# Service Bulletin

**Exhaust System Checking and Muffler Removal**

**SB-ASTM-CTLS-19**
**SB-LTUL-CTLS-18**
**SB-ASTM-CTSW-16**
**SB-LTUL-CT Supralight-07**

## 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: | CTSW/CTLS/CTSL |
| Serial Numbers: | E-20-08-03, F-20-11-02, F-20-11-03, E-21-01-10, D-21-02-51, F-21-05-01, F-21-04-51, F-21-03-04, F-21-03-01. |
| Applicable Countries: | Not limited |

### 1.2 Concurrent Documents

- none -

### 1.3 Reason

Due to a deviation in the manufacturing process, some exhaust pipes may develop cracks during operation. It is necessary to check before each flight and remove the muffler latest after 25 hours of operation and send it to Flight Design for modification/repair.

## 1.4 Subject

Checking the condition of the exhaust system and removal of the muffler latest after 25 work hours.

## 1.5 Compliance

Compliance must be shown prior to next flight.

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

## 1.6 Approval

*For Ultralight only:*

Not applicable

*For ASTM self declaration basis:*

This SB is approved by the aircraft manufacturer i.a.w. ASTM F3198 for conduct on aircraft as defined in 1.1. Subsequent to complete and correct conduct of this SB the aircraft will still meet the requirements of the applicable ASTM design and performance specification.

## 1.7 Type of Maintenance

Line

## 1.8 Personnel Qualifications

National maintenance and inspection regulations as applicable for line maintenance apply.

For US LSA aircraft: Repairman, Light Sport Aircraft-Maintenance (RLSA-M) – holds a repairman certificate (light sport aircraft) with a maintenance rating, A&P, IA or an FAA repair station.

## 1.9 Release to Service

Conduct of 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 log book with date and signature of the responsible Person according to national regulations.

## 1.10 Weight and Balance

- none -

## 1.11 References

Latest issues of:

[1] AF 0480 0001 CTLS-LSA Maintenance and Inspection Procedures Manual

[2] AU 0100 2000 CTSW-LSA Maintenance and Inspection Procedures Manual

[3] AE 0430 0007 CT / CT Supralight Flight and Maintenance Manual (FMM)

## 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.

Specific contact in USA:

Flight Design USA
P.O. Box 325 South Woodstock, CT 06267
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## 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

Proceed with this only in a non-smoking area and not close to sparks or open flames.

## 2.2 Parts

1. Self-locking nuts M – 8 pcs.

All parts will be supplied by Flight Design.

## 2.3 Materials

1. High heat silicone
2. Heat resistant lubricant (ie: LOCTITE ANTI SEIZE)
3. Safety wire.

All materials will be supplied by Flight Design.

## 2.4 Tools

1. Wrench 12 mm
2. Cutting pliers
3. Screwdriver

## 2.5 Special Tools

- none -

## 2.6 Manpower

The described task can be performed within approximately 1 hour (working time). The working time includes:

- Checking the exhaust pipes/removal of muffler

## 2.7 Cost

Not applicable

# 3 Instructions

## 3.1 General

This chapter provides extended explanations for the muffler removal steps only. For removal and installation of the subsystems, please follow the instructions and information's in the manuals [1], [2], or [3].

## 3.2 Procedures for Checking the Exhaust System

**Step 1.** Remove the cowling.

**Step 2.** Check the condition of all pipes of the exhaust system on cracks. Pay special attention to welding seams, as there may be cracks in the area (see Fig. 3-1 for example).


Fig. 3-1 - Exhaust pipe crack (example)

▲**Warning:** Perform an exhaust system check before each flight before the muffler is modified.

### 3.3 Procedures for Removing the Exhaust System

If cracks are found or the engine has been running for more than 25 hours, the muffler must be removed from the aircraft and send it to Flight Design for modification/repair.

**Step 1.** Detach tube of heating system from the muffler unscrewing the clamp. (See Fig. 3-2).

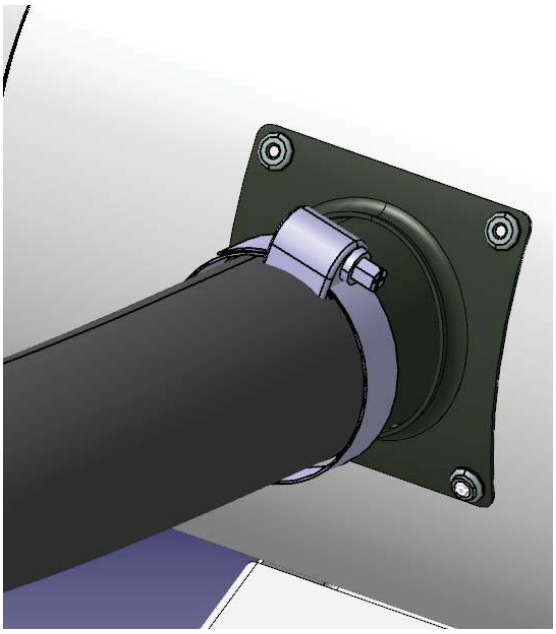

Fig. 3-2

**Step 2.** Loosen the 8 nuts M8 that connect the exhaust pipe to the engine (see Fig. 3-3). Only loosen the nuts, to not remove them!

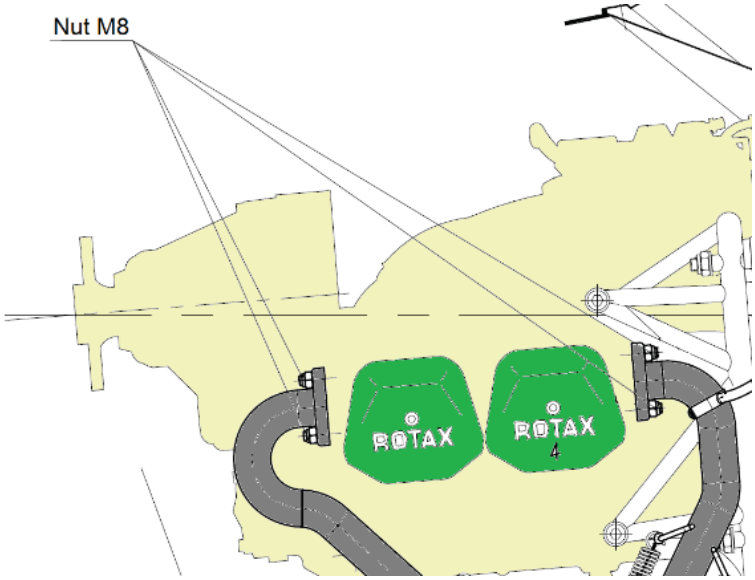


Fig. 3-3

**Step 3.** Cut the safety wires of the tension springs and remove the springs (see Fig. 3-4).

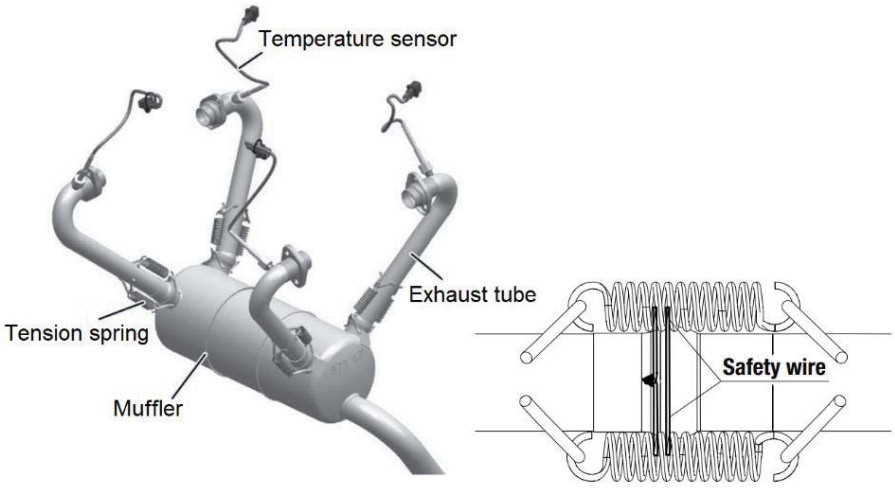


Fig. 3-4

**Step 4.** Carefully remove the muffler by pulling it off the exhaust tubes. The downwind pipes will remain on the engine.

## 3.4 Shipping and Rework of the Exhaust System

Contact Flight Design for shipping instructions.

Once the muffler has arrived at Flight Design, it will be inspected, repaired (if required) and modified, namely: reinforce the welding seam by adding two additional reinforcement plates, as shown in the Fig. 3-5:

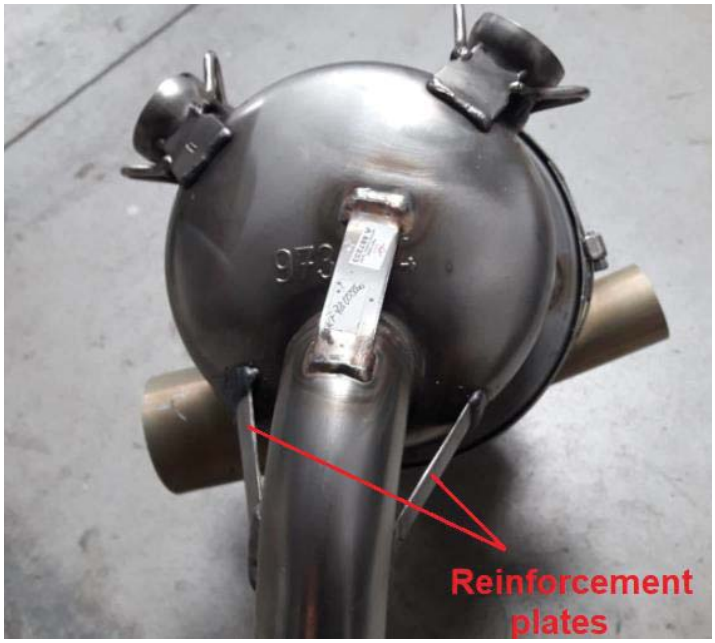


Fig. 3-5

### 3.5 Reinstallation of the Exhaust System

**Step 1.** One by be other prepare the exhaust pipes for reinstallation of the exhaust system:

- Take off both metallic stop nuts of the exhaust flange and remove the exhaust pipe from the engine by pulling it off. Clean both the ball end of the exhaust pipe and the cylinder head with a no-fuzzing cloth.
- Apply a thin coating of heat resistant coating on the ball end of the exhaust pipe and slide it back into its position on the cylinder head.
- Spin on new metallic self-locking nuts, but do not tighten them now. Just spin them on so much that the exhaust pipes are still hanging loose and can move/rotate a bit.

**Step 2.** Reinstall the muffler:

- Clean both the ball end of the exhaust pipe and the muffler with a no-fuzzing cloth and apply a thin coating of heat resistant coating on the ball end of the exhaust pipes.
- Lift the muffler so that the exhaust pipes engage in the ports of the muffler. And install the springs connecting the muffler with the exhaust pipes.
- Adjust the position of the muffler, so that the exhaust pipe points out through its opening in the lower cowling. You may want to temporarily install the lower cowing for this step.

- Thoroughly and carefully tighten the stop nuts on the cylinder heads up to a torque of 15Nm (133 in.lb). The exhaust flange should be approximately parallel to the cylinder head. It may not touch the cylinder head.

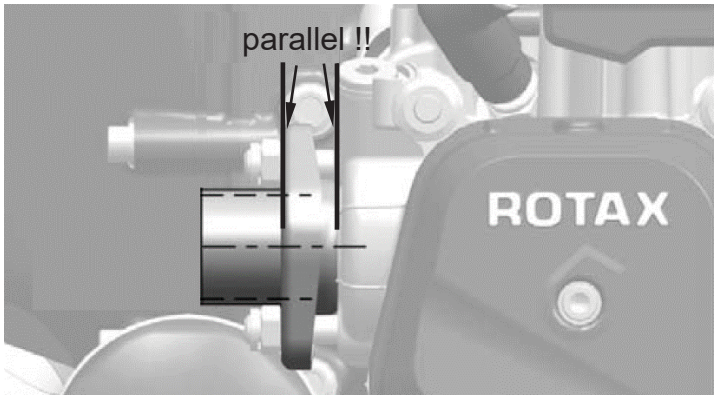


Fig. 3-6

- Secure the springs with safety wire.

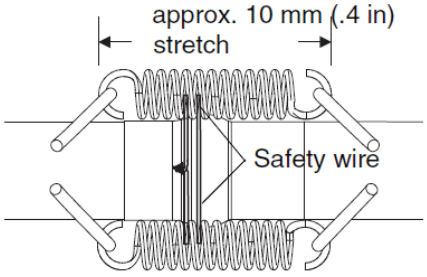


Fig. 3-7

- It is highly recommended to fill the springs with heat resistant silicone.

- **Step 3.** After checking the correct installation of the exhaust system one more time, reinstall the cowling.

### 3.6 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.