

Fuel pump and fuel pump part kits for ROTAX® Aircraft Engine Type 916 i A (Series)

ATA System: 73-00-00 Fuel system

1) Planning information

“PAC” Service Instruction Documents provide detailed information on non-certified ROTAX® Aircraft Engine Parts and Accessories. Referenced parts and accessories are provided without EASA certification or ASTM compliance. Certification / Compliance of referenced Parts and Accessories must be completed by the aircraft OEM.

To obtain satisfactory results, procedures specified in this publication must be accomplished with accepted methods in accordance with prevailing legal regulations.

BRP-Rotax GmbH & Co KG cannot accept any responsibility for the quality of work performed in accomplishing the requirements of this publication.

1.1) Applicability

NOTICE

The fuel pump is part of the fuel system on aircraft-side and not a part of the Engine Type Design. The fuel pump assy. has been tested and released by BRP-Rotax, but it is not certified. The correct function in conjunction with the entire system and the certification of the fuel pump assy. is the responsibility of the aircraft manufacturer and must be carried out jointly with the aircraft.

1.2) Concurrent ASB/SB/SI and SL

In addition to this Service Instruction - PAC the following Service documents must be observed and complied with:

In general - all relevant Alert Service Bulletins (ASB), Service Bulletins (SB), Service Instructions (SI), Service Letters (SL), Service Instruction - Parts and Accessories (SI-PAC).

1.3) Reason

Installation and maintenance information for GENUINE ROTAX® fuel pump part no. 889731 and fuel pump parts kit part no. 481481 (AN6). See section 2.3 for packaged part numbers.

1.4) Subject

Fuel pump and fuel pump parts kits for ROTAX® Aircraft Engine Type 916 i A (Series).

1.5) Compliance

None - For Information Only.

1.6) Approval

None.

1.7) Labor time

Estimated labor hours:

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

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1.8) Mass data

Change of weight - - - Single pump (part no. 889731) 0.7 kg (1.54 lbs.)

Moment of inertia - - - unaffected.

1.9) Electrical load data

See section 3.2.

1.10) Software modifications

No change.

1.11) References

In addition to this technical information refer to current issue of

- in general Illustrated Parts Catalog (IPC) and in particular:
Chapter 73-10-00 and Chapter 76-00-00
- in general Operators Manual (OM) and in particular:
Chapter 2.3 and Chapter 3
- in general Installation Manual (IM) and in particular:
Chapter 73-00-00 and Chapter 76-00-00
- in general Maintenance Manual Line (MML) and in particular:
Chapter 05-20-00 and Chapter 12-20-00
- in general Maintenance Manual Heavy (MMH) and in particular:
Chapter 73-10-00

NOTE: The status of the Manuals can be determined by checking the table of amendments. The 1st column of this table shows the revision status. Compare this number to the one listed on the ROTAX website:
www.flyrotax.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

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2) Material Information

2.1) Material

Price and availability will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers.

2.2) Company support information

- Any possible support by BRP-Rotax will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers

2.3) Material requirement per engine

Parts requirement:

Fig. no.	Part no.	Qty/en-gine	Description	Application
1	889732	(2)	Fuel pump kit	916 iSc A/ 916 iS A
consist of:				
	889731	1	Fuel pump	
2	481481	(2)	Fuel pump part kits UNF	916 iSc A/ 916 iS A
consist of:				
	900875018	1	Check valve AN6	
	900875017	1	Adapter AN6 / M14x1,5	
	250735	1	Gasket ring A14x20	
	900875016	1	Connection AN6/M10x1	
	250425	1	Gasket ring 10.2/15/1.5	
	900881305	1	Connector set fuel pump	
	910951590	2	Clamp MS21919WDG32-2	

- 1) Fuel pump part no. 889731
- 2) Part number location
- 3) Serial number location

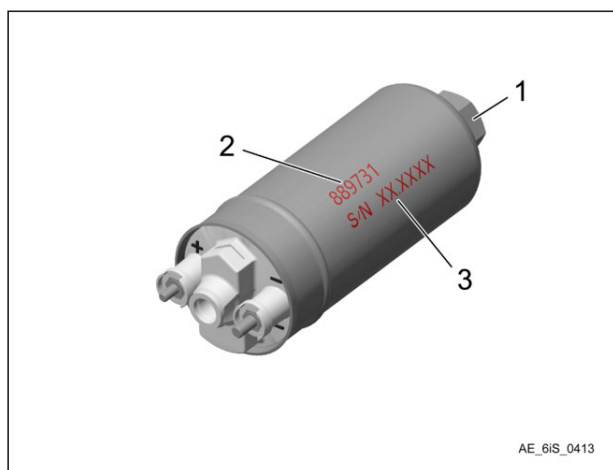


Fig. 1

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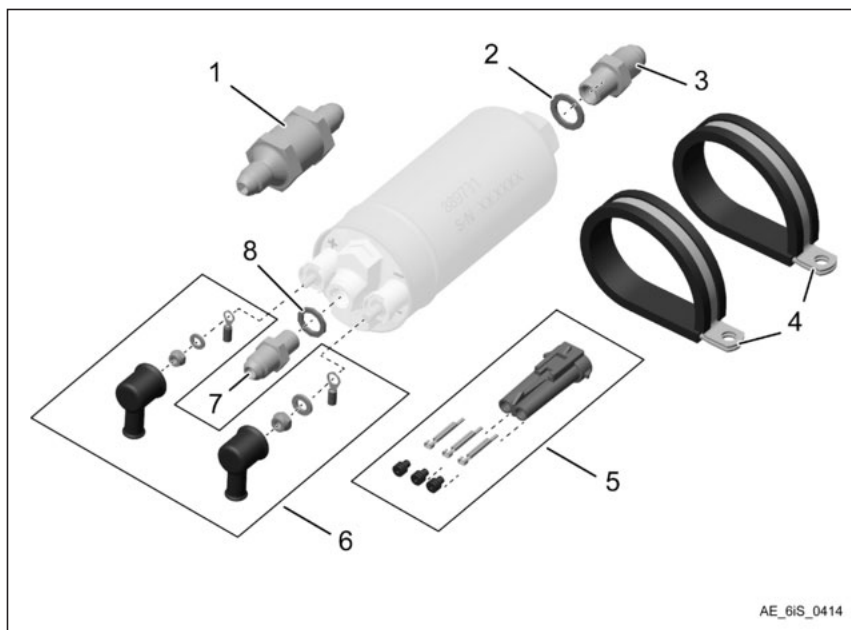


Fig. 2

- | | | |
|--|---|--|
| 1) Check valve AN6
part no. 900875018 | 2) Gasket ring A14x20
part no. 250735 | 3) Adapter AN6 / M14x1.5
part no. 900875017 |
| 4) Cable clamp
part no. 910951590 | 5) Connector set
part no. 900881305 | 6) Connector set
part no. 900481471 |
| 7) Adapter AN6/M10x1
part no. 900875016 | 8) Gasket ring 10.2/15/1.5
part no. 250425 | |

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Fig. no.	Part no.	Qty/ engine	Description	Application
2	900881305	(2)	Connector set	Wiring harness connector
consist of:				
	xxxxxx	1	Connector housing	
	xxxxxx	3	Flat pin terminal	
	xxxxxx	3	Cable grommet	
2	900481471	(2)	Connector set	Fuel pump
consist of:				
	xxxxxx	2	Protective cap	
	xxxxxx	1	Lock nut M4	
	xxxxxx	1	Lock nut M5	
	xxxxxx	1	Washer 4.3	
	xxxxxx	1	Washer 5.3	
	xxxxxx	1	Ring terminal M4	
	xxxxxx	1	Ring terminal M5	

2.4) Material requirement per spare part

None.

2.5) Rework of parts

None.

2.6) Special tooling/lubricants- /adhesives- /sealing compounds

Price and availability.

Price and availability will be supplied on request by ROTAX® Authorized Distributors or their independent Service Centers:

Description	Qty/engine	Part no.	Application
CRC® Leak Detector (14503)* Non-flammable water-based formula. No oils, silicones or harmful solvents	-	n.a	Fuel pump service. Connection leak detection
BERNER® Leak Finder (148383)* Water based formula, non-corrosive, silicone free.	-	n.a	Fuel pump service. Connection leak detection
APTIV® 12155975 Crimp tool*	-	n.a	Fuel pump power connectors

* or equivalent

NOTE: There are many third-party commercial leak detection products available. Ensure that the leak detection solution used is non-corrosive and does not contain harmful solvents.

NOTICE

If using these special tools observe the manufacturers specifications.

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3) Accomplishment/Instructions

- ROTAX® reserves the right to make any amendments to existing documents, which might become necessary due to this standardization, at the time of next revision or issue.

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

Accomplishment

All measures must be implemented and confirmed by at least one of the following persons or organizations:

- ROTAX® - Airworthiness representatives
- ROTAX® - Authorized Distributors or their independent Service Centers
- Persons approved by the respective Aviation Authorities
- Persons with approved qualifications for the corresponding engine types. Only authorized persons (iRMT, Level Heavy Maintenance) are entitled to carry out this work



All work has to be performed in accordance with the relevant ROTAX® Instructions for Continued Airworthiness (ICA) of the respective engine type.

General

Further material on general inspection, maintenance and repair can also be found in relevant Advisory Circular AC 43.13 from FAA.

Advisory Circular

The Advisory Circular (AC) contains maintenance methods, techniques and practices.

3.1) Illustrated Parts Catalog - related information



See current Illustrated Parts Catalog (IPC) for the engine type 916 i A Series, Chapter 73-10-00.

3.2) Installation - related information



Refer to current Installation Manual (IM) for engine type 916 i A Series for detailed fuel system requirements, Chapter 73-00-00 Engine - Fuel and Control.

The electrical fuel pumps must be installed in a well-ventilated area, near the fuel tank and away from potential sources of heat to ensure a safe fuel supply and minimize the risk of vapor lock. Ambient temperature of fuel pumps must not exceed 80 °C (176 °F).

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NOTE: The GENUINE-ROTAX® fuel pumps have been tested and approved according to CS-E-130. Thus, the fuel pump can be installed on the firewall without additional fire protection. A fuel pump housing is not available for the fuel pumps.

NOTICE

Do not connect additional load (additional fuel pumps, lamps, LED, etc.) to the power supply of the fuel pumps. The wiring is manufactured for GENUINE-ROTAX® fuel pumps only.

Fuel pump technical information	
Nominal Voltage (V)	13.8 V
Current consumption (A) Single pump	5.8 A
Current consumption (A) Both pumps	7.8 A
Fuel flow (up to dual operation)	255 l/h (67.4 gal/h)
Weight (single pump)	709 g (25.0 oz)
Fuel quality	See current Service Instruction -Selection of suitable operating fluids for the respective engine type
Fuel pressure (sensor position at fuel pressure regulator)	3.2 bar to 2.9 bar (46 psi - 42 psi)

NOTICE

At idle speed the fuel pressure may increase up to 3.4 bar (49 psi). This presents no technical issue.

WARNING

Non-compliance can result in serious injuries or death!
Independent from the ambient conditions (e.g. fuel pressure and temperature) and independent from the fuel used the design of the fuel system must prevent vapor lock conditions. Vapor lock may result in engine stoppage.

NOTICE

Ambient temperature of fuel pumps must not exceed 80 °C (176 °F).

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3.2.1) Installation - fuel pump power connection

Fuel pumps require the attachment of power connector sets part no. 900881305 and part no. 900481471 in order to interface with the engine wiring harness. The length of wire can be extended to reach the installation position of the fuel pumps.

- 1) Connector set part no. 900881305
- 2-8) Connector set part no. 900481471
- 2) Ring terminal M4
- 3) Ring terminal M5
- 4) Washer 5.3
- 5) Lock nut M5
- 6) Protective cap
- 7) Lock nut M4
- 8) Washer 4.3

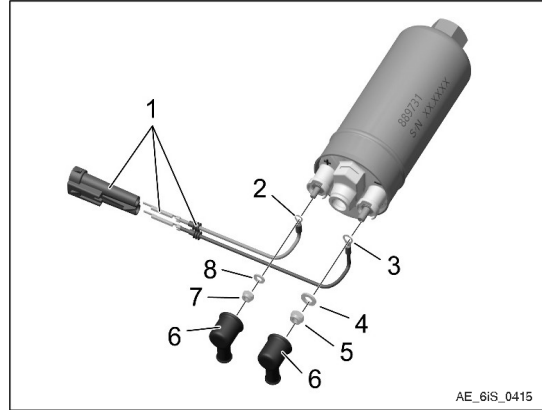


Fig. 3
Connector set

	Tightening torque
M4 terminal	0.9 Nm (8 in. lb)
M5 terminal	1.6 Nm (14 in. lb)

NOTE: Wire gauge must be a min. 2.1 mm² (14 AWG) and the length of wire between fuel pump and fuel pump connector part no. 900881305 and part no. 900481471 must not exceed 600 mm (23.6 in.).

NOTE: Place wire through protective cap before crimping ring terminals.

NOTE: Use only an aircraft grade crimping tool. See section 2.6) Special tooling.

3.2.2) Installation - fuel pump assy.

Fuel pump part kits part no. 481481 contains an AN6 check valve and AN6 fuel pump adaptor. This allows flexible connection of fuel pumps and check valves in series configuration using readily available AN fittings. It is highly recommended to use the check valve provided within the fuel pump kit to ensure functionality of the pumps.

Step	Procedure
1	Connect both fuel pumps with check valves in series configuration.



See current Installation Manual (IM) for engine type 916 i A Series, Chapter 73-00-00 Engine - Fuel and Control for fuel system diagram.

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	Tightening torque
Adaptor AN6 / M14x1.5	33 Nm (24 ft. lb)
Adaptor AN6 /M10x1	22 Nm (16 ft. lb)

Step	Procedure
2	Before attaching fuel pump assy. to the aircraft, perform a leak check. See section 3.2.3).

The following figures show sample installations using part kit part no. 481481 and 6AN fittings.

NOTE: Assemble with clean parts only in a clean environment!

NOTE: See AN fitting manufacturer for suggested tightening torque values.

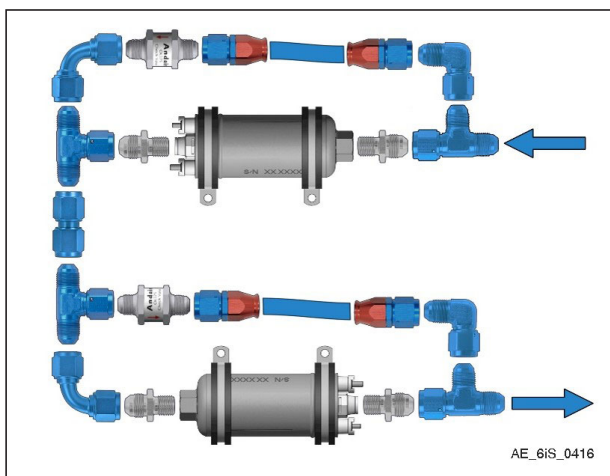


Fig. 4
Sample installation

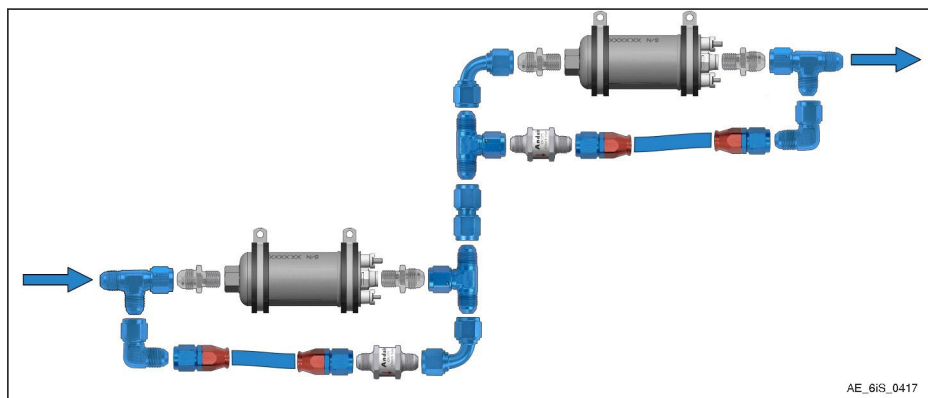


Fig. 5
Sample installation

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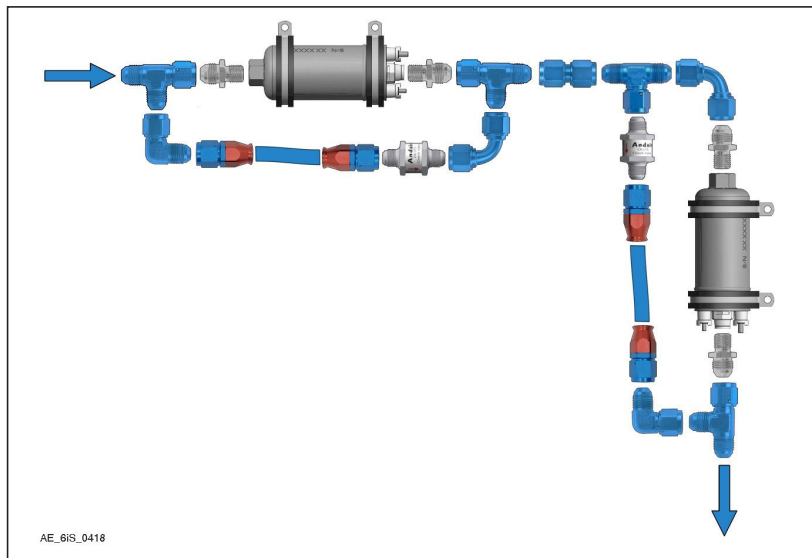


Fig. 6

Sample installation

Step	Procedure
3	Attach the fuel pumps securely to an appropriate mounting surface using cable clamps.
4	Connect fuel pump power connectors (MAIN/AUX) into appropriate wiring harness connectors.



See current Installation Manual (IM) for engine type 916 i A Series, Chapter 73-00-00 Engine - Fuel and Control for further fuel system requirements, such as:

- Inlet and return fuel lines
- Bypass line
- Coarse and fine fuel filters
- Water trap/gascolator
- Fuel pressure sensor
- Fuel tank
- Fuel shut off valve

NOTE: The hydraulic diagram shown in the current Installation Manual (IM) 916 i A Series must be complied with.

NOTE: A Bypass line must be installed according to the current Installation Manual (IM) 916 i A Series with a restriction jet part no. 963829 or similar.

Requirement	25 l (6.6 gal) ±5 l/h (1.32 gal/hour) at 3 bar (43.5 psi) pressure
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Description	Qty/engine	Part no.	Application
PILOT JET 35	-	963829	Bypass line
NOZZEL HOLDER	-	900875019	

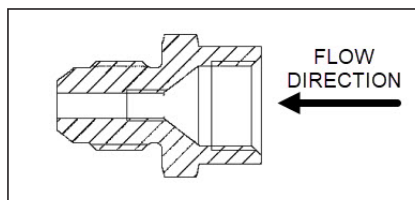


Fig. 7

3.2.3) Fuel pump assembly - Leakage check

After assembly of modular fuel pump assembly, it must be checked for leaks at each connection point before installation in the aircraft.

NOTICE For this leakage check disconnect electrical connectors to MAIN and AUX fuel pump.

Step	Procedure
1	Block the OUTLET of the fuel pump assembly with suitable pressure cap (e.g. AN929-6).
2	Connect the INLET of the fuel pump assembly to a differential pressure gauge.
3	Apply 15 bar (217 psi) to the fuel pump assy.
4	NO pressure loss is allowed on the differential pressure gauge.
5	With the fuel pump assy. temporarily pressurized with air, use an appropriate leak detector solution at each fitting connection to verify proper sealing.
6	If any air bubbles are present at connections, re-seat or replace connector.

NOTICE Follow leak detector solution manufacturer's instructions for its use, clean up and safety information.

NOTICE Make sure not to mix up IN (Fuel IN) and OUT (Fuel OUT) of fuel pump assembly in the following tasks.

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- 1) Compressor
- 2) Manometer/Test gauge set
- 3) Cap on "Outlet"

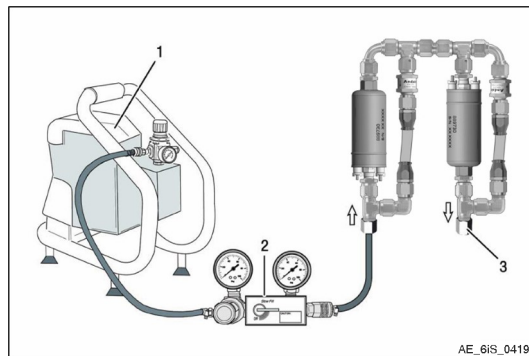


Fig. 8
Leakage check

Step	Procedure
7	Clean up leak detection fluid and dispose of in an environmentally friendly way.

3.3) Operation - related information



See current Operators Manual (OM) for engine type 916 i A Series.

3.4) Maintenance (Line) - related information

Points of inspection	Interval Operating hours		Chapter Reference
	100 h	200 h	
Inspect the fuel pumps. - Visual inspection of lines and connections - Check for leaks - Check for corrosion		X	See current Maintenance Manual Line (MML) for the engine type 916 i A Series and its periodical maintenance information.

NOTICE

Avoid over-tightening the fastening elements. Use a suitable torque wrench for all work.



See current Maintenance Manual Line (MML) for engine type 916 i A Series, Chapter 05-20-00 Scheduled maintenance checks.

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3.5) Maintenance (Heavy) - related information

3.5.1) Fuel pump assy. - removal

It is recommended to perform any fuel pump assy. maintenance on an assy. that has been removed from the aircraft.



Drain the fuel. See current Maintenance Manual Line (MML) for engine type 916 i A Series, Chapter 12-20-00 section Planned maintenance.

Step	Procedure
1	Remove the negative terminal of the battery.
2	Disconnect the fuel inlet and outlet hoses.
3	Disconnect the fuel pump power connectors from the wiring harness connectors (MAIN /AUX): - Lift the latches (1) - Pull the connectors apart (2)
4	Remove the fuel pump assy. from the aircraft according to the aircraft manufacturer's instructions.

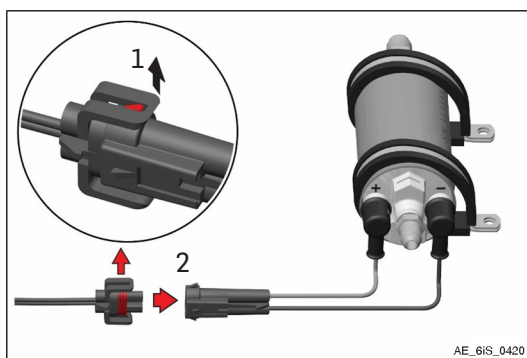


Fig. 9

Fuel pump power connectors

3.6) Finishing work

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

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3.7) Test run

In case of uninstalled engines test run is accomplished with the mandatory test run after installation into aircraft.



See Chapter 12-20-00 of the latest Maintenance Manual Line (MML) for the engine type 916 i A Series.

3.8) Summary

The execution of the Service Instruction PAC must be confirmed in the logbook.

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

Translation into other languages might be performed in the course of language localization but does not lie within ROTAX® scope of responsibility.

In any case the original text in English language and the metric units are authoritative.

3.9) Inquiries

Inquiries regarding this Service Instruction PAC should be sent to the ROTAX® Authorized Distributor of your area.

A list of all ROTAX® Authorized Distributors or their independent Service Centers is provided on <https://dealerlocator.flyrotax.com>.

NOTE: The illustrations in this document show the typical construction. They may not represent full detail or the exact shape of the parts which have the same or similar function.

Exploded views are not technical drawings and are for reference only. For specific detail, refer to the current documents of the respective engine type.