

Service Bulletin

Dynon Autopilot Servo SV42T Inspection and Replacement of Linear Actuator Servo Pulley

SB-LTUL-CTLS-14

SB-LTUL-CTSL-06

Repeating Symbols:

Please pay attention to the following symbols throughout this document emphasizing particular information.

- ▲ **Warning:** Identifies an instruction, which if not followed may cause serious injury or even death.
- **Caution:** Denotes an instruction which if not followed, may severely damage the aircraft or could lead to suspension of warranty.
- **Note:** Information useful for better handling.

1 Planning Information

1.1 Affected Aircraft

Type: CT
Model: CTLS/CT Supralight
Affected Aircraft: aircraft equipped with DYNON autopilot
Applicable Countries: Not limited.

1.2 Concurrent Documents

[1] Dynon Service Bulletin 080219: SV42T Servo Pulley.

Document is available on the Dynon Avionics webpage under the following link:

https://dynonavionics.com/bulletins/support_bulletin_080219.php

1.3 Reason

Some of the airplanes equipped with Dynon SkyView autopilot system can be affected by Dynon Service Bulletin [1] mentioned in Chapter 1.2. As specified in Dynon Service Bulletin, the pulley of the SV42T linear actuator servo could have cracks. This can be cause for the poor autopilot system performance and presents a risk of interfering with the flight controls.



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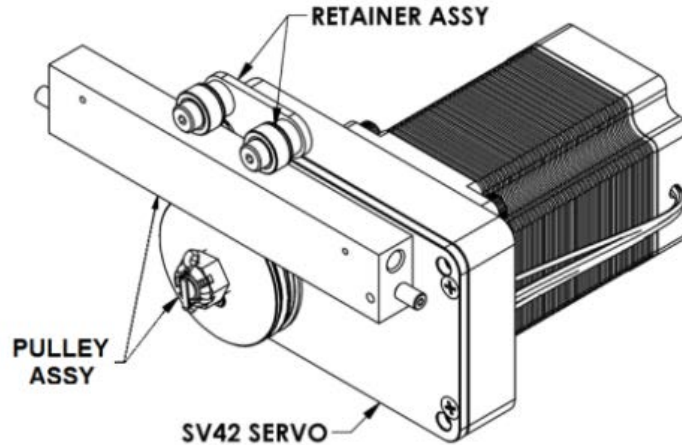


Fig. 1

1.4 Subject

This Service Bulletin provides information about required inspection and replacement (if needed) of the pulley assembly of autopilot roll servo unit SV42T. This bulletin is an add-on information provided by the initial Dynon Service Bulletin [1].

1.5 Compliance

Conduct of the inspection is required before the next flight.

During inspection the following cases can be detected:

- Pulley of servo has correct fiber direction and cracks are not observed. In this case further actions are not required;
- Pulley of servo has wrong fiber direction and cracks are not observed;
- Pulley has cracks.

In the cases that cracks or/and wrong fiber directions are detected, the autopilot system shall not be operated and must be disabled. The autopilot circuit breaker should be set in switched OFF position and marked with label "INOP" prior next flight. The affected parts must be replaced as soon as repair kit will be provided.

▲Warning: Non-compliance with these instructions could result in further damages, personal injuries or death.

1.6 Approval

Not applicable.

1.7 Type of Maintenance

Inspection - Line

Replacement - Heavy

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Publication Date of this Revision: **26-Aug-2019****1.8 Personnel Qualifications**

National maintenance and inspection regulations as applicable for heavy maintenance, assembly of aircraft systems, apply.

Task Specific: Can be completed only by a responsible individual with experience in assembly of aircraft systems.

1.9 Release to Service

Conduct of modification according this SB must be inspected by an aircraft inspector according to the national applicable regulations for the country of registry of the aircraft.

Conduct of this SB must be logged in the aircraft documentation.

1.10 Weight and Balance

- non effect -

1.11 References**1. Drawings:**

- none -

2. Documents:**Latest issues of:**

- [1] Dynon Service Bulletin 080219: SV42T Servo Pulley. Document is available on the Dynon Avionics webpage:
https://dynonavionics.com/bulletins/support_bulletin_080219.php;
- [2] Dynon Actuator Component Removal and Replacement Instructions for Dynon Autopilot Servos 101156-001 Rev B 8/7/2019. Document is available on the Dynon Avionics webpage:
https://dynonavionics.com/includes/guides/Servo_Arm_Capstan_Removal_and_Replacement_Instructions_Rev_B.pdf

1.12 Superseded Documents

- none -

1.13 Contact Details

For further information on conduct of this SB, or to report any Safety of Flight or Service Difficulty issues contact your Distributor responsible for your country. Your Distributor can be located via the Flight Design general aviation website: www.flightdesign.com under "Dealer Location".

In cases where the local distributor is not known or available contact Flight Design general aviation GmbH directly: customer.care@flightdesign.com

1.14 Disclaimer

This Service Bulletin has been generated with utmost care. Nevertheless errors and misunderstandings can never be fully excluded. In case of any doubts the applicant of this Service Bulletin is requested to contact Flight Design immediately to clarify the issue.

2 Resources

2.1 Workshop Conditions

No specific requirements.

2.2 Parts

- Repair Kit (Pulley)– 1 set
Part Number – C9999077R
- Self-locking nut DIN 985-M6, regular – 1 pcs
Part Number – C9996334

2.3 Materials

- Paint Marafkor TK 36 red (or equivalent torque stripe).

2.4 Tools

1. Allen key 2.5 mm
2. Allen key 5 mm
3. Wrench 10 mm
4. Needle nose pliers
5. Torque Driver (adjustable to 4.5 in-lb (0,5 Nm))
6. SAE socket 1/2"
7. Wrench 1/4"
8. Magnifier
9. Flashlight

2.5 Special Tools

- none -

2.6 Manpower

The described task can be performed within approximately 2 hours (working time).

The working time includes:

- Removal and installation of control system barrier.
- Inspection and replacement (if needed) of servo pulley assy.

2.7 Cost

Spare parts will be provided by Flight Design general aviation GmbH free of charge.

3 Instructions

- **Note:** Before maintenance, review the entire documentation to make sure you have a complete understanding of the procedure and requirements.

3.1 General

This chapter provides extended explanation for the autopilot servo SV42T components inspection and replacement. The SV42T servo is installed in a luggage compartment behind main bulkhead on tunnel top and connected to the aileron control system.

3.2 General Procedure

Not applicable.

3.3 Detailed Procedure

3.3.1 Preparation to inspection

Before starting, set the parking brake. In addition always place chocks to the wheels to avoid rolling of the aircraft in case the brake gets loose or the brake lines are opened. Be sure that all equipment and instrumentation is working correct prior to conduct of this instruction. Turn off the electricity of the plane by pulling out the master switch BAT and GEN (Fig. 1).



Fig.1

3.3.2 Removal of Control System Protection Cover

To provide proper access to the autopilot servo SV42T it is necessary:

- Open left luggage door;
- Remove protection cover of control system by unscrewing attachment screws M4, marked by red circles on Fig. 2.

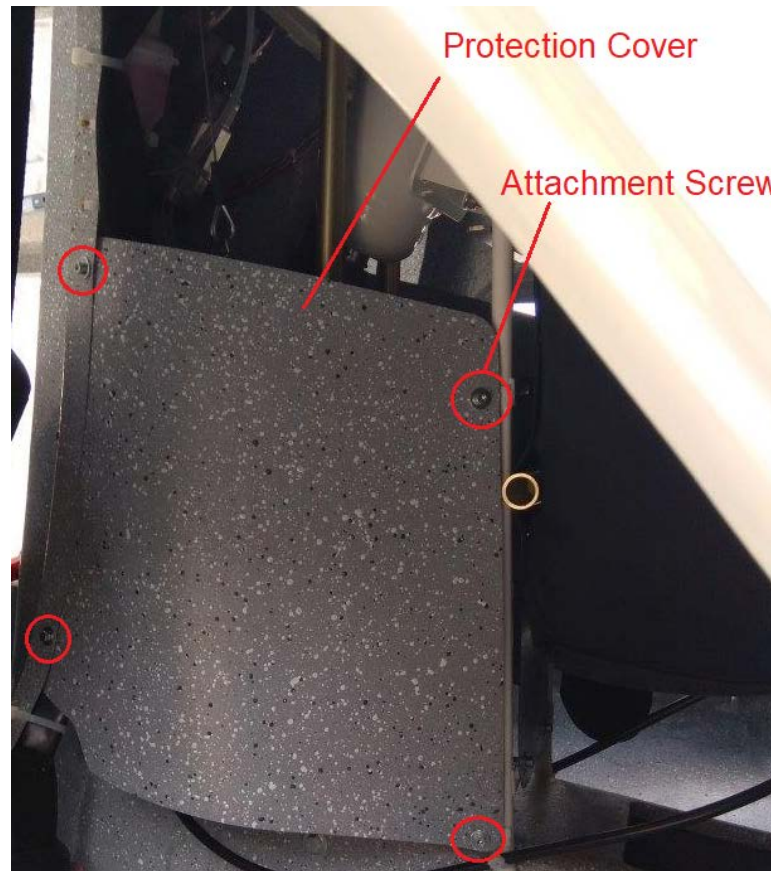


Fig. 2

- **Note:** On Fig.2 shown installation of protection cover on CTSL plane. Installations of protection cover on CTLS are very similar.

3.3.3 Inspection of Roll Servo Pulley

Perform inspection of servo pulley as described in [1].

When inspections shown that servo pulley replacement is not required – pass subchapters 3.3.3, 3.3.4 and continue this SB accomplishment from subchapter 3.3.6.

When inspections shown that servo pulley replacement is required – contact with Flight Design to get needed parts for replacement and continue SB accomplishment from subchapter 3.3.4. Set off and mark the autopilot system as per 1.5.

3.3.4 Removal of Servo Pulley

Installations of autopilot roll servo SV42T to CTLS and to CT Supralight planes is very similar with some small differences. With this the servo pulley removal procedure provided below is applicable for both airplane types. Installation of system is shown on Fig. 3.

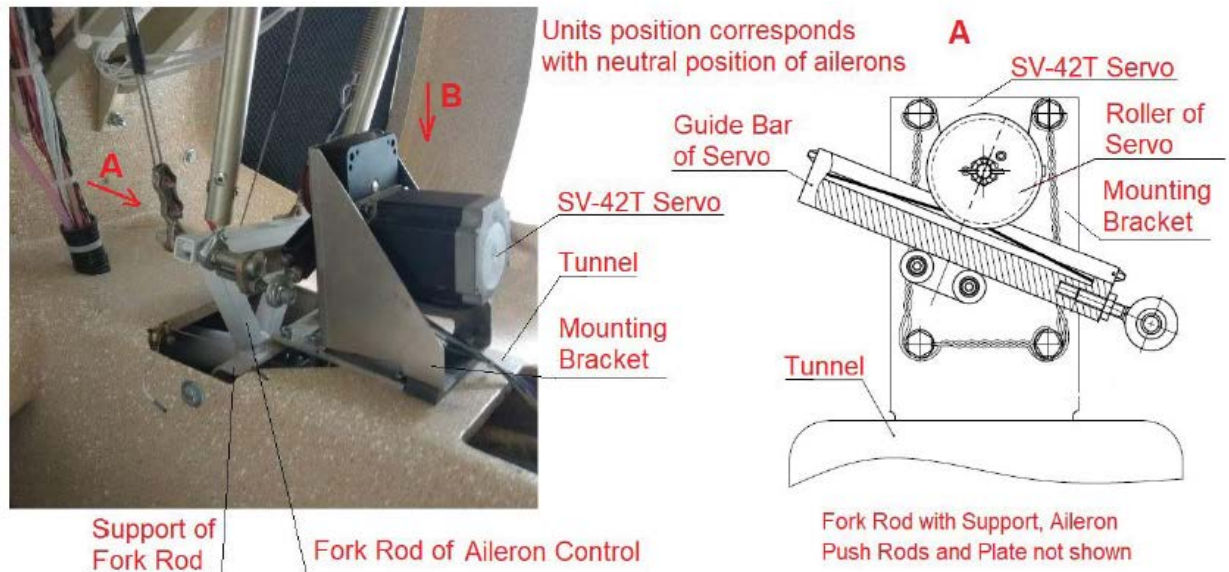


Fig. 3. Installation of Roll Servo SV42T to CTLS

For mechanical disconnection of the servo from the aileron control system perform the following steps:

1. Unloose Lock Nut of the servo Rod End (Fig. 4) by turning of nut counterclockwise approx. for 15°-30° (it should be enough to screw-out rod end from guide bar later). Keep Lock Nut in such position on the Rod End. Do not screw out nut more so as will help install rod end properly at unit assembling.

Detach servo guide bar with rod end from an aileron control system by unscrewing of the bolt-nut connection (Fig. 4a and Fig. 4b)

- **Note:** Before unscrewing the bolt-nut connection, note and put down amount of washers and bushes in a Spacer Set (as shown on Fig. 5a and Fig. 5b) between the aileron control system components and the rod end of servo guide bar. During the final assembly of system the same Spacer Set should be installed back.

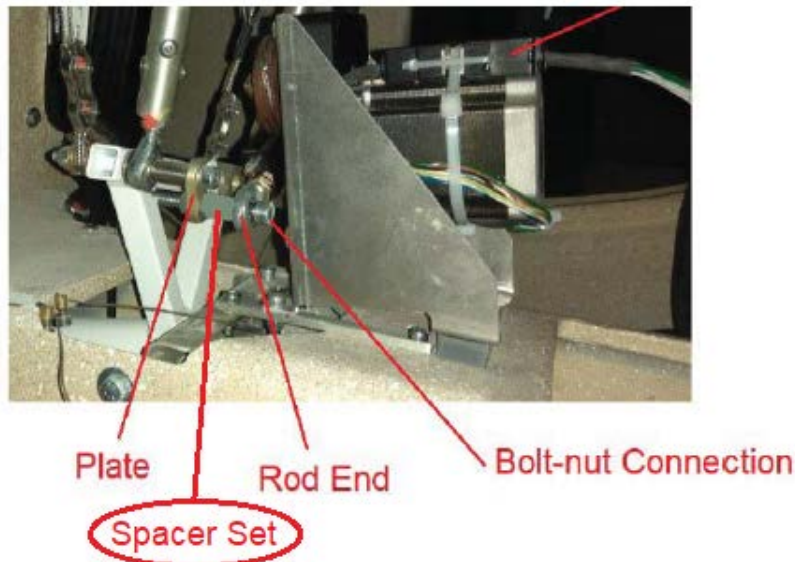


Fig. 4a. Mechanical connection of servo to aileron control (CTLS)

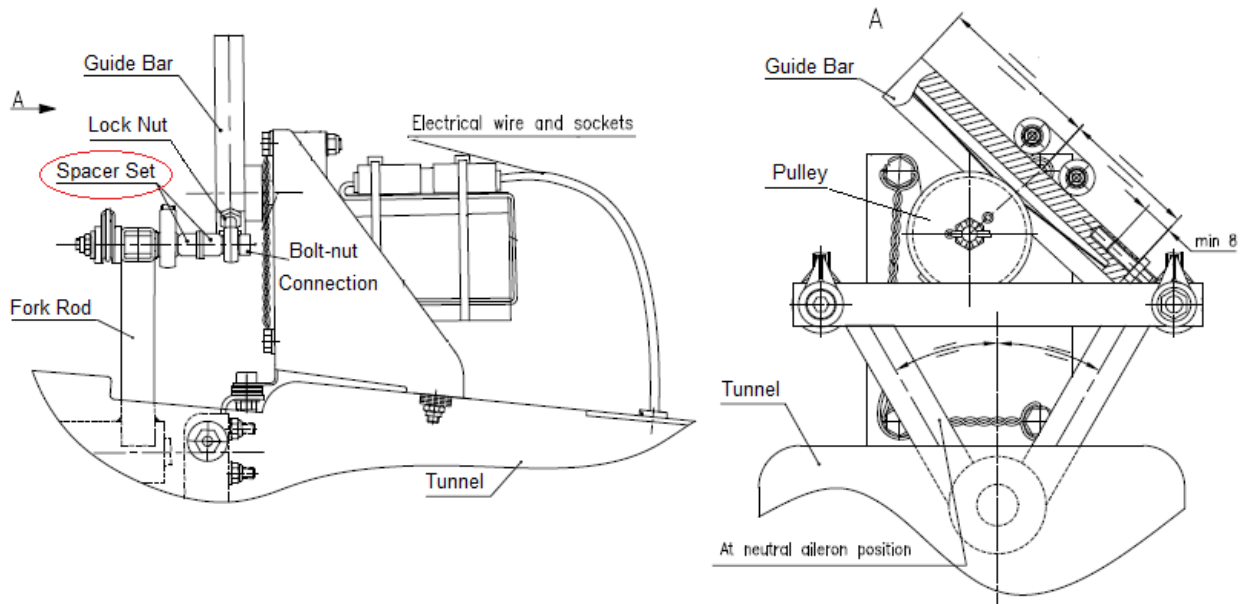


Fig. 4b. Mechanical connection of servo to aileron control (CTSL)

2. Screw-out the Rod End from the servo guide bar (Fig. 5).

- **Note:** Keep lock nut on the rod end in the current position.

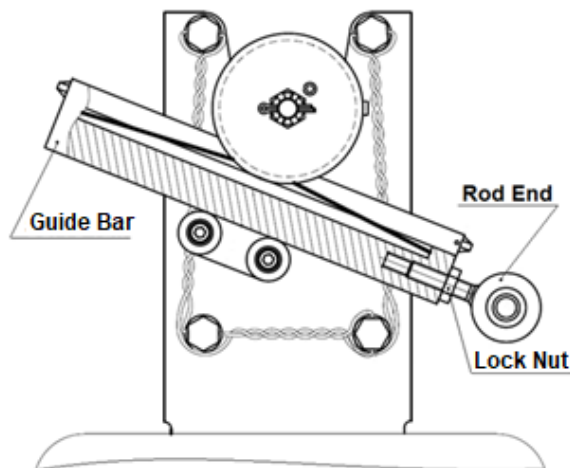


Fig. 5

3. Detach Pulley with Guide Bar from the servo shaft as described in [2].

3.3.5 Installation of New Servo Pulley

1. Mount the new pulley with guide bar on the shaft of servo as described in [2].
2. Screw-in the rod end with lock nut to the guide bar up to lock nut by hand. Do not tight lock nut at this moment.

- **Note:** Guide bar has thread bores for rod end on both ends. Verify the correct position of guide bar relative to the pulley. The correct position for CTLS installation is shown on Fig. 3 (guide bar under the pulley). The correct position for CTSL installation is shown on Fig. 4b (guide bar above the pulley).

3. Connect the rod end to the control system by the bolt-nut connection with spacer set. To be done in back order of item 2 of subchapter 3.3.4. Use the new self-locking nut p/n C9996334. Tight the bolt-nut connection with torque 9 Nm.
4. Verify that within the full range of aileron control system deflections (right-left) the pulley does not touch the end of the guide bar slot. If the pulley touches the end of the guide bar slot, adjust the rod end of the guide bar. Verify that the rod end thread is screwed in to the guide bar not less than 8mm.
5. After check and adjustment (if required) tighten a lock nut of the Rod End.

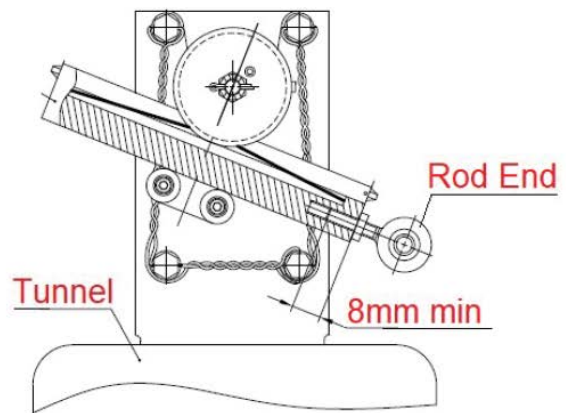
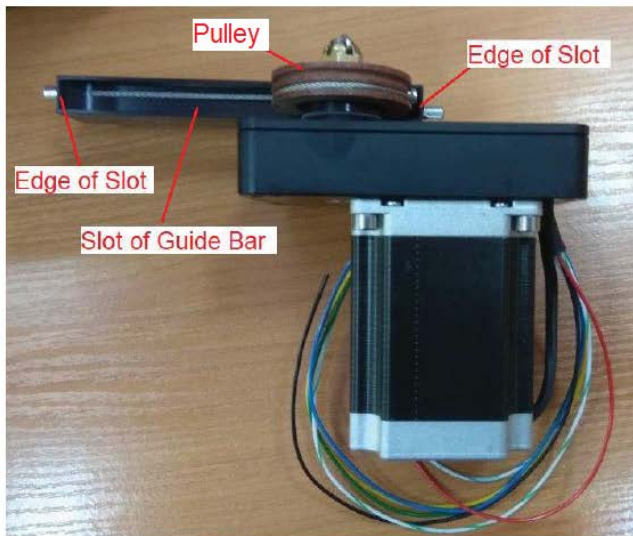


Fig. 6

6. Perform servo calibration from Dynon Skyview:
 - Switch on the power and all avionic equipment together with autopilot circuit breaker;
 - Enter to the SYSTEM SETUP menu on the left SkyView display (SV);
 - Enter to submenu HARDWARE CALIBRATION > AP SERVO CALIBRATION > CALIBRATION. Then follow instructions on the screen.



- When the calibration and test is completed successfully, EXIT from the SETUP MENU.



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- After completion of calibration switch off all avionics and master circuit breakers BAT and GEN.

3.3.6 Mounting of Control System Protection Cover

Install the protection cover in back order as shown in subchapter 3.3.2

3.3 Documentation

Conduct of this SB must be logged in the aircraft log book with date and signature of the responsible Person conducting the SB. National regulations have to be considered.

4 Appendix

4.3 Changes to Previous Revision

Original Issue – no changes

4.4 Feedback Template

No specific feedback required.

