installation to insert the hex bolt through the middle hole in the servo arm and in the direction shown.

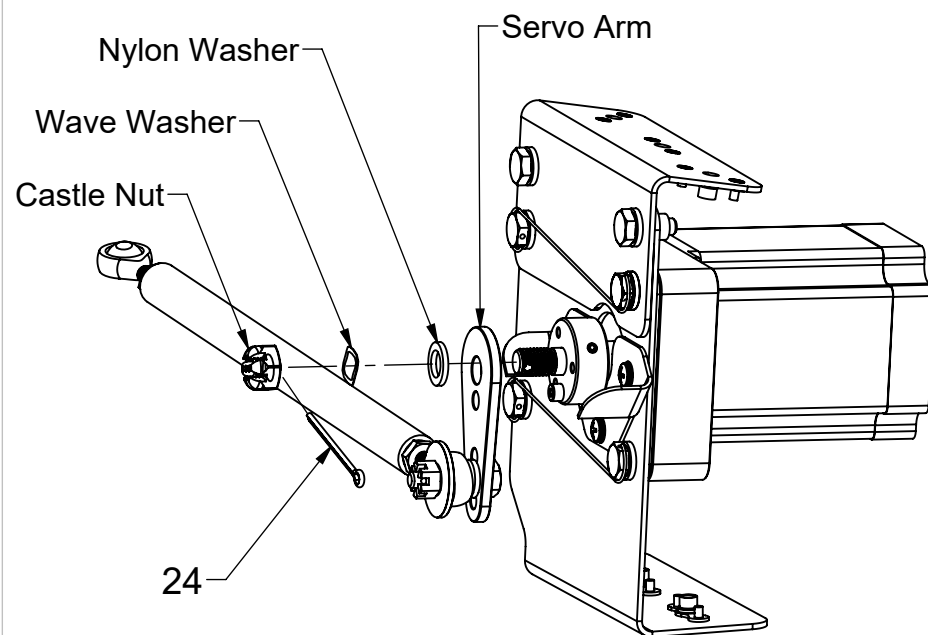


STEP 11: Attach servo arm, with servo pushrod assembly, to roll servo.

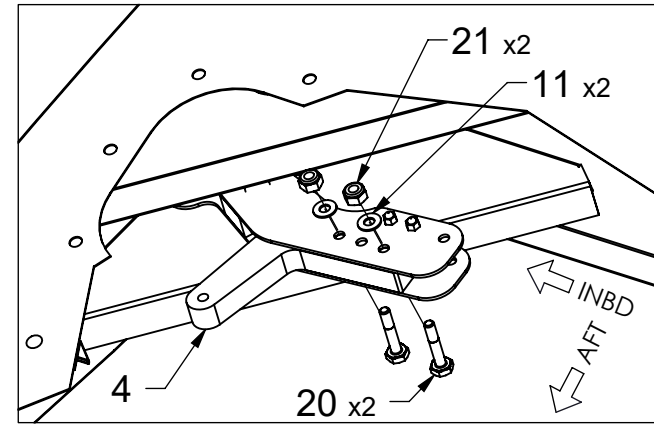
IMPORTANT: Position servo arm so it is fully seated on servo disc. The servo arm has a hole that fits over the shear screw head.

IMPORTANT: Finger tighten only, DO NOT exceed 4 in-lbs. DO NOT fully compress wave washer! Over tightening may prevent servo arm from rotating freely in event of shear screw failure.

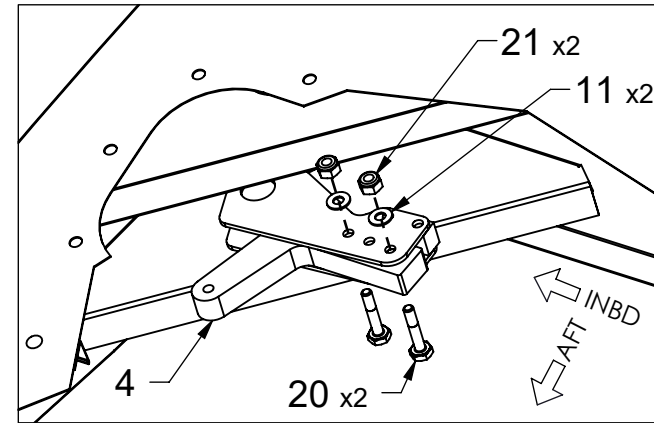
IMPORTANT: Install cotter pin on servo castle nut.



STEP 12: Attach roll servo bellcrank arm to aircraft bellcrank.

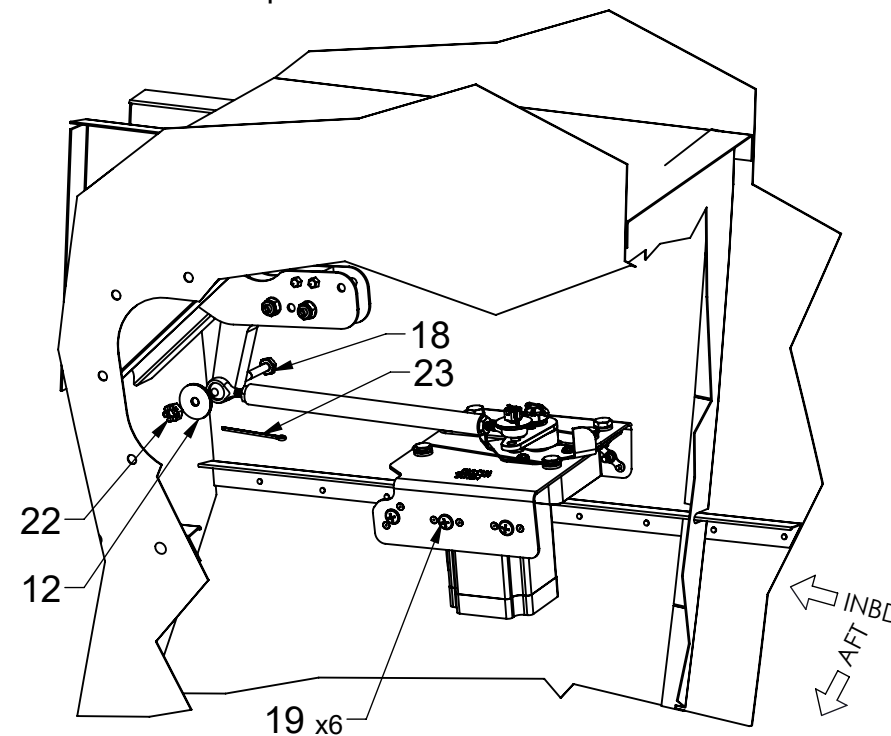


NOTE: For models with shortened bellcrank (shown below), installation is identical.



STEP 13: Attach pushrod assembly to bellcrank arm and secure entire roll servo assembly to wing skins.

NOTE: If required, adjust rod end length to ensure servo arm does not contact servo arm limiting bracket at full aileron deflections. Ensure not to exceed the 1.27in max dimension from Step 7.



Check Roll Servo Installation

1. Release ailerons.
2. Move aileron control through full range of motion per manufacturer's maintenance instructions, and verify the following:
 - Aileron control is smooth throughout (i.e., no grinding, rubbing, or roughness).
 - Roll servo pushrod and bellcrank do not contact any other controls, structures, wiring, insulation, or interior materials during entire travel.
 - At max travel in both directions, servo arm never rotates more than 60 degrees in either direction from neutral.
 - Aileron control travel is limited by manufacturer's control stop not the servo arm limiter.
3. Cycle the control several times, return it to neutral, and verify the servo arm points downward in roughly the 6 o'clock position.

| ITEM # | DESCRIPTION |
|--------|--|
| 4 | ROLL SERVO BELLCRANK ARM |
| 11 | FLAT WASHER #10 (AN960-10/NAS1149F0363P) |
| 12 | FLAT WASHER 3/16", LARGE AREA (AN970-3) |
| 13 | HEX BOLT #10-32, 29/32"L, 1/2"G, DRILL SHANK (AN3-7) |
| 18 | HEX BOLT #10-32, 1-9/32"L, 7/8"G, DRILL SHANK (AN3-12) |
| 19 | PHIL WASH HEAD SCREW #8-32, 7/16"L (AN525-832R7) |
| 20 | HEX BOLT #10-32, 1-1/32"L, 5/8"G (AN3-10A) |
| 21 | LOCK NUT #10-32 (AN365-1032A) |
| 22 | CASTLE NUT #10-32 (AN310-3) |
| 23 | COTTER PIN 1/16" X 1/2" (MS24665-151) |
| 24 | COTTER PIN 5/64" X 3/4" (MS24665-210) |

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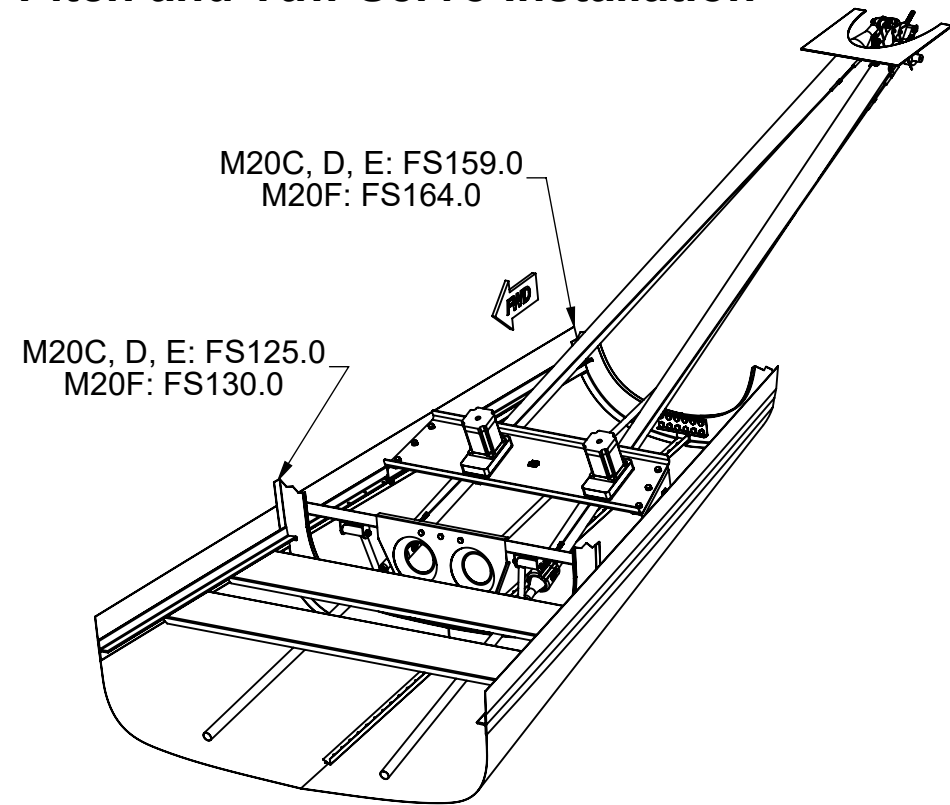
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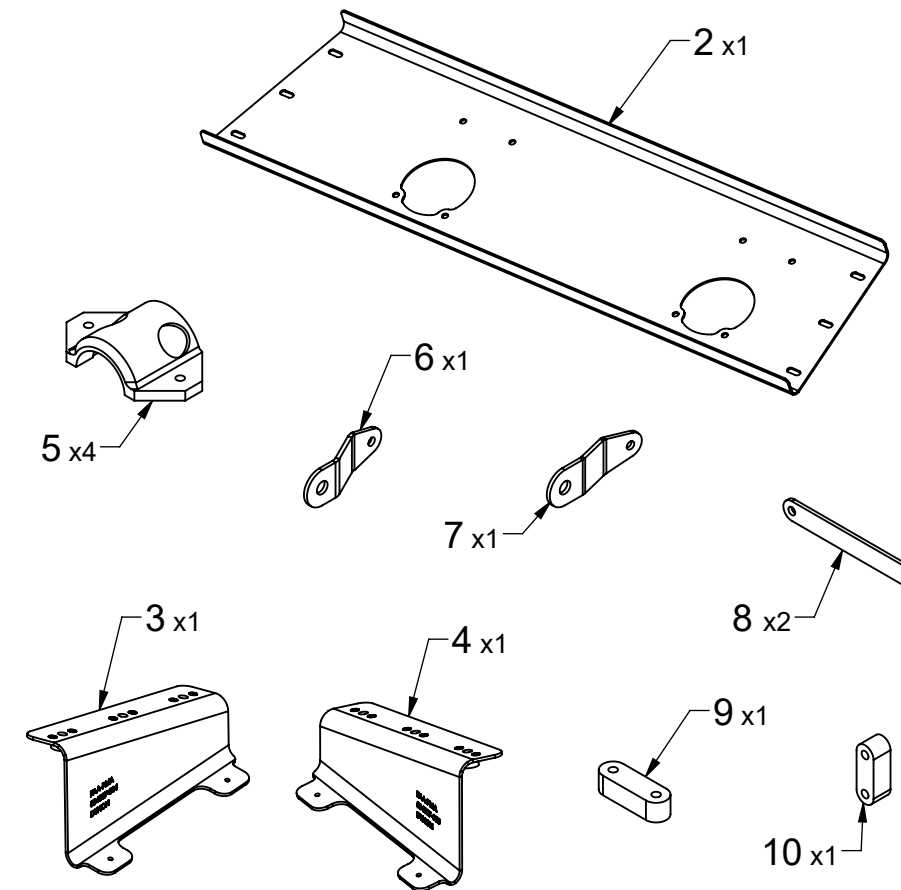
Mooney M20C-F with 1.5in tapered pushrods

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Pitch and Yaw Servo Installation



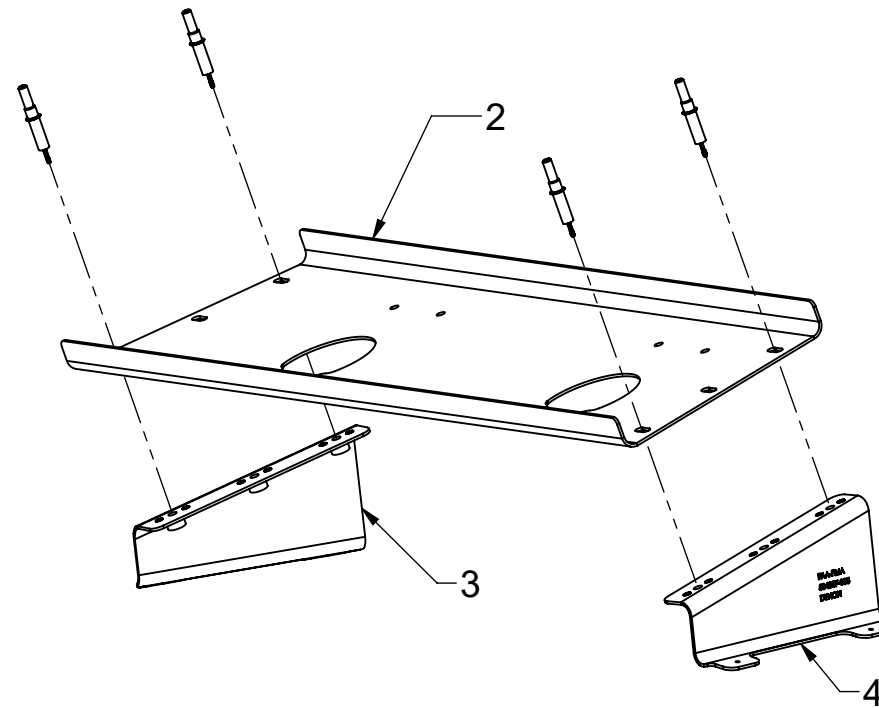
Pitch and Yaw Servo Complete Installation



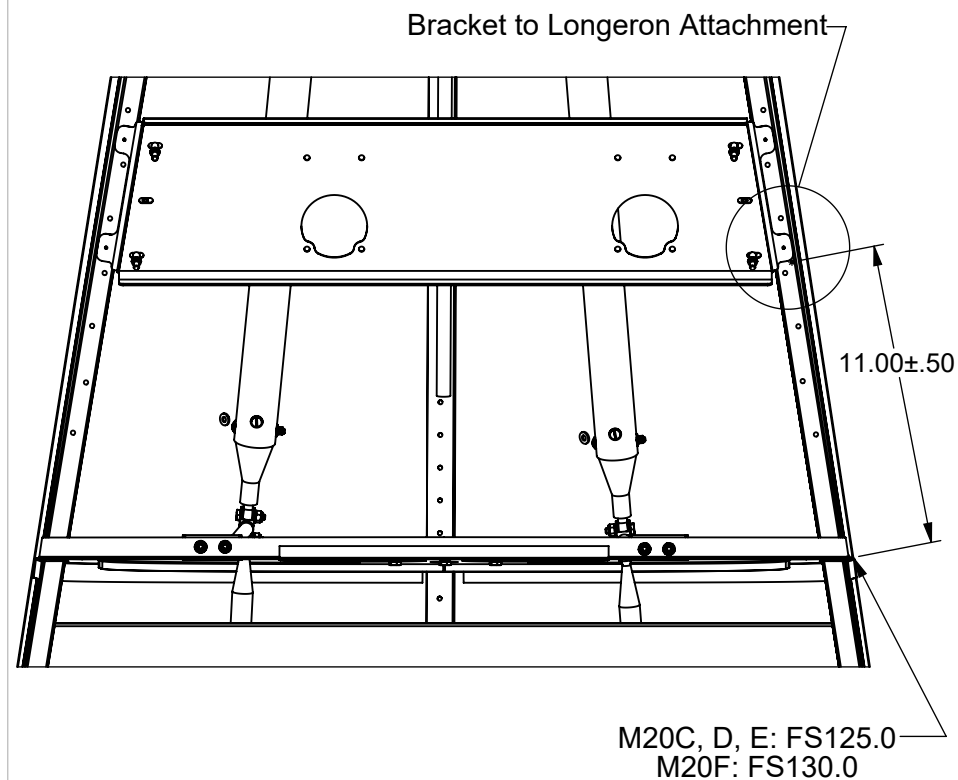
Pitch and Yaw Servo Assembly Parts

STEP 1: Secure elevator and rudder in center of travel.

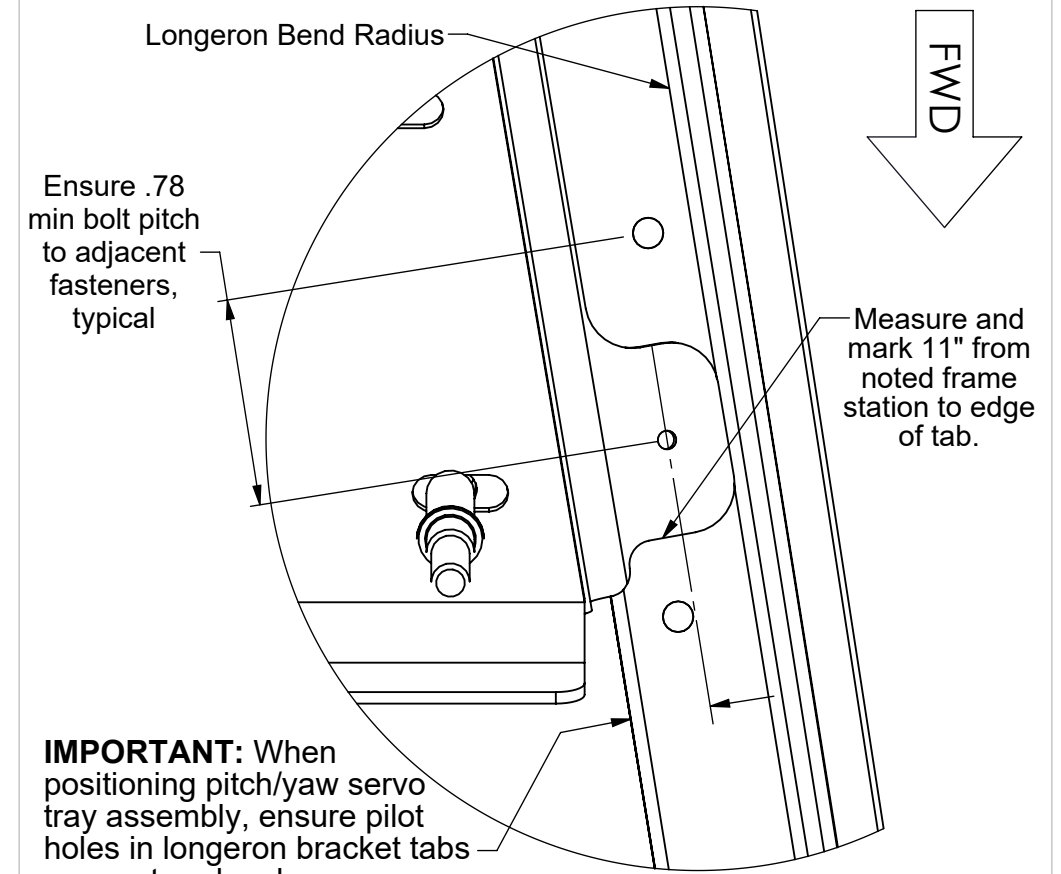
STEP 2: Temporarily fasten left and right longeron brackets to pitch/yaw servo tray.



STEP 3: Position pitch/yaw servo tray assembly as shown below.



M20C, D, E: FS125.0
M20F: FS130.0



IMPORTANT: When positioning pitch/yaw servo tray assembly, ensure pilot holes in longeron bracket tabs are centered on longeron webs and tabs do not contact bend radii of longerons.

Bracket to Longeron Attachment

| ITEM # | DESCRIPTION |
|--------|--|
| 2 | PITCH/YAW SERVO BRACKET TRAY |
| 3 | BRACKET ALUM PITCH SERVO RIGHT LONGERON ATTACHMENT TALL MOONEY |
| 4 | BRACKET ALUM PITCH SERVO LEFT LONGERON ATTACHMENT TALL MOONEY |
| 5 | CLAMP ALUM PUSH ROD 1.5" MOONEY |
| 6 | BRACKET STL YAW CLEARANCE SHORT MOONEY |
| 7 | BRACKET STL PITCH CLEARANCE MOONEY |
| 8 | PITCH/YAW SERVO BRIDLE CABLE EXTENDER |
| 9 | SPACER ALUM PITCH BELLCRANK MOONEY |
| 10 | YAW SERVO BELLCRANK SPACER |



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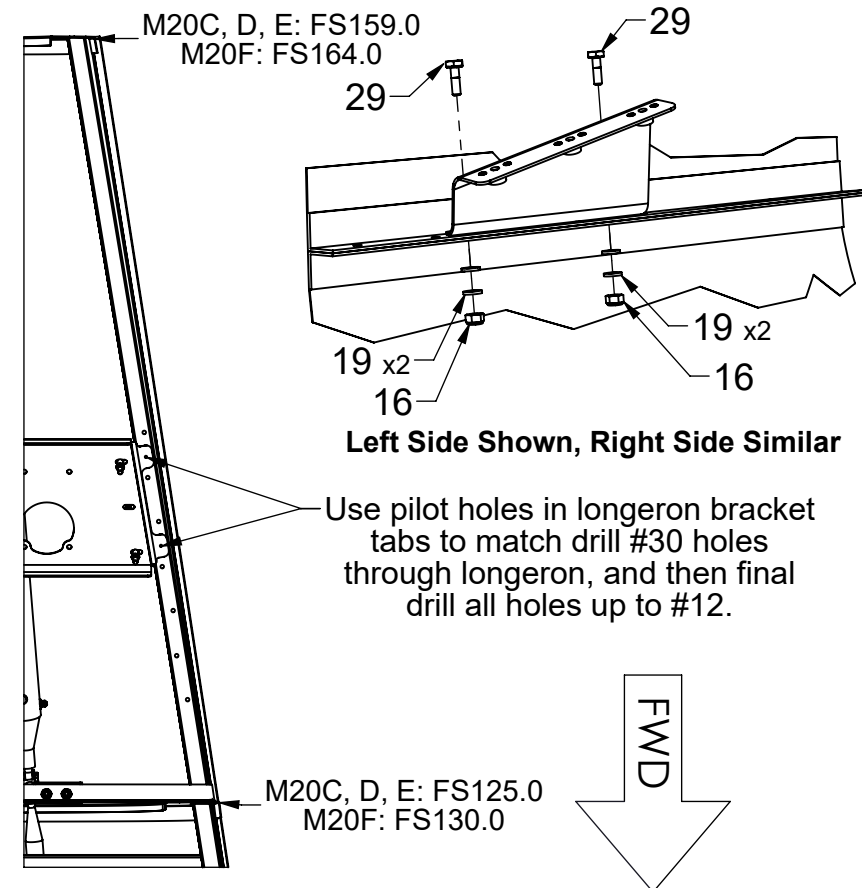
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STEP 4: Attach left and right longeron brackets to longerons.

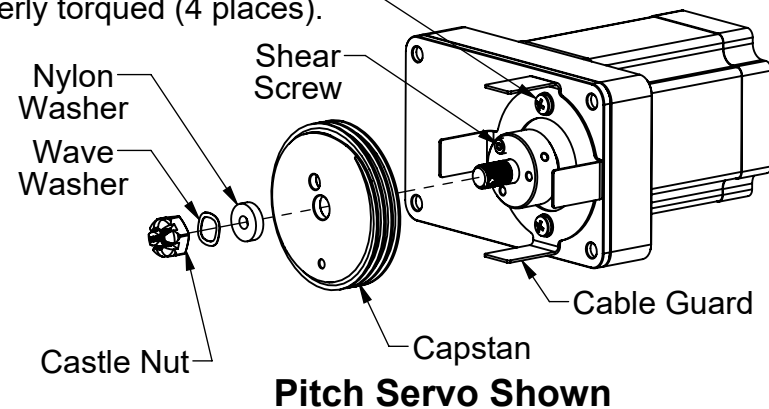
- A. On both sides of fuselage, clamp pitch/yaw servo tray assembly to longerons at marks made in Step 3.
- B. Use pilot holes in longeron bracket tabs to match drill #30 holes through longerons.
- C. Final drill all holes up to #12.
- D. Secure longeron brackets to longerons.



STEP 5: Temporarily remove capstans from pitch and yaw servos. Keep all hardware, except for cotter pin, for re-installation. A new cotter pin has been provided in the hardware kit.

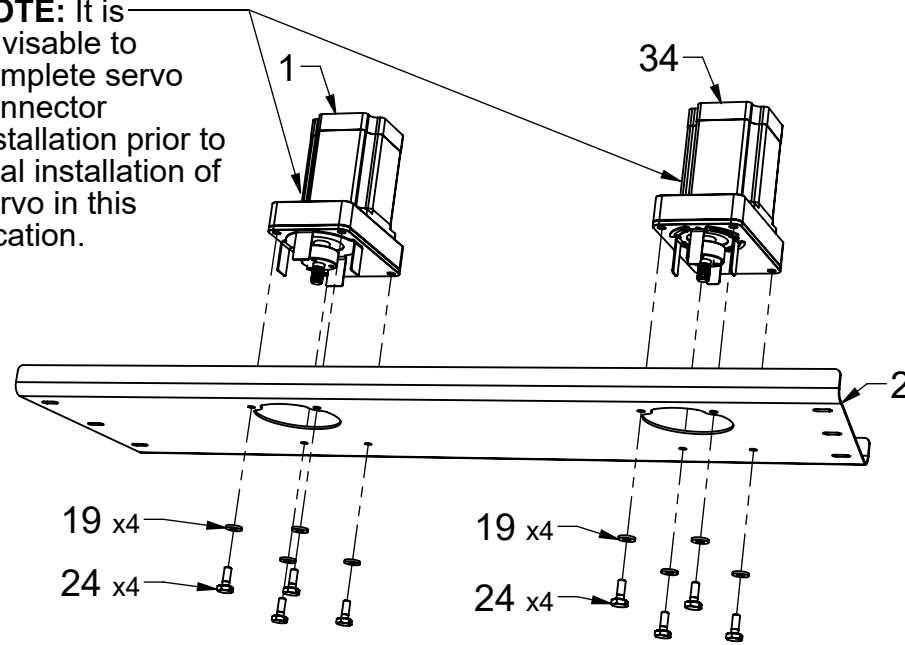
IMPORTANT: *DO NOT* remove shear screws from servo discs!

NOTE: Do not remove cable guard, ensure screws are properly torqued (4 places).

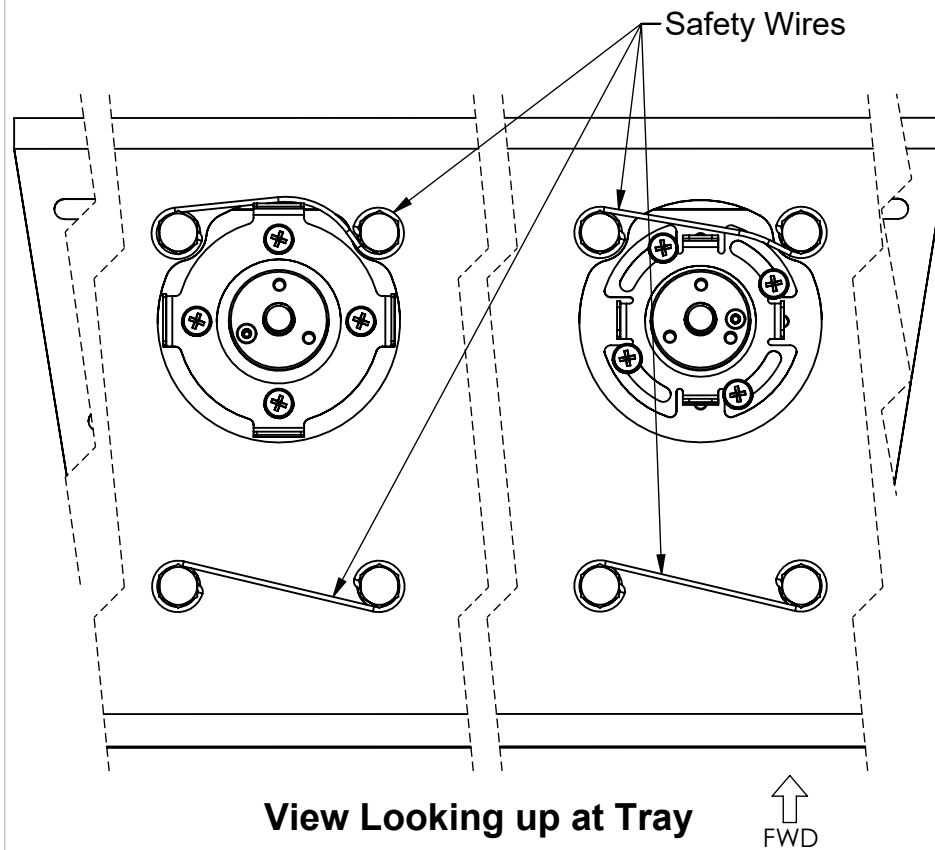


STEP 6: Attach pitch and yaw servos to pitch/yaw servo tray bracket.

NOTE: It is advisable to complete servo connector installation prior to final installation of servo in this location.



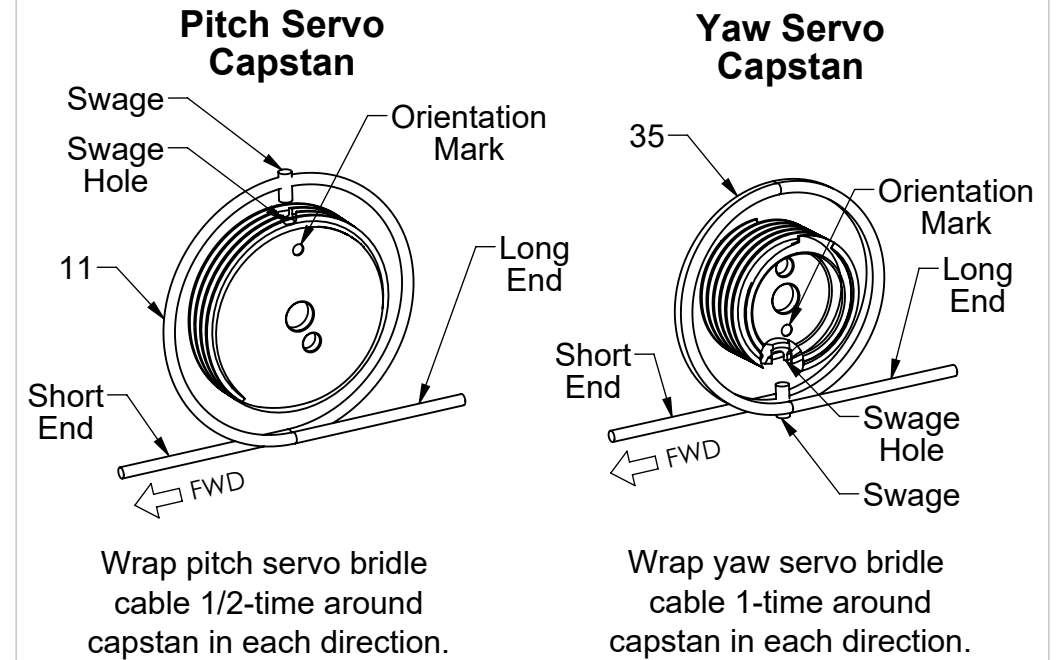
STEP 7: Use 0.032 wire to safety wire pitch and yaw servo bolts. **IMPORTANT:** Ensure safety wire is routed *outside* of cable guards.



STEP 8: Wrap bridle cables around pitch and yaw servo capstans.

IMPORTANT: Ensure ends of bridle cables exit capstans as detailed below.

NOTE: Securing (e.g., taping) bridle cables to capstan grooves prevents them from unraveling when handling.



| ITEM # | DESCRIPTION |
|--------|---|
| 1 | SV42C PITCH SERVO ASSY: MOONEY M20 |
| 2 | PITCH/YAW SERVO BRACKET TRAY |
| 11 | ASSY BRIDLE CABLE 65IN MOONEY PITCH 65C-F |
| 16 | LOCK NUT #10-32 |
| 19 | FLAT WASHER #10 (AN960-10/NAS1149F0363P) |
| 24 | HEX BOLT #10-32, 17/32"L, 1/8"G, DRILL HEAD (AN3H-4A) |
| 29 | HEX BOLT #10-32, 21/32"L, 1/4"G (AN3-5A) |
| 34 | SV42C-068 YAW SERVO ASSY: MOONEY M20 |
| 35 | ASSY BRIDLE CABLE MOONEY YAW 65C-F |

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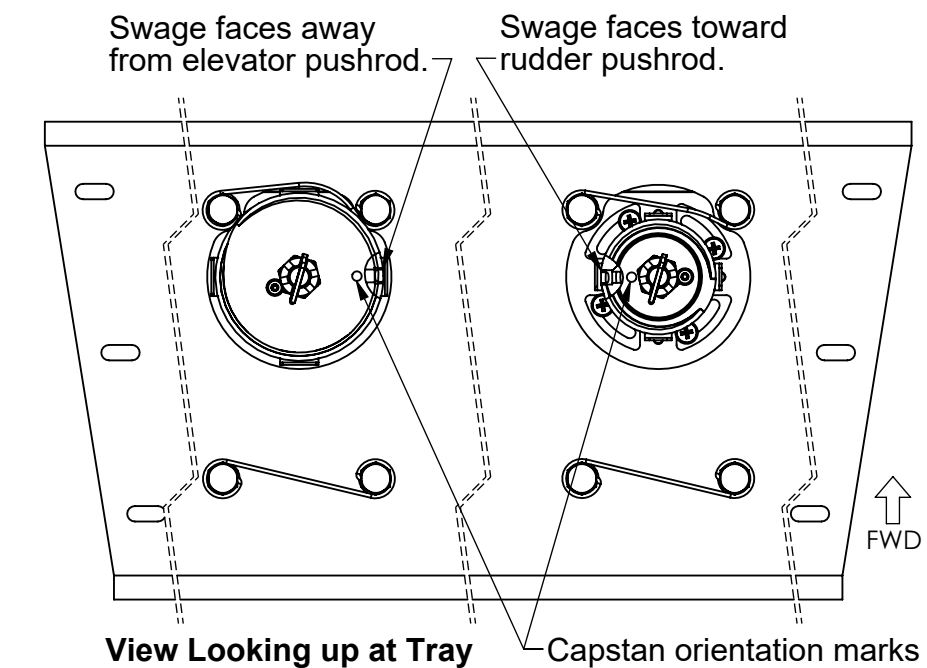
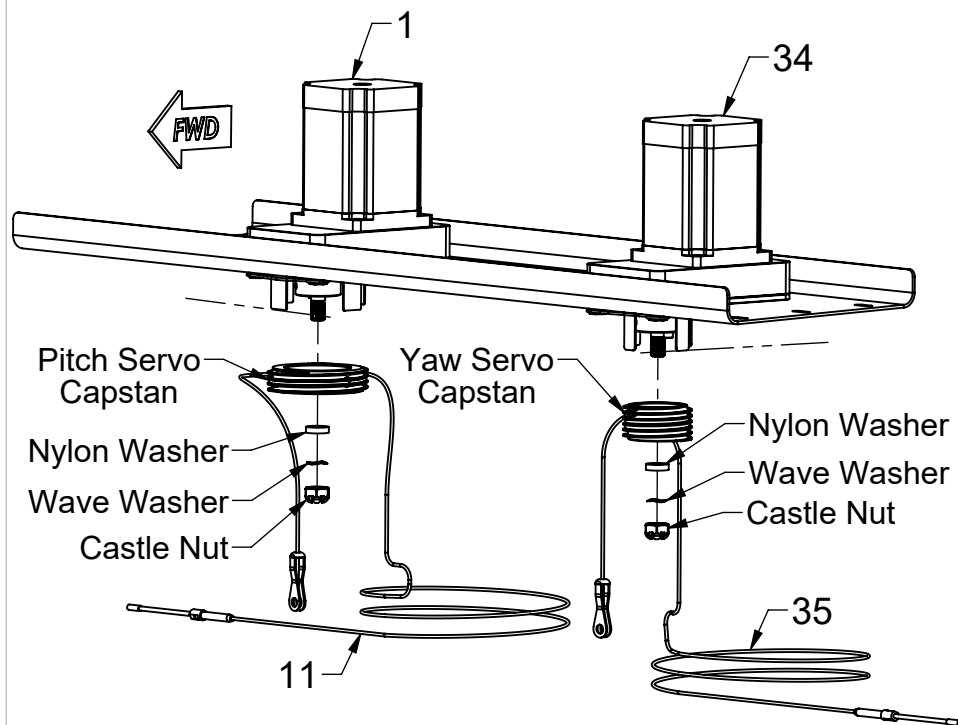
| AUTOPILOT SERVO INSTALLATION MANUAL | | | |
|---|------------|---------------|-----|
| Mooney M20C-F with 1.5in tapered pushrods | | | |
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STEP 9: Re-attach pitch and yaw servo capstans with bridle cables.

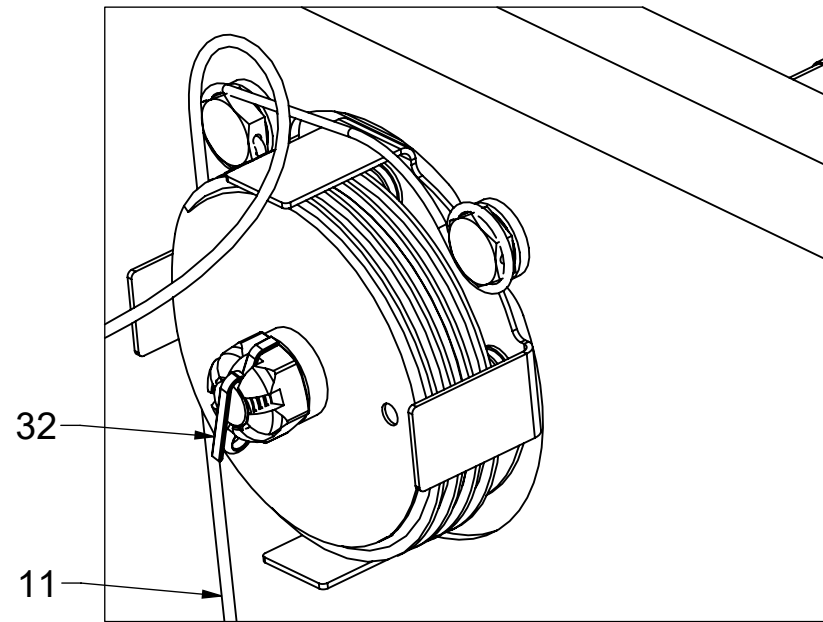
IMPORTANT: Position servo capstans so orientation marks face inboard (as shown below) and capstans are fully seated on servo discs. The capstans have holes that fit over the shear screw heads.

IMPORTANT: Position pitch servo capstan so swage hole will face away from elevator pushrod; position yaw servo capstan so swage hole will face toward rudder pushrod.

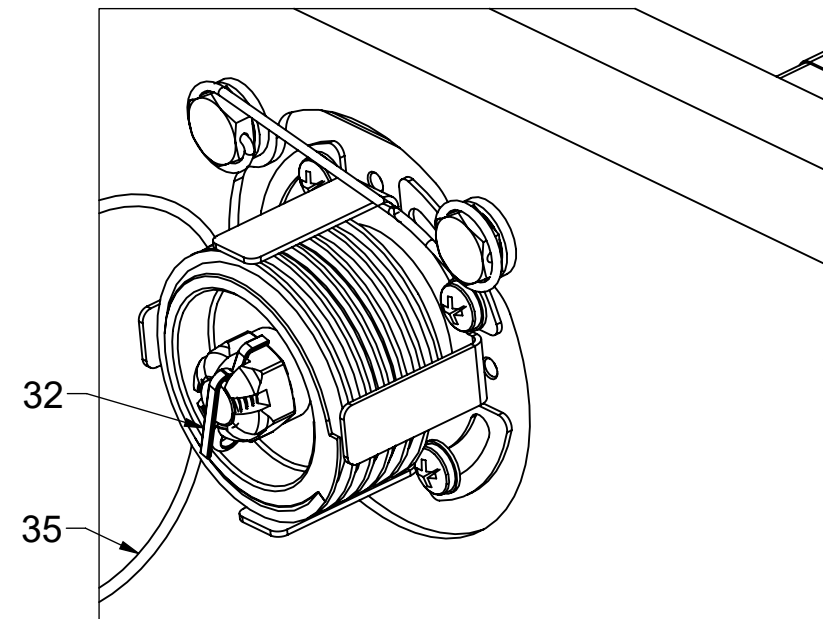
IMPORTANT: Finger tighten only, DO NOT exceed 4 in-lbs. DO NOT fully compress wave washer! Over tightening may prevent capstan from rotating freely in event of shear screw failure.



IMPORTANT: Install cotter pins on servo castle nuts.



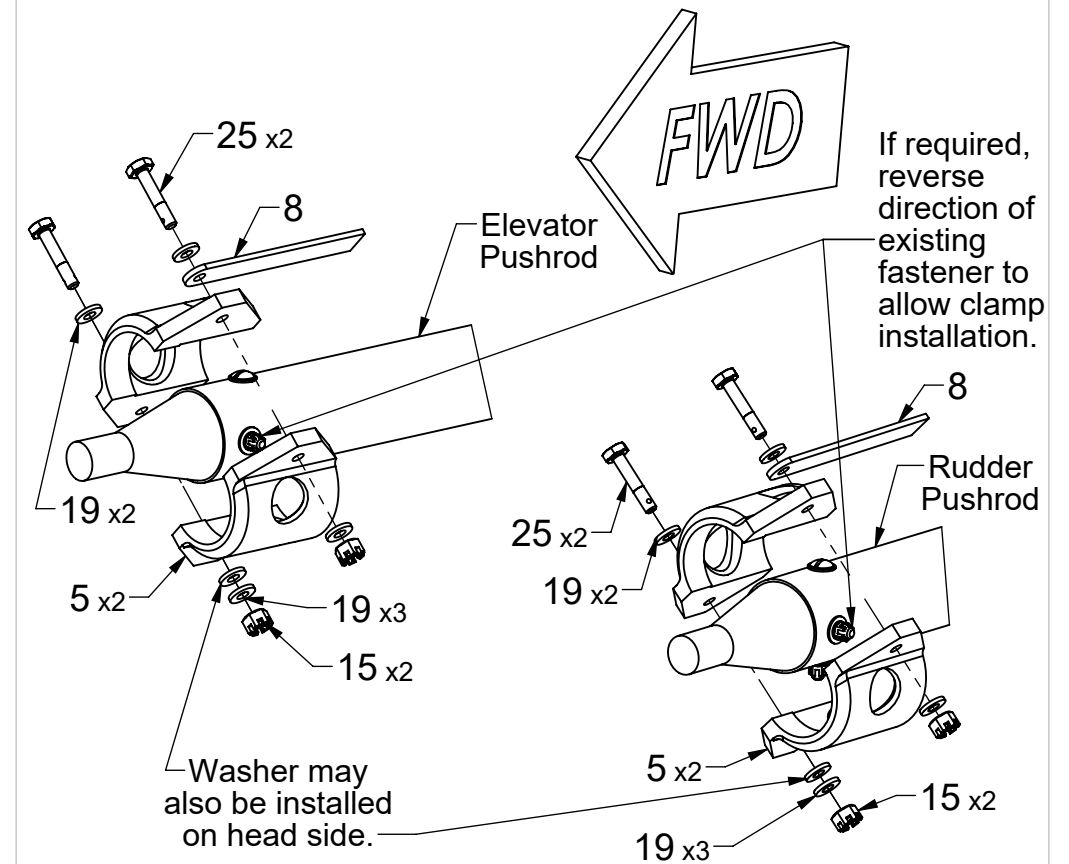
Pitch Servo Cotter Pin Installation



Yaw Servo Cotter Pin Installation

STEP 10: Attach forward pushrod clamps to elevator and rudder pushrods.

IMPORTANT: Ensure clamp inner edge aligns with mating tube edge and is not sitting over the tube. Ensure $.060 \pm .030$ " gap between interfacing clamp parts. Do not fully tighten, allow Item 8 to rotate.



| ITEM # | DESCRIPTION |
|--------|--|
| 1 | SV42C PITCH SERVO ASSY: MOONEY M20 |
| 5 | CLAMP ALUM PUSH ROD 1.5" MOONEY |
| 8 | PITCH/YAW SERVO BRIDLE CABLE EXTENDER |
| 11 | ASSY BRIDLE CABLE 65IN MOONEY PITCH 65C-F |
| 15 | CASTLE NUT, #10-32 (MS17826-3) |
| 19 | FLAT WASHER #10 (AN960-10/NAS1149F0363P) |
| 25 | HEX BOLT #10-32, 1-1/32"L, 5/8"G, DRILL SHANK (AN3-10) |
| 32 | COTTER PIN 5/64" X 3/4" |
| 34 | SV42C-068 YAW SERVO ASSY: MOONEY M20 |
| 35 | ASSY BRIDLE CABLE MOONEY YAW 65C-F |

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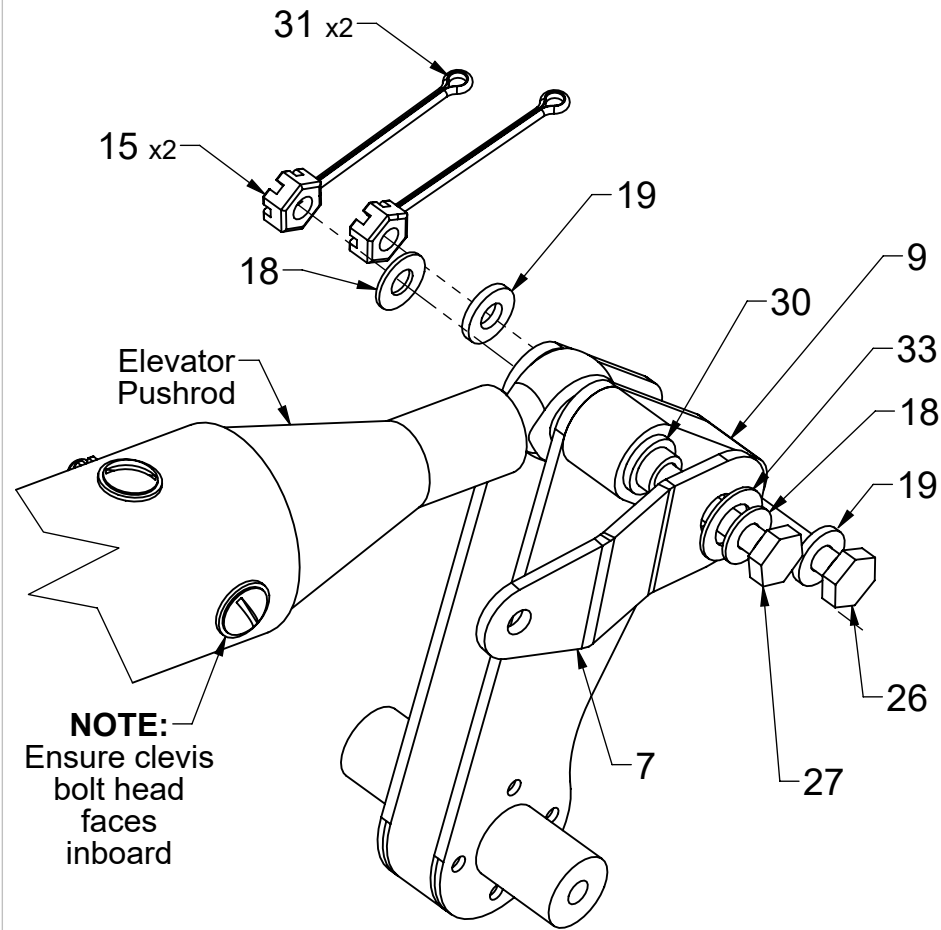
Mooney M20C-F with 1.5in tapered pushrods

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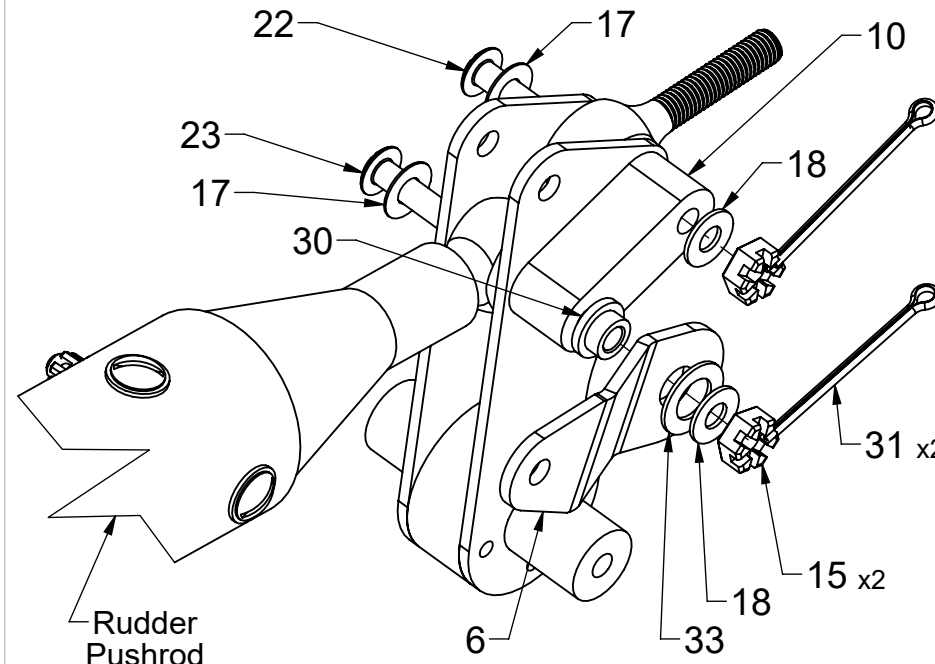
STEP 11: Attach pitch clearance bracket to elevator bellcrank, and yaw clearance bracket to rudder bellcrank.

NOTE: If threaded end of elevator pushrod bolt is facing inboard, reverse the direction of hardware so that the head end is inboard (see note below).

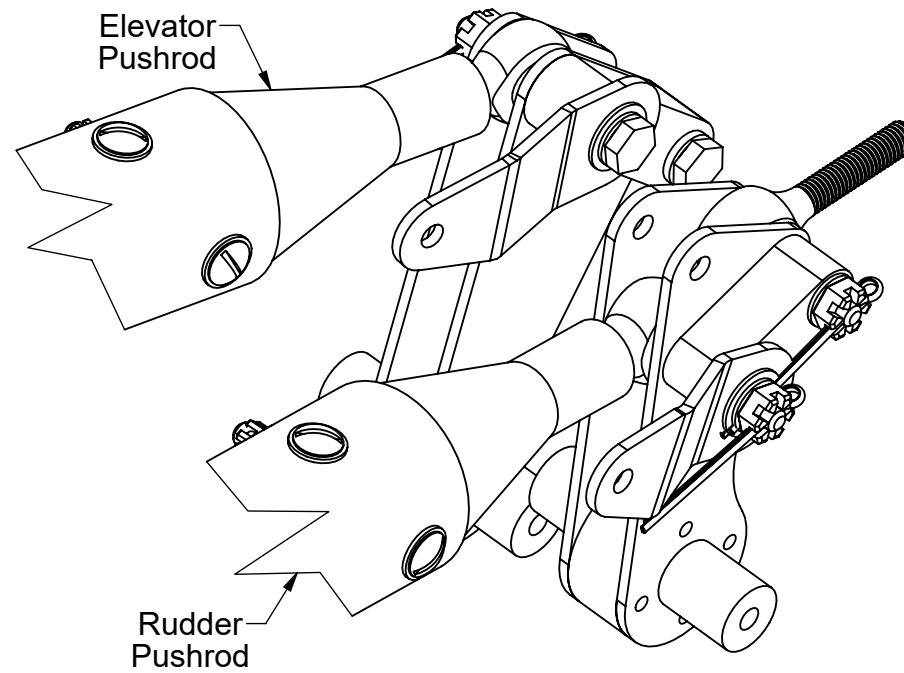
NOTE: Install pitch bracket and spacer first. To install yaw bracket and spacer, secure L rudder pedal in FWD most position.



Pitch Installation

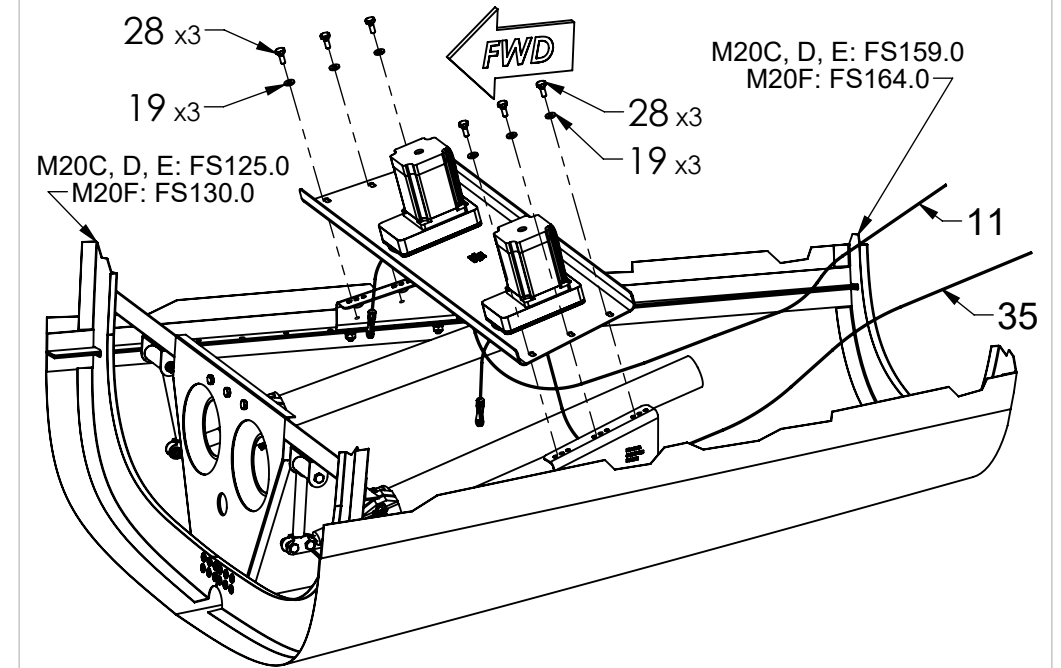


Yaw Installation



Step 11 Completion Overview

STEP 12: Attach pitch/yaw servo tray, with servos and bridle cables, to left and right longeron brackets.



| ITEM # | DESCRIPTION |
|--------|---|
| 6 | BRACKET STL YAW CLEARANCE SHORT MOONEY |
| 7 | BRACKET STL PITCH CLEARANCE MOONEY |
| 9 | SPACER ALUM PITCH BELLCRANK MOONEY |
| 10 | YAW SERVO BELLCRANK SPACER |
| 11 | ASSY BRIDLE CABLE 65IN MOONEY PITCH 65C-F |
| 15 | CASTLE NUT, #10-32 (MS17826-3) |
| 17 | FLAT WASHER, #10 (NAS1149F0316P) |
| 18 | FLAT WASHER, #10 (NAS1149F0332P) |
| 19 | FLAT WASHER #10 (AN960-10/NAS1149F0363P) |
| 22 | CLEVIS BOLT, #10-32 (AN23-24) |
| 23 | CLEVIS BOLT, #10-32 (AN23-27) |
| 26 | HEX BOLT #10-32, 1-17/32"L, 1-1/8"G, DRILL SHANK (AN3-14) |
| 27 | HEX BOLT #10-32, 1-21/32"L, 1-1/4"G, DRILL SHANK (AN3-15) |
| 28 | HEX BOLT #10-32, 17/32"L, 1/8"G (AN3-4A) |
| 30 | COPPER BUSHING 3/16"ID |
| 31 | COTTER PIN 1/16" X 1/2" |
| 33 | NYLON FLAT WASHER |
| 35 | ASSY BRIDLE CABLE MOONEY YAW 65C-F |



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AUTOPILOT SERVO INSTALLATION MANUAL

Mooney M20C-F with 1.5in tapered pushrods

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STEP 13: Connect pitch servo bridle cable assembly to elevator pushrod:

- Assemble bridle cable, turnbuckle, and turnbuckle fork end with three threads exposed on cable end and fork end.
- At aft end of pushrod, attach bridle cable assembly to pitch clearance bracket. Orient nut side *toward* pitch pushrod (shown below).
- At forward end of pushrod, while pulling bridle cable taught, mark hole location on extender bracket.
- Drill #10 hole through extender bracket, and then trim bracket as shown below.
- Attach bridle cable assembly to extender bracket. Tighten forward hardware left loose in Step 11, keeping extender bracket in line with cable.

F. Make sure bridle cable does not contact cable guard.

IMPORTANT: *The bridle cable will prematurely wear if it contacts the cable guard throughout its travel.*

G. If cable guard interferes with bridle cable, adjust bridle cable guard position as needed.

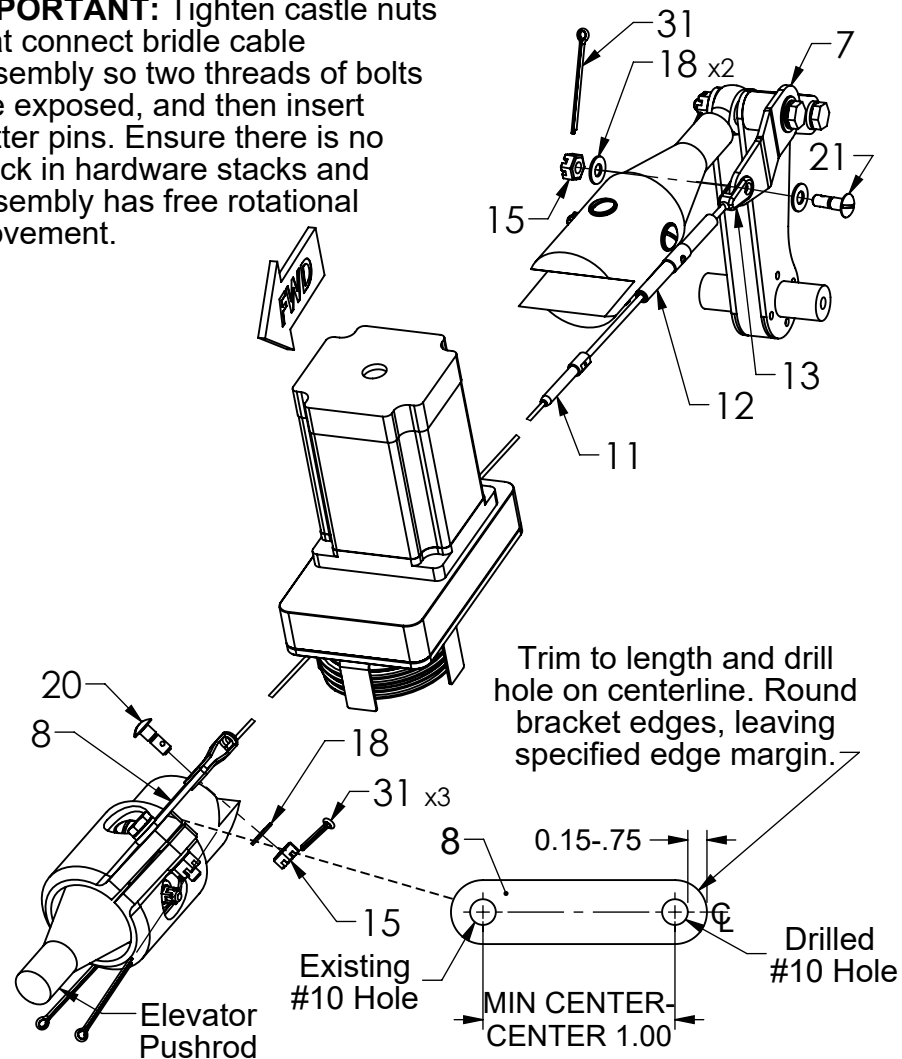
NOTE: See the *SkyView General Maintenance Manual* document for bridle cable guard adjustment instructions.

H. Use turnbuckle to tension bridle cable to 15-20 lbs. While tensioning, make sure capstan's swage engagement hole continues to face *away from* elevator pushrod.

IMPORTANT: *Ensure no more than three threads are exposed on cable or fork end when installed into turnbuckle body.*

I. Secure turnbuckle with provided clips or safety wire.

IMPORTANT: Tighten castle nuts that connect bridle cable assembly so two threads of bolts are exposed, and then insert cotter pins. Ensure there is no slack in hardware stacks and assembly has free rotational movement.



STEP 14: Connect yaw servo bridle cable assembly to rudder pushrod:

- Assemble bridle cable, turnbuckle, and turnbuckle fork end with three threads exposed on cable end and fork end.
- At aft end of pushrod, attach bridle cable assembly to yaw clearance bracket. Orient head side *toward* yaw pushrod (shown below).
- At forward end of pushrod, while pulling bridle cable taught, mark hole location on extender bracket.
- Drill #10 hole through extender bracket, and then trim bracket as shown below.
- Attach bridle cable assembly to extender bracket. Tighten forward hardware left loose in Step 11, keeping extender bracket in line with cable.

F. Make sure bridle cable does not contact cable guard.

IMPORTANT: *The bridle cable will prematurely wear if it contacts the cable guard throughout its travel.*

G. If cable guard interferes with bridle cable, adjust bridle cable guard position as needed.

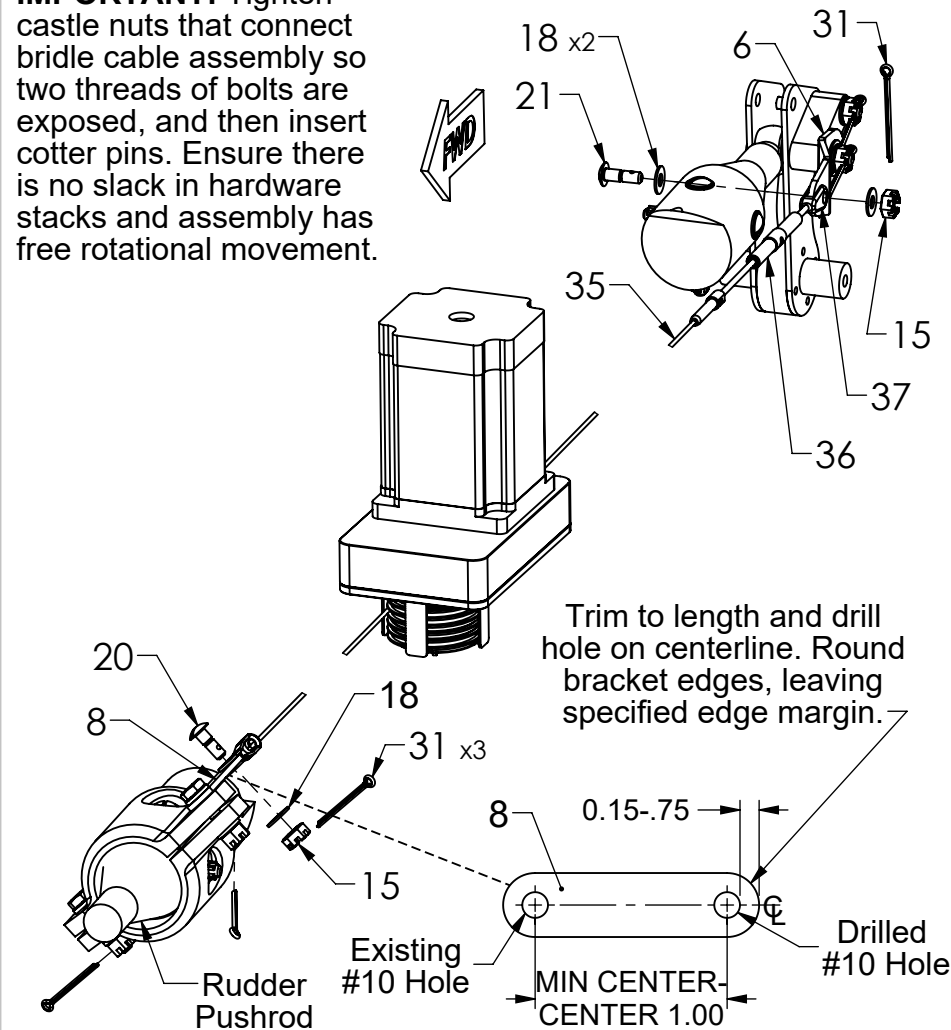
NOTE: See the *SkyView General Maintenance Manual* document for bridle cable guard adjustment instructions.

H. Use turnbuckle to tension bridle cable to 15-20 lbs. While tensioning, make sure capstan's swage engagement hole continues to face *toward* rudder pushrod.

IMPORTANT: *Ensure no more than three threads are exposed on cable or fork end when installed into turnbuckle body.*

I. Secure turnbuckle with provided clips or safety wire.

IMPORTANT: Tighten castle nuts that connect bridle cable assembly so two threads of bolts are exposed, and then insert cotter pins. Ensure there is no slack in hardware stacks and assembly has free rotational movement.



Check Pitch/Yaw Servo Installation

- Release elevator and rudder and/or yoke and pedals.
- Move elevator and rudder controls through full range of motion per manufacturer's maintenance instructions, and verify the following:
 - Elevator and rudder controls are smooth throughout (i.e., no grinding, rubbing, or roughness).
 - Pitch and yaw servo bridle cables and connecting ends do not contact any other controls, structures, wiring, insulation, or interior materials during entire travel.
 - At extents of travel in both directions, there's a minimum of .25 clearance from the capstan guard to the push rods.

NOTE: See the *SkyView General Maintenance Manual* document for bridle cable

- At extents of travel in both directions, there's a minimum of 30 degrees of bridle cable engagement with capstan from swage engagement hole to where bridle cable departs from capstan.
 - Elevator and rudder control travel is limited by manufacturer's control stops.
- Cycle elevator and rudder controls several times, return them to neutral, and verify the following:
 - Pitch servo swage engagement hole faces away from elevator pushrod.
 - Yaw servo swage engagement hole faces toward rudder pushrod.
 - Pitch and yaw servo bridle cable tensions have not changed.

| ITEM # | DESCRIPTION |
|--------|---|
| 6 | BRACKET STL YAW CLEARANCE SHORT MOONEY |
| 7 | BRACKET STL PITCH CLEARANCE MOONEY |
| 8 | PITCH/YAW SERVO BRIDLE CABLE EXTENDER |
| 11 | ASSY BRIDLE CABLE 65IN MOONEY PITCH 65C-F |
| 12 | TURNBUCKLE BARREL #6-40 |
| 13 | TURNBUCKLE FORK END #6-40, RH |
| 15 | CASTLE NUT, #10-32 (MS17826-3) |
| 18 | FLAT WASHER, #10 (NAS1149F0332P) |
| 20 | CLEVIS BOLT, #10-32 (AN23-8) |
| 21 | CLEVIS BOLT, #10-32 (AN23-9) |
| 31 | COTTER PIN 1/16" X 1/2" |
| 35 | ASSY BRIDLE CABLE MOONEY YAW 65C-F |
| 36 | TURNBUCKLE BARREL #6-40 |
| 37 | TURNBUCKLE FORK END #6-40, RH |

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AUTOPILOT SERVO INSTALLATION MANUAL

Mooney M20C-F with 1.5in tapered pushrods

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| Materials | | | |
|-----------|-------------------|--|-----|
| ITEM # | DYNON PART # | DESCRIPTION | QTY |
| | | ROLL SERVO KIT (Includes the Following) | 1 |
| 1 | 504897-000 | SV42 ROLL SERVO ASSY: MOONEY M20 | 1 |
| | 504438-000 | ROLL SERVO BRACKET KIT | 1 |
| 2 | 504311-001 | ROLL SERVO UPPER BRACKET | 1 |
| 3 | 504310-001 | ROLL SERVO LOWER BRACKET | 1 |
| 4 | 104325-000 | ROLL SERVO BELLCRANK ARM | 1 |
| | 104904-000 | ROLL SERVO PUSHROD KIT | 1 |
| 5 | 104317-000 | ROLL SERVO PUSHROD, 0.5" OD | 1 |
| 6 | 100975-001 | JAM NUT #10-32 | 2 |
| 7 | 104568-000 | BEARING ROD END #10-32RH, MALE | 2 |
| | 504903-000 | ROLL SERVO LIMITING BRACKET KIT | 1 |
| 8 | 104875-000 | SERVO ARM LIMITING BRACKET | 1 |
| 9 | 100494-000 | PHIL PAN HEAD SCREW #6-32, 1/4"L, NYLOCK | 3 |
| 10 | 100979-000 | INT STAR LOCK WASHER #6 | 3 |
| | 104777-000 | ROLL SERVO HARDWARE KIT | 1 |
| 11 | 100978-003 | FLAT WASHER #10 (AN960-10/NAS1149F0363P) | 9 |
| 12 | 100977-000 | FLAT WASHER 3/16", LARGE | 2 |
| 13 | 101844-004 | HEX BOLT #10-32, 29/32"L, 1/2"G, DRILL SHANK | 1 |
| 14 | 100981-001 | HEX BOLT #10-32, 17/32"L, 1/8"G, DRILL HEAD | 4 |
| 15 | 103666-001 | HEX BOLT #10-32, 17/32"L, 1/8G | 2 |
| 16 | 103990-008 | NUTPLATE #8-32, SELF-LOCK, LOW-PRO | 6 |
| 17 | 103665-001 | RIVET, MS20426AD3-3.5 | 12 |
| 18 | 101844-007 | HEX BOLT #10-32, 1-9/32"L, 7/8"G, DRILL SHANK | 1 |
| 19 | 101880-004 | PHIL WASH HEAD #8-32", 7/16"L | 6 |
| 20 | 103666-005 | HEX BOLT #10-32, 1-1/32"L, 5/8"G | 2 |
| 21 | 100976-011 | LOCK NUT #10 | 2 |
| 22 | 100899-001 | CASTLE NUT #10-32 | 2 |
| 23 | 100904-002 | COTTER PIN 1/16" X 1/2" | 2 |
| 24 | 100904-001 | COTTER PIN 5/64" X 3/4" | 1 |

| ITEM # | DYNON PART # | DESCRIPTION | QTY |
|--------|-------------------|--|-----|
| | | PITCH SERVO KIT (Includes the Following) | 1 |
| 1 | 503406-000 | SV42C PITCH SERVO ASSY: MOONEY M20 | 1 |
| | 505424-000 | PITCH/YAW SERVO BRACKET KIT | 1 |
| 2 | 504309-003 | PITCH/YAW SERVO BRACKET TRAY | 1 |
| 3 | 504307-004 | BRACKET ALUM PITCH SERVO RIGHT LONGERON ATTACHMENT TALL MOONEY | 1 |
| 4 | 504307-005 | BRACKET ALUM PITCH SERVO LEFT LONGERON ATTACHMENT TALL MOONEY | 1 |
| 5 | 104844-004 | CLAMP ALUM PUSH ROD 1.5" MOONEY | 4 |
| 6 | 504553-001 | BRACKET STL YAW CLEARANCE SHORT MOONEY | 1 |
| 7 | 504553-002 | BRACKET STL PITCH CLEARANCE MOONEY | 1 |
| 8 | 504552-000 | PITCH/YAW SERVO BRIDLE CABLE EXTENDER | 2 |
| 9 | 504499-001 | SPACER ALUM PITCH BELLCRANK MOONEY | 1 |
| 10 | 504499-000 | YAW SERVO BELLCRANK SPACER | 1 |
| | 505422-000 | BRIDLE CABLE KIT, PITCH | 1 |
| 11 | 504508-003 | ASSY BRIDLE CABLE 65IN MOONEY PITCH 65C-F | 1 |
| 12 | 104563-000 | TURNBUCKLE BARREL #6-40 | 1 |
| 13 | 104656-000 | TURNBUCKLE FORK END #6-40, RH | 1 |
| 14 | 104556-000 | TURNBUCKLE SAFETY CLIP | 2 |
| | 505421-000 | PITCH/YAW SERVO HARDWARE KIT | 1 |
| 15 | 105445-000 | CASTLE NUT, #10-32 (MS17826-3) | 12 |
| 16 | 100976-011 | LOCK NUT #10-32 | 4 |
| 17 | 105418-007 | FLAT WASHER, #10 (NAS1149F0316P) | 2 |
| 18 | 105419-007 | FLAT WASHER, #10 (NAS1149F0332P) | 10 |
| 19 | 100978-003 | FLAT WASHER #10 (AN960-10/NAS1149F0363P) | 34 |
| 20 | 105420-000 | CLEVIS BOLT, #10-32 (AN23-8) | 2 |
| 21 | 105420-001 | CLEVIS BOLT, #10-32 (AN23-9) | 2 |
| 22 | 105420-016 | CLEVIS BOLT, #10-32 (AN23-24) | 1 |
| 23 | 105420-019 | CLEVIS BOLT, #10-32 (AN23-27) | 1 |
| 24 | 100981-001 | HEX BOLT #10-32, 17/32"L, 1/8"G, DRILL HEAD (AN3H-4A) | 8 |
| 25 | 101844-005 | HEX BOLT #10-32, 1-1/32"L, 5/8"G, DRILL SHANK (AN3-10) | 4 |
| 26 | 101844-009 | HEX BOLT #10-32, 1-17/32"L, 1-1/8"G, DRILL SHANK (AN3-14) | 1 |
| 27 | 101844-000 | HEX BOLT #10-32, 1-21/32"L, 1-1/4"G, DRILL SHANK (AN3-15) | 1 |
| 28 | 103666-001 | HEX BOLT #10-32, 17/32"L, 1/8"G (AN3-4A) | 6 |
| 29 | 103666-002 | HEX BOLT #10-32, 21/32"L, 1/4"G (AN3-5A) | 4 |
| 30 | 104747-000 | COPPER BUSHING 3/16"ID | 2 |
| 31 | 100904-002 | COTTER PIN 1/16" X 1/2" | 12 |
| 32 | 100904-001 | COTTER PIN 5/64" X 3/4" | 2 |
| 33 | 105590-000 | NYLON FLAT WASHER | 2 |
| | | YAW SERVO KIT (Includes the Following) | 1 |
| 34 | 503933-000 | SV42C-068 YAW SERVO ASSY: MOONEY M20 | 1 |
| | 505423-000 | BRIDLE CABLE KIT, YAW | 1 |
| 35 | 504508-002 | ASSY BRIDLE CABLE MOONEY YAW 65C-F | 1 |
| 36 | 104563-000 | TURNBUCKLE BARREL #6-40 | 1 |
| 37 | 104565-000 | TURNBUCKLE FORK END #6-40, RH | 1 |
| 38 | 104556-000 | TURNBUCKLE SAFETY CLIP | 2 |

Electrical Connection

After physically installing all autopilot servos, connect them to the SkyView Network. See the *Autopilot Servos* section of the *SkyView System Installation Manual* document at dynoncertified.com/docs.

Servo Calibration

After physically installing and electrically connecting all autopilot servos, calibrate them in the SkyView System. See the *Autopilot Servo Calibration* section of the *SkyView General Maintenance Manual* document at dynoncertified.com/docs.

Electric Trim Control

Existing pitch trim motors certified for the airplane can be controlled through the SkyView Autopilot system. Such trim motors must operate on 10–30 Volts with a maximum current draw of 5 Amps. This includes trim motors with or without a clutch.

Instructions for connecting to a trim motor, configuring SkyView for trim control, and testing the feature are found in the *SkyView System Installation Manual* document at dynoncertified.com/docs.

Servo Troubleshooting, Service, and Maintenance

Instructions for Continued Airworthiness (ICA) for autopilot servos, including troubleshooting, service, and maintenance procedures, are provided in the *SkyView General Maintenance Manual* document at dynoncertified.com/docs.



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