

# SERVICE INSTRUCTION

## OIL LINE CONNECTIONS WITH UNF-THREADS (AN-8) FOR ROTAX® ENGINE TYPE 912 AND 914 (SERIES)

SI-912-003 R2

SI-914-005 R2

### 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 engine or could lead to suspension of warranty.

◆ **NOTE:** Information useful for better handling.

|| A revision bar outside of the page margin indicates a change to text or graphic.

### 1) Planning information

#### 1.1) Engines affected

All versions of the engine type:

- 912 (Series/pre-series)\*

- 914 (Series/pre-series)

\*Applicable for ROTAX® 912 UL starting with 3.792.508.

#### 1.2) Concurrent ASB/SB/SI and SL

In addition to this Service Instruction the following additional Service Instructions must be observed and complied with:

- SI-912-018/SI-914-020 Purging of lubrication system, latest edition

#### 1.3) Reason

Upon customers request the option of UNF (AN) style 37° flare fittings on the oil pump, oil cooler and oil tank has now been made available allowing the fitting of appropriate AEROQUIP® or STRATOFLEX® oil lines or similar.

Introduction of a 8° sloped hose fitting with UNF-thread (AN-8) at the crankcase.

#### 1.4) Subject

Oil line connections with UNF-threads (AN-8) for ROTAX® Engine Type 912 and 914 (Series).

#### 1.5) Compliance

OPTIONAL

At discretion of the owner and aircraft manufacturer the oil line connections may be changed into a version with UNF threads (AN) as per the following instructions, or specifically requested at ordering the engine.

#### 1.6) Approval

The technical content is approved under the authority of DOA Nr. EASA.21J.048.

#### 1.7) Manpower

Estimated man-hours:

Engine installed in the aircraft - - - manpower time will depend on installation and therefore no estimate is available from the engine manufacturer.

#### 1.8) Mass data

change of weight - - - none.

moment of inertia - - - unaffected.

### 1.9) Electrical load data

no change

### 1.10) Software accomplishment summary

no change

### 1.11) References

In addition to this technical information refer to the current issue of

- Operators Manual (OM)
- Illustrated Parts Catalog (IPC)
- Installation Manual (IM)
- all relevant Service Instructions (SI)
- all relevant Service Bulletins (SB)
- Maintenance Manual (MM)

◆ NOTE: The status of Manuals can be determined by checking the table of amendments of the Manual. The 1<sup>st</sup> column of this table is the revision status. Compare this number to that listed on the ROTAX WebSite: [www.rotax-aircraft-engines.com](http://www.rotax-aircraft-engines.com). Updates and current revisions can be downloaded for free.

### 1.12) Other publications affected

none

### 1.13) Interchangeability of parts

All parts are interchangeable

◆ NOTE: The conversion of an engine from metric to UNF (AN) oil fittings will require an appropriate change in oil lines suitable for such use.

## 2) Material Information

### 2.1) Material- cost and availability

Price and availability will be supplied on request by ROTAX® Authorized Distributors or their Service Center.

### 2.2) Company support information

none

### 2.3) Parts requirement per engine

parts required:

To change to UNF connections the following parts are required:

item no.	New part no.	Qty	Description	Old part no.	remarks
		2	adaptor M14x1,5 / 3/4" UNF (AN)	956641	oil cooler
		1	adaptor M14x1,5 / 3/4" UNF (AN)	956641	oil pump
		1	adaptor M16x1,5 / 3/4" UNF (AN)	956651	crankcase
			or		
	956050	1	hose nipple 16	-	crankcase
		1	oil tank cover assy.	956438	oil tank
		3	gasket ring A14x18	230387	oil cooler, oil pump
		1 or 2	gasket ring A16x22	430622	crankcase
		1 or 2	gasket ring A10x14	230150	914 Series return oil line oil tank cover

**2.4) Material volume per spare part**

none

**2.5) Rework of parts**

none

**2.6) Special tooling/lubricant-/adhesives-/sealing compound - Price and availability**

Price and availability will be supplied on request by our ROTAX® authorized distributors or their Service Center.

parts volume:

At installation of UNF-connections the following items will be needed:

<b>Fig.no.</b>	<b>New part no.</b>	<b>Qty/engine</b>	<b>Description</b>	<b>Old part no.</b>	<b>remarks</b>
	-	as required	LOCTITE 243	897651	screw securing agent
	-	as required	LOCTITE 221	899785	screw securing agent

### 3) Accomplishment / Instructions

#### Accomplishment

All the measures must be taken and confirmed by the following persons or facilities:

- ROTAX® -Airworthiness representative
- ROTAX® -Distributors or their Service Centers
- Persons approved by the respective Aviation Authority
- *Person with type-specific training (applicable only for none-certified engines)*

▲ **WARNING:** Proceed with this work only in a non-smoking area and not close to sparks or open flames. Switch off ignition and secure engine against unintentional operation. Secure aircraft against unauthorized operation. Disconnect negative terminal of aircraft battery.

▲ **WARNING:** Risk of scalds and burns! Allow engine to cool sufficiently and use appropriate safety gear while performing work.

▲ **WARNING:** Should removal of a locking device (e.g. lock tabs, self-locking fasteners, etc.) be required when undergoing disassembly/assembly, always replace with a new one.

◆ **NOTE:** All work has to be performed in accordance with the relevant Maintenance Manual.

#### 3.1) Oil tank cover assy.

See fig. 1.

##### 3.1.1) Removal

1. Remove oil lines and clamps according to instructions in the Manual of the aircraft manufacturer.
2. Remove the old type oil tank cover assy. (1). Before removal of the cover mark the hose connections for convenience at reassembly and then detach the hose.
3. Inspect all parts.

#### 3.2) Crankcase

See fig. 2 and 3.

##### 3.2.1) Removal of the adaptor or of the hose nipple 10 (part no. 956315)

1. Remove the banjo bolt (6) and the hose nipple (7) of oil return line from underside of crankcase.

##### 3.2.2) Installation of the UNF (AN) -adaptor or the hose nipple 16 (part no. 956050)

1. Fit the UNF (AN) -adaptor (8) along with new gasket ring (9) on underside of crankcase. Tighten to 35 Nm (26 ft.lb) and secure with LOCTITE 243.

Or alternative

2. Fit the hose nipple UNF (AN) (10) along with new gasket ring (9) and banjo bolt (11), secure with LOCTITE 221. Tightening torque 30 Nm (22 ft.lb).

#### 3.3) Oil pump

See fig. 4

##### 3.3.1) Removal of the adaptor or of the nipple

◆ **NOTE:** Depending on configuration a nipple or an metric adaptor can be installed.

1. Remove the adaptor (12) from the oil pump.

Or

2. Remove the nipple (13) from the oil pump.

### 3.3.2) Installation of the UNF (AN) -adaptor or the nipple, metric adaptor

1. Fit the UNF (AN)-adaptor (14) with gasket ring (15) on the oil pump, secure with LOCTITE 243. Tightening torque 35 Nm (26 ft.lb).

Or alternative

1. Fit the nipple (13), secure with LOCTITE 243. Tightening torque 15 Nm (133 in.lb).
2. Fit the metric adaptor (12) along with new gasket ring (15) and secure with LOCTITE 243. Tightening torque 25 Nm (18 ft.lb).

### 3.4) Oil cooler

See fig. 5.

#### 3.4.1) Removal of the adaptor

1. Remove the adaptor (17) with gasket ring.

#### 3.4.2) Installation of the UNF (AN) -adaptor or the nipple, metric adaptor

1. Fit the UNF (AN) -adaptor (18) along with new gasket ring (19) secure with LOCTITE 243. Tightening torque 22 Nm (195 in.lb).

Or alternative

1. Fit the nipple (20), secure with LOCTITE 243. Tightening torque 22 Nm (195 in.lb).
2. Fit the metric adaptor (17) with gasket ring (19) on the oil pump, secure with LOCTITE 243. Tightening torque 22 Nm (195 in.lb).

### 3.5) Installation of the oil tank cover assy.

See fig.1.

Install the new type oil tank cover assy. (1). Re-establish all hose connections using new oil lines appropriate to connection type and approved for use as oil lines which respect all operating-, temperature-, pressure and depression limits as specified in the engines Installation Manual.

- **CAUTION** On Rotax 914 the oil return line from the turbo charger (2) has to be reconnected too. For that fit the hose nipple (4) along with gasket rings (5) 10x14 and banjo bolt (3) M10 on. Tightening torque 17 Nm (150 in.lb).

### 3.6) Install oil lines

See fig. 4.

1. When using new oil lines select them in accordance with the current Manual at the corresponding engine, check the oil system.
2. Install the oil lines and clamps according to instructions in the Manual of the aircraft manufacturer.
3. If the installation requires a removal of the oil pressure sensor (16), thoroughly clean and degrease the thread before refitting. Secure with LOCTITE 243. Tighten to 15 Nm (135 in.lb).

### 3.7) Filling and purging of the lubrication system

- Proceed according to Maintenance Manual and Service Instruction SI-912-018/SI-914-020, latest edition.

▲ **WARNING:** Proper purging of the engine oil system is critical to avoid engine damage.

- Restore aircraft to original operating configuration.
- Connect negative terminal of aircraft battery.

### 3.8) Test run

Start engine. Conduct test run, inclusive ignition check and leakage test in accordance with the current Maintenance Manual.

### 3.9) Summary

These instructions (section 3) have to be conducted in accordance with the time limits stated in section 1.5.

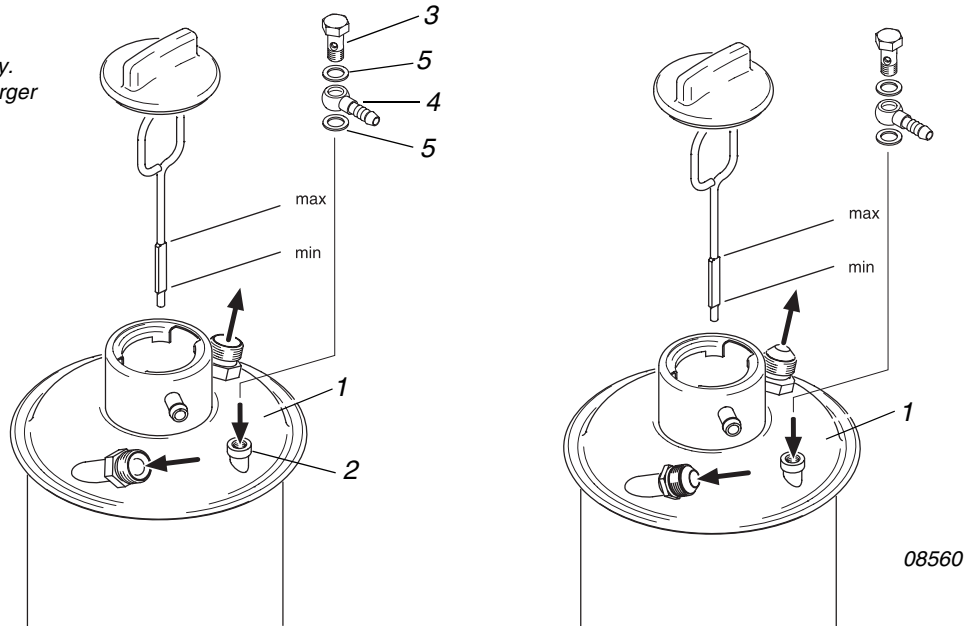
▲ **WARNING:** Non-compliance with these recommendations could result in engine damage, personal injury or death!

Approval of translation to best knowledge and judgement - in any case the original text in German and the metric unit (SI-system) are authoritative.

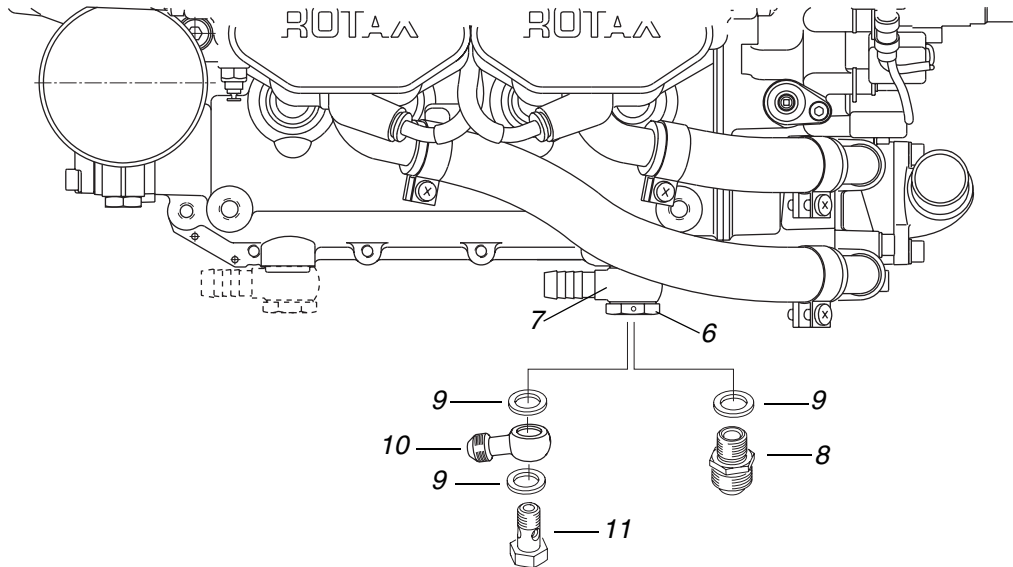
#### 4) Appendix

The following drawings should convey additional information:

- 1 (metric) oil tank cover assy.
- 1 UNF (AN) oil tank cover assy.
- 2 oil return line from turbo charger
- 3 banjo bolt
- 4 hose nipple
- 5 gasket ring



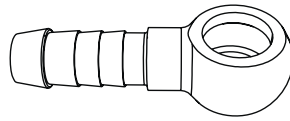
**Fig. 1**  
Options for metric oil line connections on the oil tank



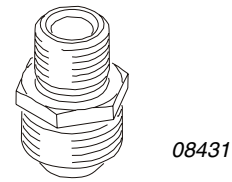
- 6 banjo bolt
- 7 hose nipple
- 8 adaptor UNF (AN)
- 9 gasket ring
- 10 hose nipple UNF (AN)
- 11 banjo bolt

**Fig. 2**  
Oil line connections on the crankcase - metric and UNF version

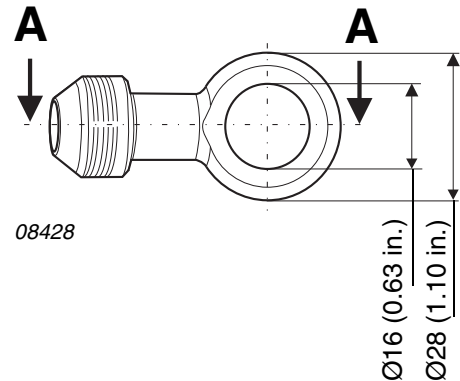
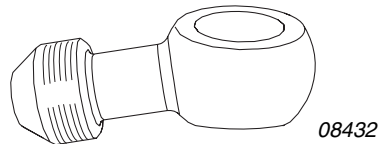
Configuration hose nipple standard  
part no. 956315



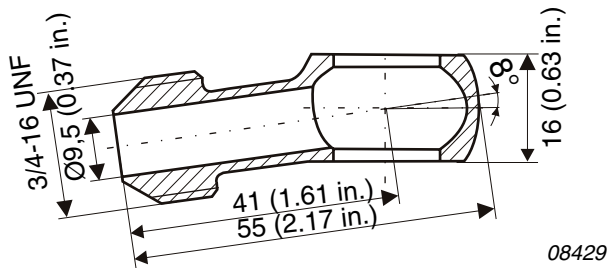
Configuration adaptor UNF (AN)  
part no. 956651



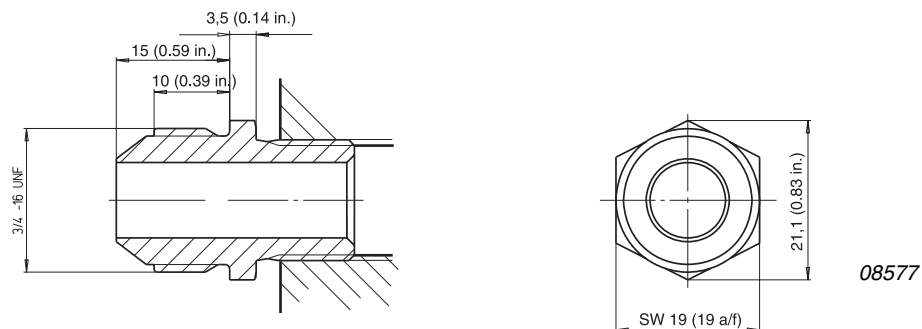
Configuration hose nipple UNF (AN)  
part no. 956050



section A-A



Dimension of the UNF (AN) connection on the adaptor

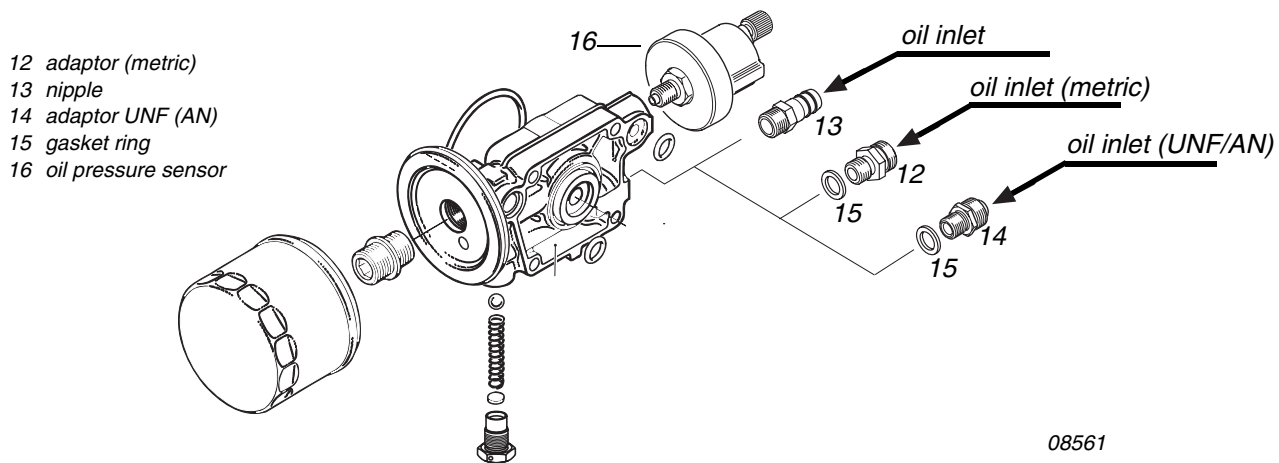


**Connecting dimensions and location of UNF (AN) connections for oil lines**

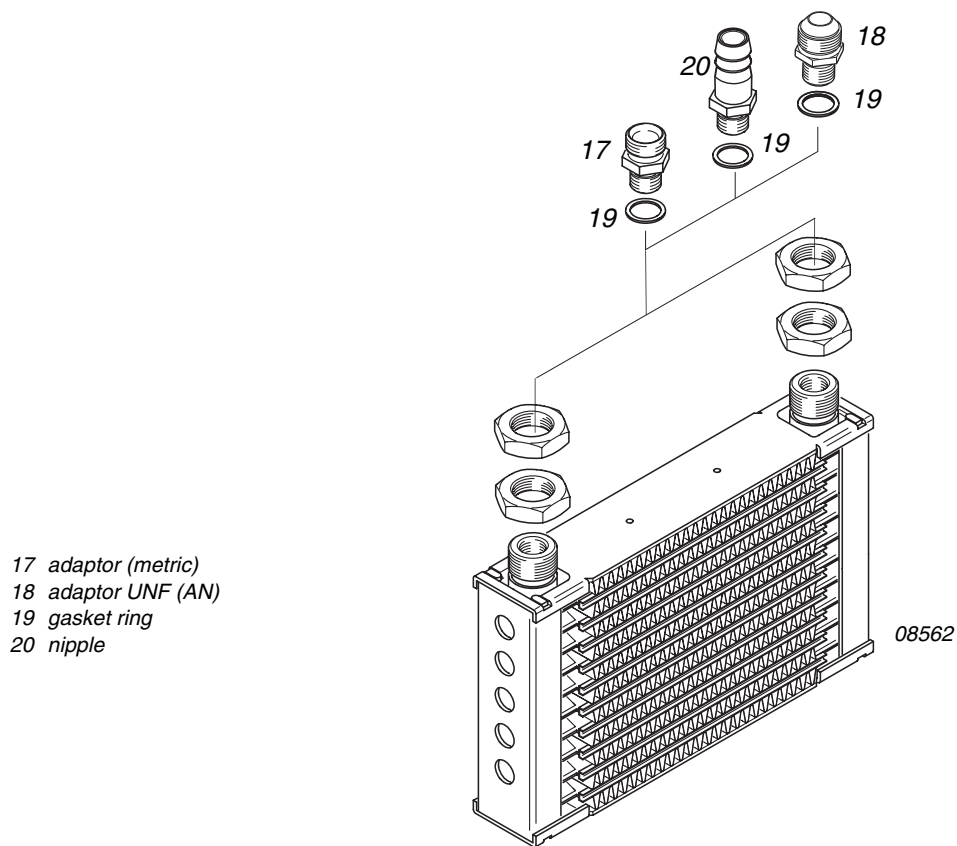
All oil line connections of UNF (AN) version have a 3/4-16 UNF (AN)-thread:

- Oil pump (inlet)
- Oil return socket in crankcase
- Oil tank (inlet and outlet with screw connection)
- Oil cooler (inlet and outlet with screw connection)

**Fig. 3**  
**Connecting dimensions of connections**



**Fig. 4**  
**Options for metric and UNF (AN) oil line connection at the oil pump**



**Fig. 5**  
**Options for metric and UNF (AN) oil line connection on the oil cooler**

◆ **NOTE:** The illustrations in this Manual show the typical construction. They may not represent in full detail or the exact shape of the parts which have the same or similar function. The here presented exploded drawings are **not technical drawings** and should be an aid in understanding. Specific data can be found in the latest manual for the corresponding engine.