

GARMIN PITCH SERVO UNIT - REMOVAL/INSTALLATION (Airplanes with GSM 86 Servo Mounts)

1. General

- A. This section gives the removal and installation procedures for the pitch servo unit for airplanes that have GSM 86 servo mounts.
- B. The GSA 81 and the GSM 86 are components of the Garmin GFC 700 Auto Pilot System. The GSA 81 is connected to the GSM 86 Servo Mount to form a single servo unit. Refer to Figure 401. Because of the design of the servo unit the servo portion (GSA 81) can be removed from the servo mount (GSM 86) without the need to de-rig the aircraft control cables. The pitch servo unit is located aft of the rear compartment wall.

CAUTION: When removing and/or replacing a GFC 700 component make sure that the aircraft power is off. Disconnect auxiliary power supplies.

2. GSA 81 Pitch Servo Removal/Installation

- A. Remove the GSA 81 Pitch Servo (Refer to Figure 401).
 - (1) Remove external electrical power from the airplane.
 - (2) Make sure that the BATTERY switch (SC005), found on the circuit breaker switch panel, is set to the OFF position.
 - (3) Make sure that the EXTERNAL POWER switch (SC006), found on the circuit breaker switch panel, is set to the OFF position.
 - (4) Disengage the A/P SERVOS & A/P DISC and A/P CONT circuit breakers found on the left circuit breaker panel.
 - (5) Remove the Rear Compartment Wall. Refer to Chapter 25, Rear Compartment Wall - Maintenance Practices.
 - (6) Remove the GSA 81 pitch servo as follows:
 - (a) Disconnect the servo electrical connector (PT300)
 - (b) Remove the bolts and washers that attach the servo to the servo mount
 - (c) Remove the pitch servo from the servo mount.

NOTE: If the servo is removed for an extended time a cover can be installed on the servo mount to prevent contamination of the unit.

CAUTION: Do not use solvents to clean the output gear.

- (7) Remove excess grease buildup from the single servo output gear using a lint-free cloth.

NOTE: It is not necessary to remove all of the grease from the output gear, only the excess grease.

- (8) If necessary use a brush or other applicator and apply a thin coat of grease to the servo output gear. Use Aeroshell 33 MS (preferred) or Aeroshell 17 grease.

- B. Install the GSA 81 Pitch Servo (Refer to Figure 401).

- (1) If necessary remove the cover from the servo mount.
- (2) Carefully put the GSA 81 pitch servo in its correct position on the GSM 86 servo mount.
 - (a) Make sure that you align the servo mount gears and the servo gears correctly.
- (3) Install the bolts and washers that attach the servo to the servo mount.
 - (a) Torque bolts to 35.0 inch-pounds, + 5.0 or -5.0 inch-pounds (3.95 N-m, 0.56 or -0.56 N-m).
- (4) Visually inspect the electrical connectors to make sure that there are no bent or damaged pins.
 - (a) Repair any damage.
- (5) Connect the servo electrical connector.
- (6) Operate the controls through full travel and make sure that no binding or restriction occurs.
- (7) Install the Rear Compartment Wall. Refer to Chapter 25, Rear Compartment Wall - Maintenance Practices.
- (8) Engage the A/P SERVOS & A/P DISC and A/P CONT circuit breakers found on the cockpit circuit breaker panel.
- (9) Load G1000 baseline software/configuration and certification gains to the pitch servo. Refer to Chapter 34 Garmin G1000 Integrated Avionics System - Adjustment/Test, G1000 Baseline Software/Configuration Load.
- (10) Do an operation check of the pitch servo. Refer to Garmin GFC 700 Autopilot- Adjustment/Test, Pitch Servo Operational Test.

3. GSM 86 Autopilot Pitch Servo Mount Removal/Installation

A. Remove the GSM 86 Pitch Servo Mount (Refer to Figure 401).

- (1) Remove the pitch servo from the mount. Refer to the GSA 81 Pitch Servo Removal procedure in this section.
- (2) Remove the servo mount.

- (a) Remove the tension from the bridle cable.

- 1 Remove the clips from the bridle cable turnbuckle.
 - 2 Loosen the turnbuckle.
 - 3 Disconnect the turnbuckle ends.

- (b) Remove the bridle cable from the capstan.

- 1 Remove the screws that attach the capstan cover and pins to the mount.

NOTE: Before you remove the cable retention pins record the installation position of each of the pins on the mount.

- 2 Remove the capstan cover and pins.
 - 3 Record how the cable is installed on the capstan.
 - 4 Remove the cable from the capstan.

- (c) Remove the four bolts that attach the mount to the servo mount bracket.

- (d) Remove the servo mount from the airplane.

NOTE: If the servo mount is removed for an extended time a cover can be installed on the servo mount to prevent contamination of the unit.

B. Install the GSM 86 Pitch Servo Mount (Refer to Figure 401).

- (1) Install the pitch servo mount servo mount.

- (a) Carefully the servo mount in its correct position on the servo mount bracket.

- 1 Install the four bolts that attach the servo mount to the servo mount bracket.
 - 2 Torque the bolts to 35 inch-pounds, +5.0 or -5.0 inch-pounds (3.95 N-m, +0.56 or -0.56 N-m).

- (2) Install the pitch servo bridle cable.

- (a) Make sure that the elevator and bell crank are in the neutral position.

- (b) Wind the bridle cable around the servo drum approximately as shown. Refer to Figure 401.

- (3) Install the capstan cover.

- (a) Put each of the cable retention pins in one of the correct positions on the servo mount as follows:

- C, F, H, and L.

- (b) Put the capstan cover in its correct position on the mount retention pins.

- (c) Install the screws that attach the capstan cover to the servo mount.

- 1 Torque the screws to 10.0 inch-pounds +2.0 or -2.0 (1.12 N-m +.22 or -.22 N-m).

- (4) Make sure that the primary control cables tension is correct before checking or adjusting bridle cable tension. Refer to Chapter 27 Elevator System - Maintenance Practices Elevator System Rigging.

- (5) Connect the two ends of the turnbuckle.

- (a) Tighten the bridle cable tension to 20.0 pounds, +5.0 or -5.0 pounds (88.9 N +22.2 to -22.2 N).

- 1 Install new clips on the turnbuckle.

- (6) Install the pitch servo. Refer to the GSA 81 Pitch Servo Installation procedure in this section.

- (7) Engage the A/P SERVOS & A/P DISC and A/P CONT circuit breakers found on the cockpit circuit breaker panel.

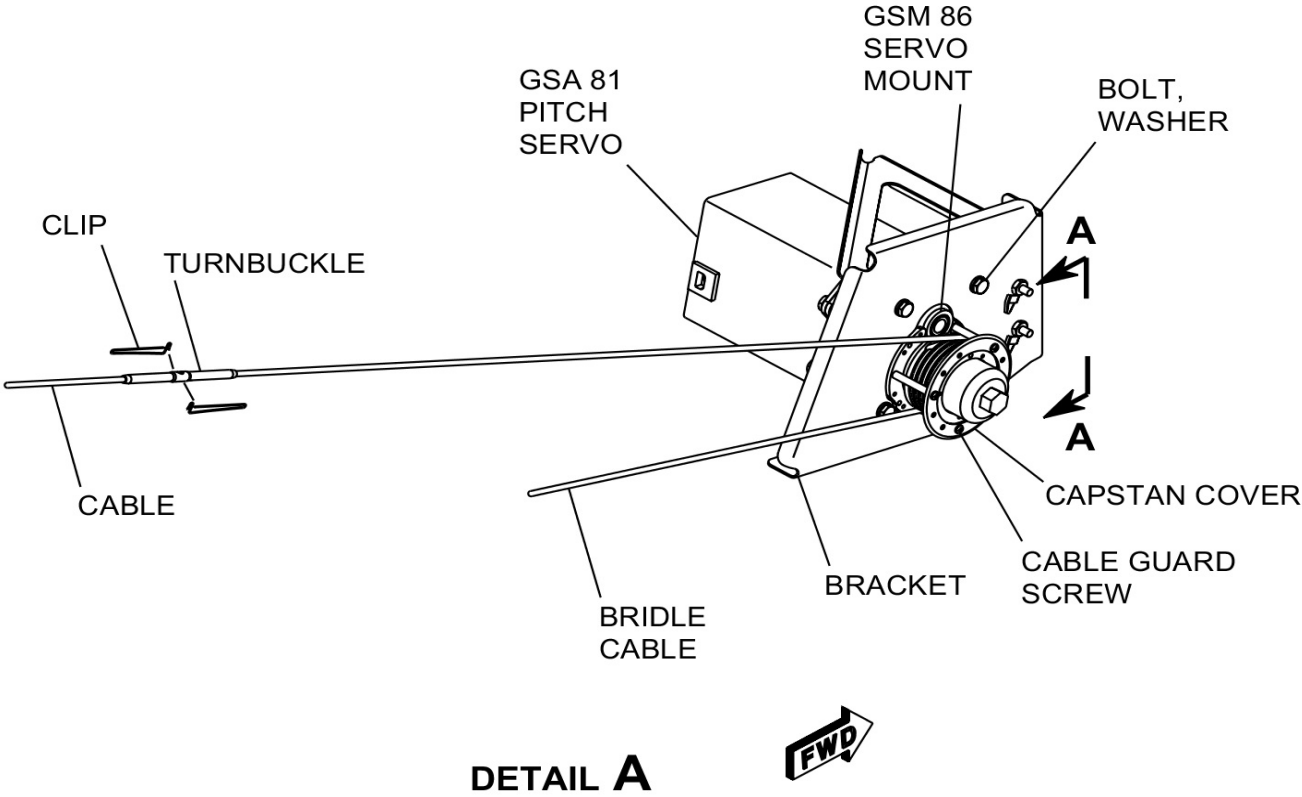
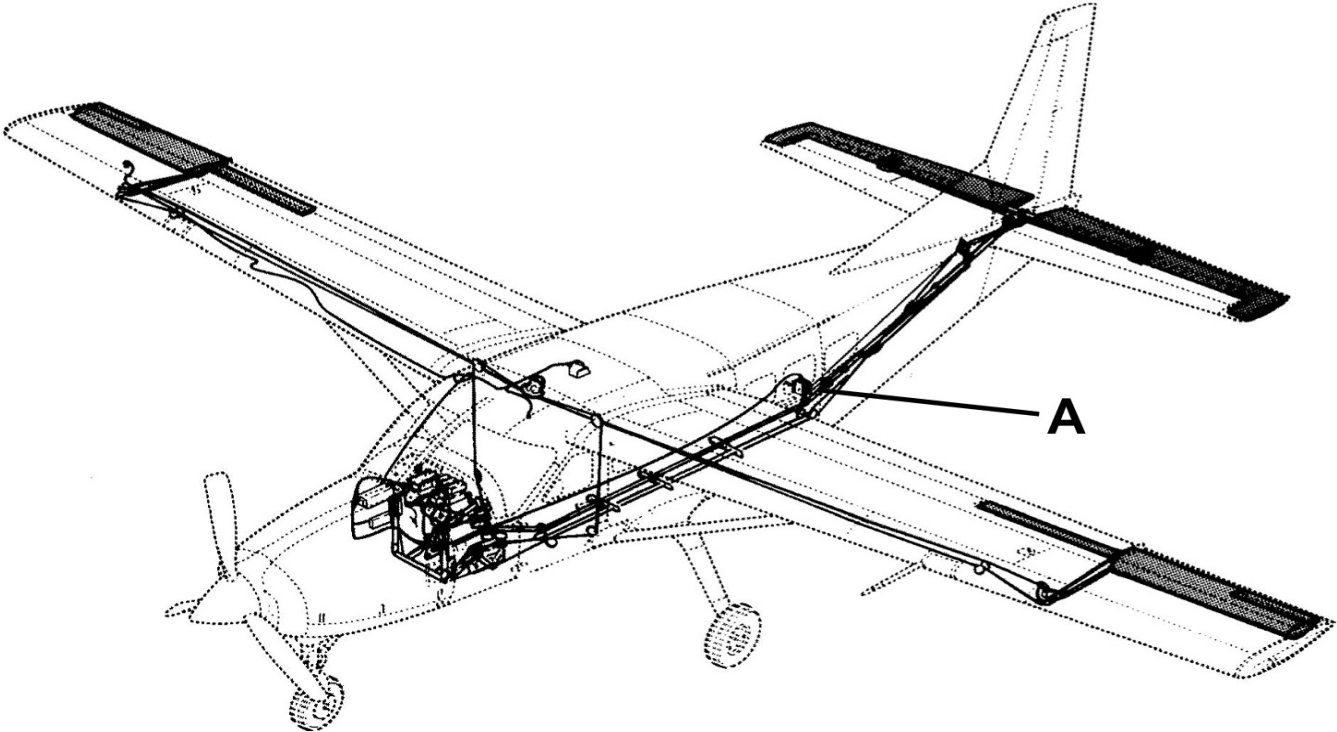
- (8) Connect external electrical power to the aircraft.

- (9) Do a check of the servo mount slip clutch. Refer to GSM Servo Slip Clutch Check.

NOTE: The GSM 86 slip clutch is not adjustable once manufactured. If the servo mount is not serviceable you must replace it.

Figure 401 : Sheet 1 : Autopilot Pitch Servo Unit Installation

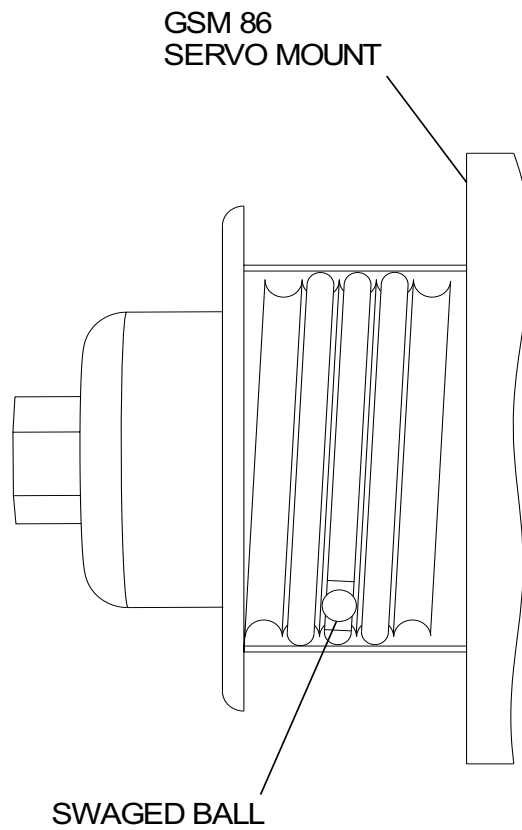
A86061



0710T1001
A2663T1022

Figure 401 : Sheet 2 : Autopilot Pitch Servo Unit Installation

A86063



VIEW A-A

AA2663T1022