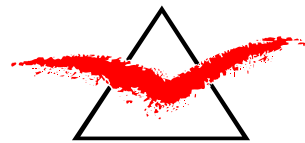


# **Improved Fire Protection Retro-Fit Manual for US LSA Airplanes**

Fuel and Oil Tubes Securing



**FLIGHT DESIGN**

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## 1 Applicability

All CT-LSA planes.

## 2 Workspace Preparing

Before processing make sure your workspace is prepared properly.

### 2.1 Tools Required

Wrench 8x10	1 pcs.
Wrench 10x13	1 pcs.
Allen key 6	1 pcs.
34" support with padded top	1 pcs.
Cutting pliers	1 pcs

### 2.2 Level of Certification Required

Light Sport Aircraft Repairman Maintenance Airplane (LSRMA)

## 3 Anchoring the Aircraft

### 3.1 General

- A. Before starting, set the parking brake on. Remove cowlings; make sure the tail area is clear.
- B. Lift the forward fuselage by pushing down the tail at the narrowest part so that the nose wheel is at least 10" off the ground.
- C. Insert the padded support securely just behind the firewall.  
Note: the top of the support has to be soft to prevent damage of the skin and paint.
- D. Set the chocks under the wheels to prevent plane's rolling.

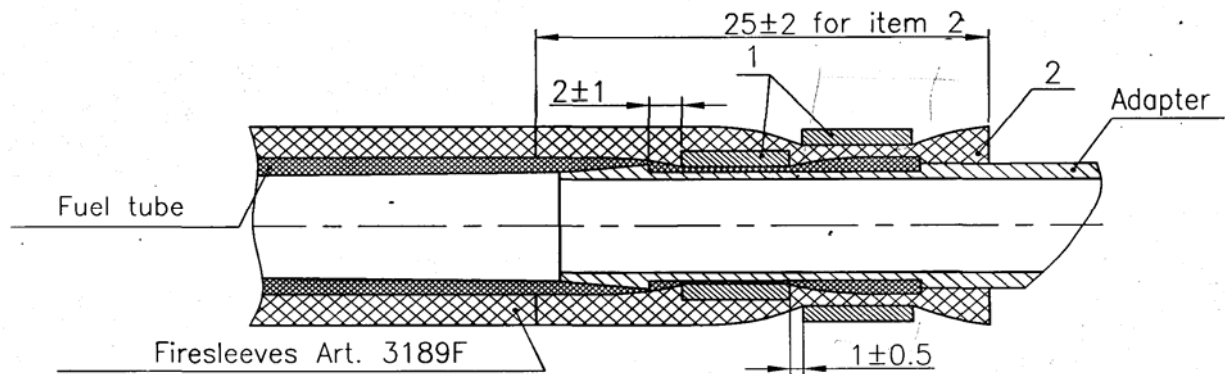
## 4 Fuel and Oil Tubes Securing

### 4.1 Materials Required

Clamp (Art No. 7720)	3014260 FSC Clamp
Firesleeve AE102 Size 10 (fuel tubes)	(AE102-10)
Firesleeve AE102 Size 14 (oil tubes)	(AE102/624-14)
Silicone black fireproof (Art No. 3549 E)	3014262FSS Firesleeve Sealant

### 4.2 General

All Fuel & Oil tubes in engine compartment must be secured with Firesleeves (Pic. A). Disconnect tube from adapter. Put the FSC clamp on the rubber tube. Coat the inner side of Firesleeve with fireproof silicone. Put the FSC clamp on. Duration (for one tube end): 10 min.



- 1 – Clamp (Art No. 7720)  
 2 – Silicone black fireproof (Art No. 3549 E)

Pic. A

Amount of available connections for CTSW:

Fuel line:

- without Dynon: 11;
- with Dynon: 12;

Oil line:

- without Dynon: 8;
- with Dynon: 12;

Use the following instruction for fire sleeve installation:

**FIRESLEEVE**

**Accessories**



**3014260**  
**FSC Clamp**  
 Used to attach firesleeve around socket on all size hose lines.

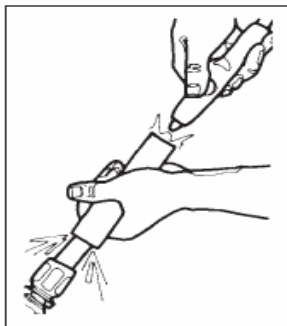


**3014261**  
**FST Clamp Tool**  
 Used to secure FSC clamp.

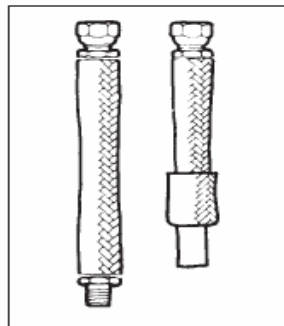


**3014262**  
**FSS Firesleeve Sealant**  
 Keeps ends of firesleeve from fraying - for neater, longer lasting installation.

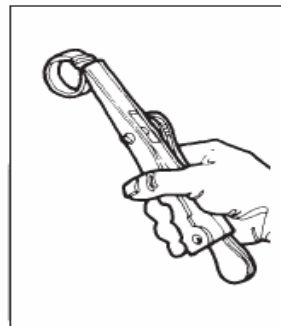
**Firesleeve Assembly Instructions**



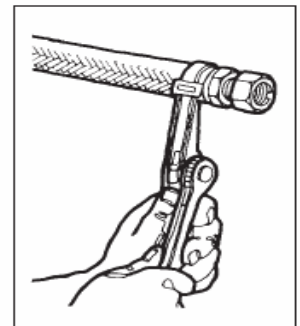
**Step 1**  
 Assemble one end fitting on hose. Cut firesleeve to same length as hose. Dip each end of firesleeve into FSS sealant approximately 1" and allow to dry.



**Step 2**  
 Push firesleeve back from cut end of hose and assemble the second end fitting. Then pull firesleeve completely over both sockets.



**Step 3**  
 Insert tail of FSC clamp into FST clamping tool.



**Step 4**  
 Position clamp around middle of socket and tighten with tool. Bend end of band back over buckle. Repeat on other end. Repair any scuffs or abrasions in firesleeve with FSS sealant.

Pic. B

### 4.3 Fuel system line

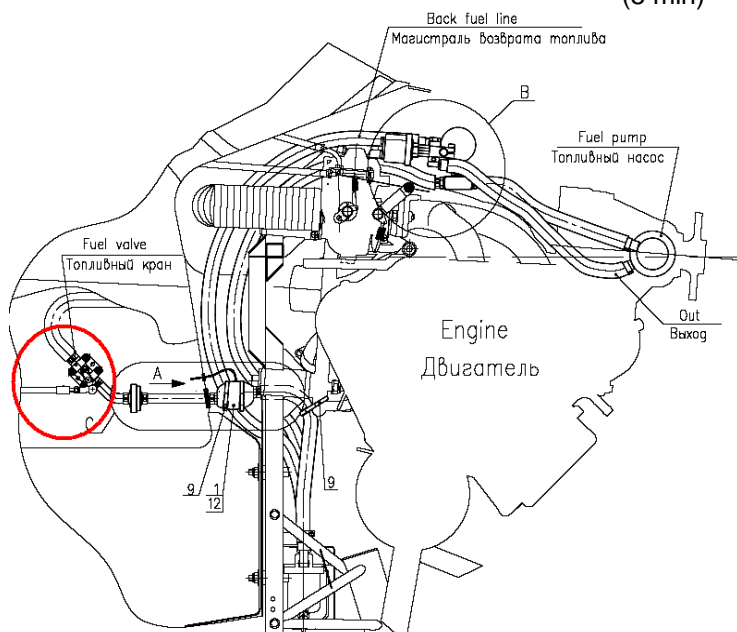
Fuel system inspection and maintenance are to be performed in a well-ventilated compartment, away from heaters and flame.

- drain fuel from the tank;
- uninstall the wing from the fuselage and make sure there no fuel in the tank;
- drain fuel from the fuel line through the drain valve of the gascalator;

open middle panels (10 min)

disconnect rod of the fuel valve from the fuel valve (5 min)

disconnect the fuel valve from the mushroom (5 min)



disconnect fuel line in point b (see picture C) – loose the clamp C9997715H (Clamp 14 mm) (5 min)

disconnect fuel line in points a (see picture C) – loose the clamps from both lines (left/ right) (15 min)

Take out T-connector ( item 3, see picture C) with connected fuel tubes from firewall (5 min)

Replace clamps as shown in picture A; B on the T-connector. (30min)

Make hole in the firewall for fuel tube covered with fire sleeve big enough (about 1" (25mm)) using drill machine; insert grommet and pass fuel tube covered with fire sleeve trough it. (15 min)

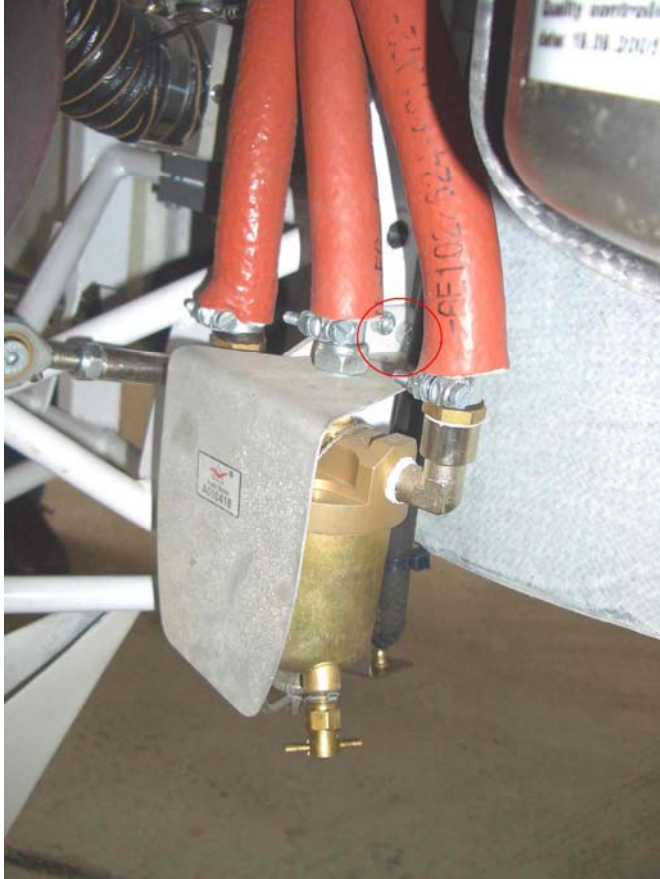


Connect the fuel tube to the fuel valve ( item 4, see picture C) using procedure from picture B.  
(20 min)



Install the fuel valve, fuel valve rod, instrument panels.  
(30min)

Disconnect gascalator from the Engine Nount (10 min)



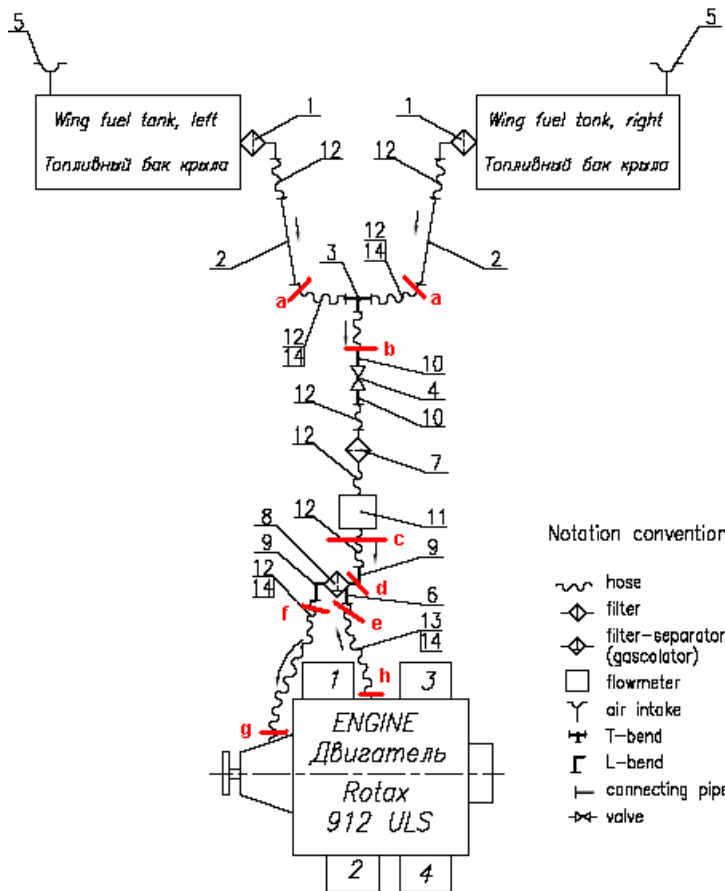
Disconnect fuel lines from gascalator in points d, e, f (see picture C) (30 min)

Replace clamps as shown in picture B (1hour 15 min)

Connect gascalator to the Engine Nount (10 min)

**Total working time about 3 hours**





ITEM	QTY	UNIT	DESCRIPTION	REFERENCE
			<u>Documentation</u>	
			Assembly drawing	KA7021000-01 ASSY
			<u>Assembly units</u>	
1	2	pcs	Fuel intake	KA7020030 ASSY
2	2	pcs	Fuel line	KA7020080 ASSY
3	1	pcs	T-connection	KB7020090 ASSY
4	1	pcs	Fuel valve	KB7020020 ASSY
5	2	pcs	Vent	KA7020080 ASSY
			<u>Details</u>	
6	1	pcs	Gascolator adaptor	KA7020008
			<u>Standard parts</u>	
7	1	pcs	Fuel filter W-K942/2	3549
8	1	pcs	Gascolator	7421
9	2	pcs	Fuel L-adapter A-Wek-8/4-1/8-MSv	7417E
10	2	pcs	Connector E-GET80-9-1/4-MS	7257B
11	1	pcs	Sender-Kit for Rotax 912 (S)	7426S
			<u>Materials</u>	
12	3.45	m	Fuel tube DIN 73379, 7.5x13,5	3184A
13	1	m	Fuel tube 5,5	3184C
14	3.4	m	824 & AE102-14 Firesleeves	3189F

Pic. C

#### 4.4 Oil system line

Turn the propeller 3-4 times by hand.

Take out the muffler .

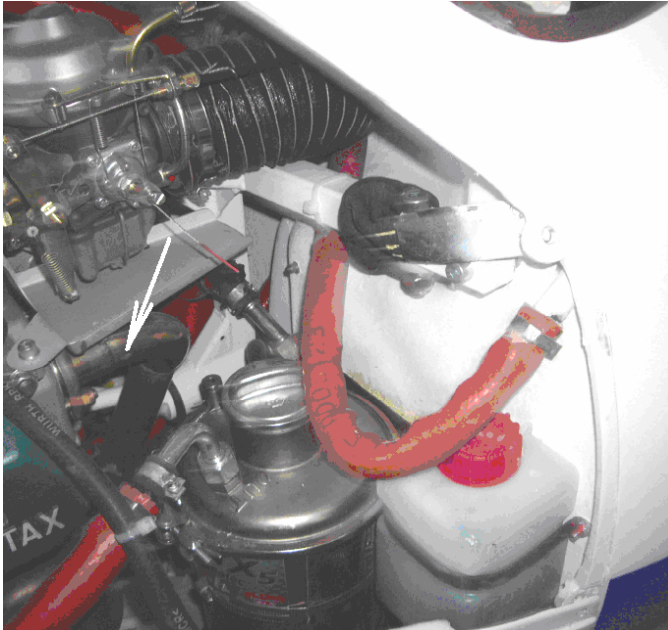
Take out Rear exhaust pipe, Left (KA5020200 ASSY) – see pointer on the picture below.

A

Disconnect the oil pipe from the oil tank (pipe between the oil tank and oil radiator)

Put the fire Firesleeve AE102 Size 14 on the oil pipe. Replace clamps as shown in picture A; B.

Connect the oil pipe to the oil tank – see picture below.



B

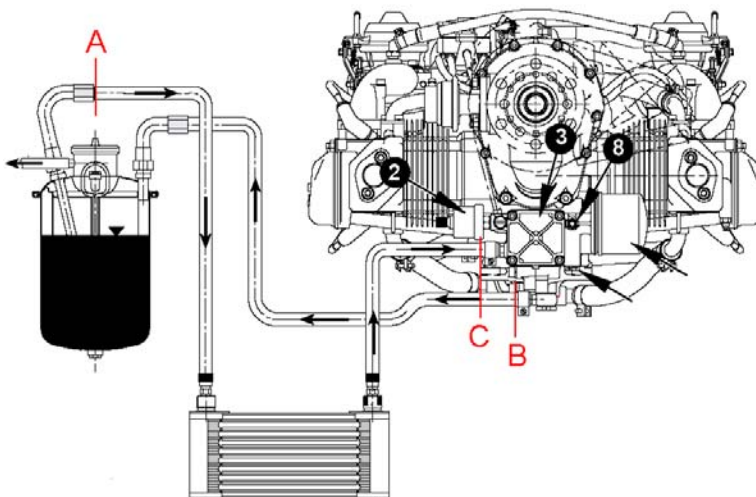
Take out the connector from the crankcase oil pan. Disconnect oil pipe from the connector.

Put the fire Firesleeve AE102 Size 14 on the oil pipe. Replace clamps as shown in picture A; B. Install the connector to the crankcase oil pan.

C

Take out the connector from the oil pump. Disconnect oil pipe from the connector.

Put the fire Firesleeve AE102 Size 14 on the oil pipe. Replace clamps as shown in picture A; B. Install the connector to the oil pump.





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Install the Rear exhaust pipe, Left (KA5020200 ASSY).  
Install the muffler.

Turn the propeller 3-4 times by hand.  
Check is lever of the oil correct

**Total working time about 2.5 hours**

Rev. No.:

Original Issue Date: 07.07.2006

#### **4.5 Before flight**

Check all pipes, hoses and connecting places for routing, chafing, security, and signs of leakage.

Check all systems in accordance to the checklists presented in the Maintenance Manual. Make all required adjustments if necessary.

**5 Revisions**

The Revisions pages are updated by Flight Design each time revision is issued. They contain a list of all revisions made to the Manual since its original issue.

<b>Revision No.</b>	<b>Date Released</b>	<b>Affected Chapters</b>	<b>Affected Pages</b>	<b>Approved By</b>
Original Issue	07.07.2006	N/A	N/A	



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