

SERVICE INSTRUCTION**Introduction of a new oil sump assy. for ROTAX® Engine Type 914 (Series)**

ATA System: 78-00-00 Exhaust and Turbocharger

1) Planning information

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

All versions of ROTAX® engine types:

Engine type	Serial number
914 F	from S/N 10000356
914 UL	from S/N 10000272

On engines with S/N equal or higher than those listed above the new oil sump assy. part no. 656770 has already been fitted in serial production.

1.2) Concurrent ASB/SB/SI and SL

In addition to this Service Instruction the following 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) with relevance to perform this maintenance, repair or overhaul task.

Service Bulletin-SB-914-007, title „Check / replacement of the turbo oil pressure line and pipe clamps“, current issue.

1.3) Reason

In the course of further development and standardization, the 914 turbocharger oil sump assy. has been standardized to include a plug screw assy. (including screen) to allow inspection and cleaning.

1.4) Subject

Introduction of a new oil sump assy. for ROTAX® Engine Type 914 (Series).

1.5) Compliance

NONE - For Information Only

NOTE: It is not mandatory to retrofit non-applicable engines to the new oil sump.

1.6) Approval

The technical content of this document is approved under the authority of the DOA ref. EASA.21J.048.

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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.

1.8) Mass data

Change of weight - - - insignificant.

Moment of inertia - - - unaffected.

1.9) Electrical load data

No change.

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 78-10-00
- in general Operators Manual (OM)
- in general Installation Manual (IM)
- in general Maintenance Manual Line (MML)
- in general Maintenance Manual Heavy (MMH) and in particular:
Chapter 78-20-00

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

- Not 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
- Shipping costs, downtime costs, loss of income, telephone costs etc. or costs of conversion to other engine versions or additional work, as for instance simultaneous engine overhauls are not covered in this scope and will not be borne or reimbursed by ROTAX®

2.3) Material requirement per engine

Parts requirement:

New part no.	Qty/en-gine	Description	Application
656770	1	OIL SUMP ASSY.	956495
640860	1	PLUG SCREW ASSY. M22x1.5	-
250055	1	O-RING 18x2.5-N, FPM 75	-

2.4) Rework of parts

None.

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

None.

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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
- Persons with type-specific training

NOTE: Indicates supplementary information which may be needed to fully complete or understand an instruction.



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 respective engine type, Chapter 78-10-00.

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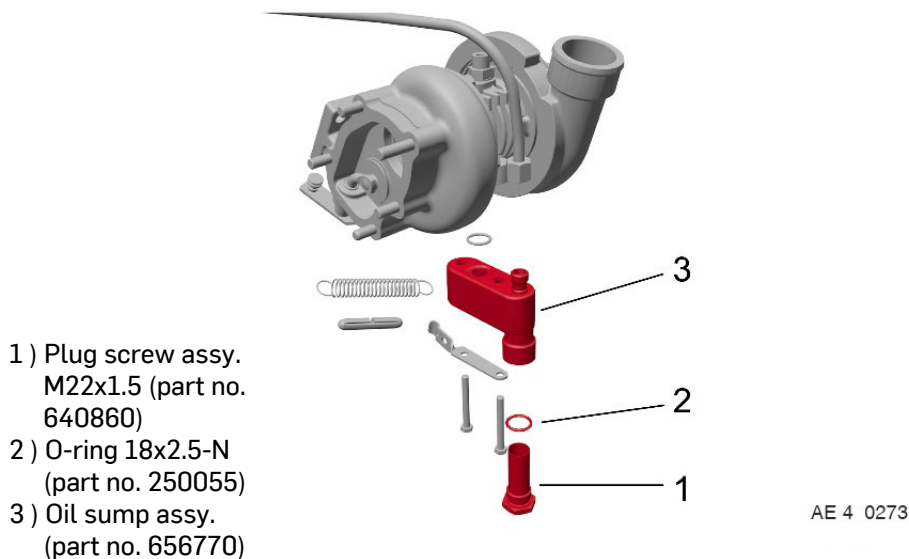


Fig. 1

3.2) Installation - related information



See current Installation Manual (IM) for the respective engine type.

3.3) Operation - related information



See current Operators Manual (OM) for the respective engine type.

Engine shut-off Normally the cooling down of the engine during descending and taxiing will be sufficient to allow the engine to be shut off as soon as the aircraft is stopped.
At increased operating temperatures make an engine cooling run of at least minimum 2 minutes.

3.4) Maintenance (Line) - related information



See current Maintenance Manual Line (MML) for the respective engine type, Chapter 05-20-00 and 12-20-00.

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Danger of severe burns and scalds!

Allow the engine and exhaust system to cool to ambient temperature before starting work.

3.4.1) Scheduled maintenance checks

Periodic inspections are those which must be performed at 25, 100, 200, 600 hr. intervals in accordance with Maintenance Manual Line (MML), Chapter 05-20-00, section "Maintenance Schedule".

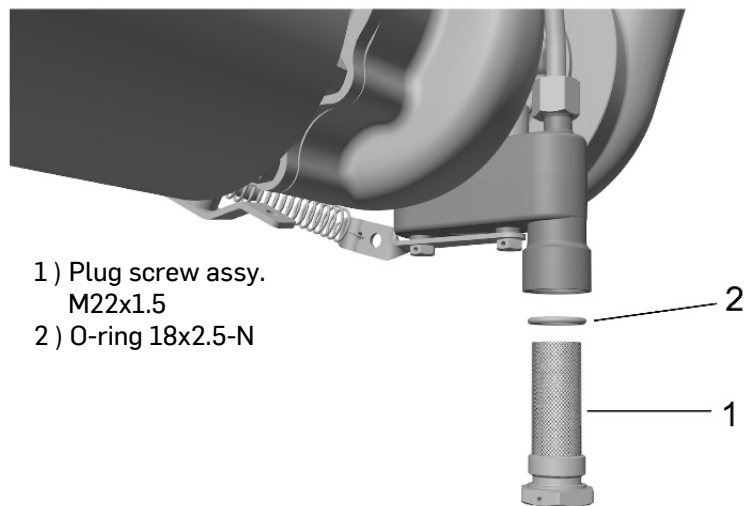
Points of inspection	Interval Operating Hours						Chapter Reference
	25*	50	100	200	600	1000	
*no periodic maintenance (requirement after the first 25 hours of operation)							
Inspect and clean screen in turbo oil sump.		X ¹	X				12-20-00 Turbo sump screen
¹⁾ In the case more than 30% of operation with leaded fuel e.g.: AVGAS 100 LL							

Cleaning and checking the plug screw

To check and clean the plug screw screen on turbo oil sump assy., the following steps are necessary (see Fig. 2).

Step	Procedure
1	Cut the lock-wire from hex. screws and plug screw.
2	Loosen the plug screw assy. M22x1.5 with the O-ring 18x2.5-N.
3	Drain the residual oil from the oil sump assy.
4	Inspect the plug screw assy. for metal and coked oil particles.
5	Clean the plug screw with suitable cleaning agent.
6	Install plug screw assy. M22x1.5 with O-ring 18x2.5-N into the oil sump assy. Tightening torque 20 Nm (15 ft. lb).
7	Secure the hex. screws and plug screw with lock-wire.

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Fig. 2

3.5) Maintenance (Heavy) - related information



See current Maintenance Manual Heavy (MMH) for the respective engine type.



WARNING Danger of severe burns and scalds!
Allow the engine and exhaust system to cool to ambient temperature before starting work.

3.5.1) Oil sump assy. - removal

See Fig. 3

Step	Procedure
1	Cut the lock-wire on the plug screw head.
2	Loosen the plug screw assy. M22x1.5 with the O-ring 18x2.5-N.
3	Drain the residual oil from the oil sump assy.
4	Remove tension spring from wastegate flap with a suitable tool.
5	Release collar nut of the turbo oil suction line
6	Loosen the 2 hex. screws M6x55 and remove the cable support, oil sump assy. and O-ring 15.9 x 2.3.

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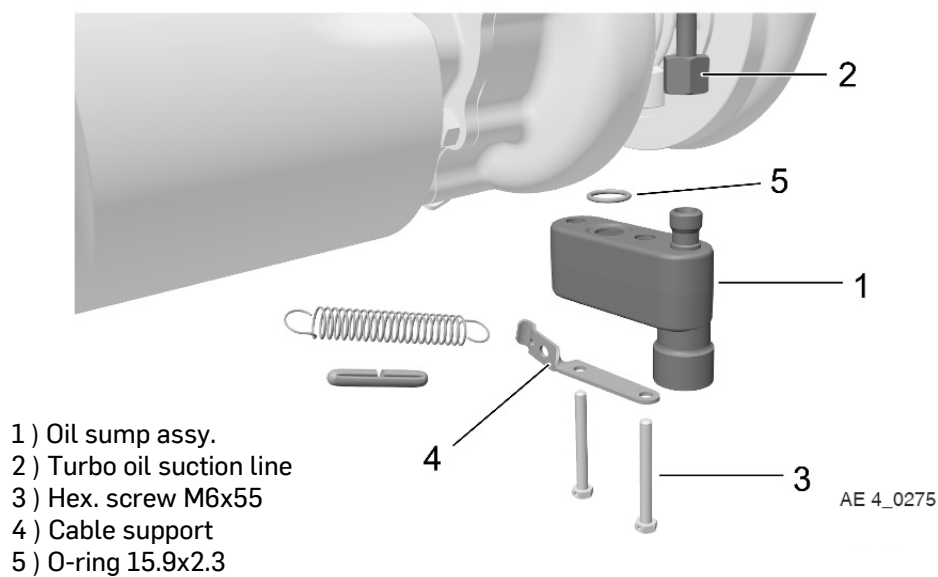


Fig. 3

Oil lines - removal / in- spection

The steel oil lines are only removed in the event of damage or for cleaning.

NOTE: The turbo pressure and the suction oil line are attached together by means of two cable clamps $\varnothing 8/M5$ and 2 cable clamps $\varnothing 5/M5$.

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Turbo pressure oil line - removal

NOTICE

Make sure that the ball and the spring of the pressure check valve are not damaged or lost.

See Fig. 4

Step	Procedure
1	Remove banjo bolt with sealing rings at turbocharger inlet.
2	Remove banjo bolt at oil pump. NOTE: It is recommended to replace the banjo bolt M10x1x30 with the longer M10x1x34. NOTE: On configuration 3 and 4 engines, remove the double banjo bolt M10x1x30 and 3 sealing rings. On configuration 2 engines, remove the double banjo bolt M10x1x30, distance sleeve 10.5/15/10 and 3 sealing rings.

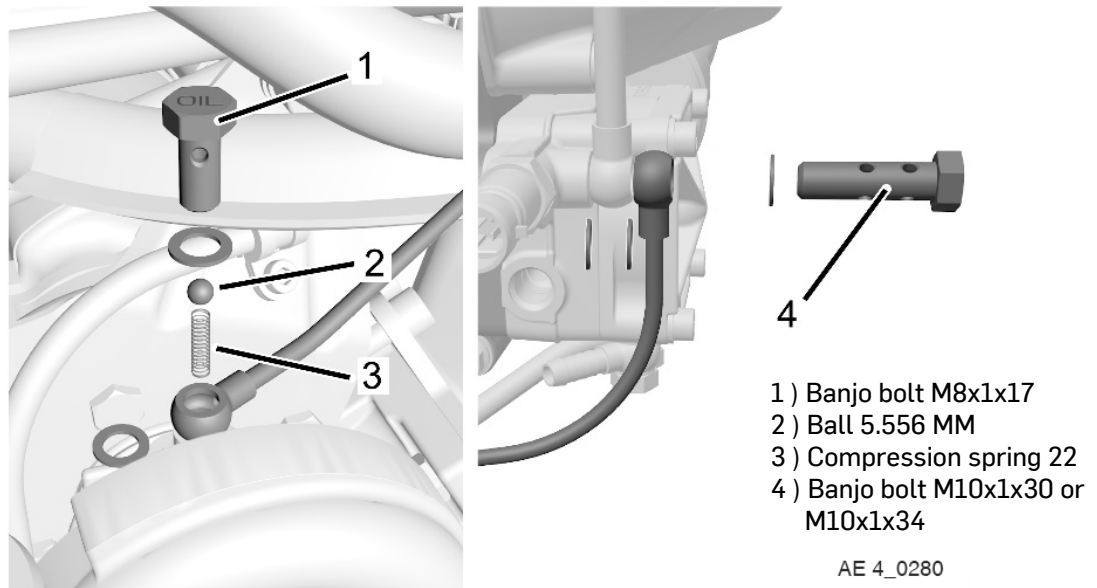


Fig. 4

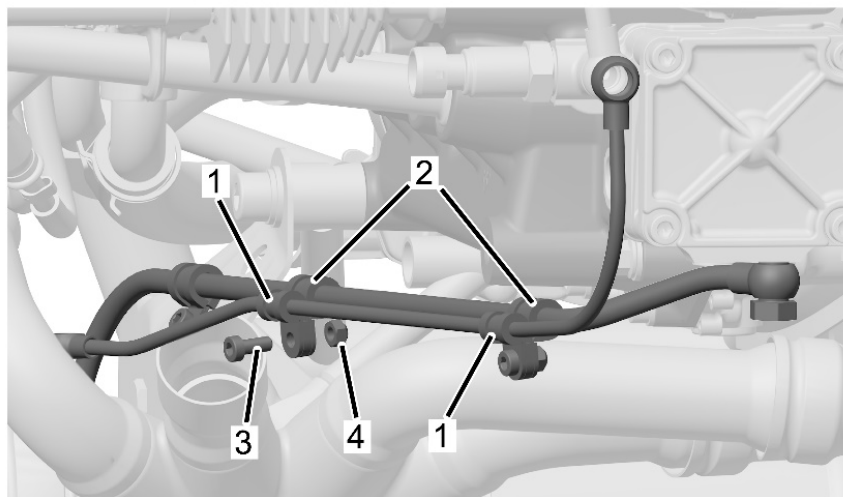
See Fig. 5

Step	Procedure
3	To separate the pressure oil line and the oil suction line, remove the Allen screws M5x12 and lock nuts M5 from the two pairs of cable clamps.
4	Clean oil line and inspect visually. Check for free passage. NOTE: If oil line is restricted or blocked, it must be replaced with new.

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- 1) Cable clamp 5/M5
- 2) Cable clamp 8/M5
- 3) Allen screw M5x12
- 4) Lock nut M5



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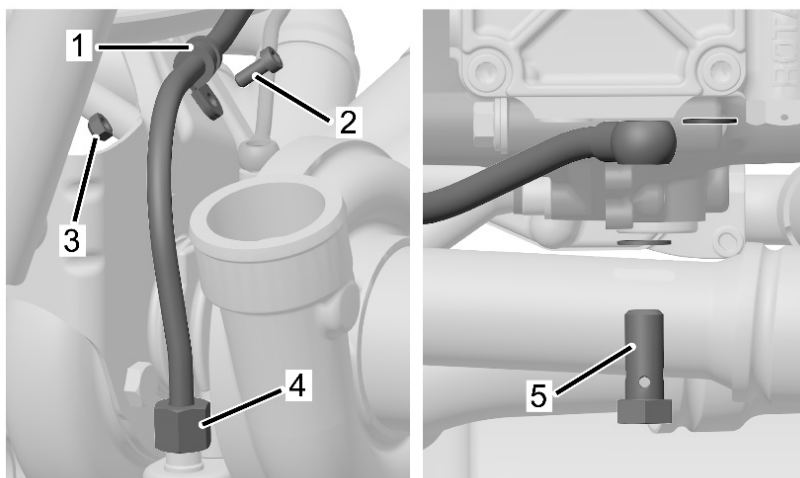
Fig. 5

Turbo suction oil line - removal

See Fig. 6

Step	Procedure
1	Remove the cable clamp on the turbocharger bracket.
2	Remove banjo bolt M10 with sealing rings from the suction oil pump and the collar nut from the oil sump.
3	Clean oil line and inspect visually. Check for free passage. NOTE: If oil line is restricted or blocked, it must be replaced with new.

- 1) Cable clamp 8/M5
- 2) Allen screw M5x12
- 3) Lock nut M5
- 4) Collar nut
- 5) Banjo bolt M10x1x19



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Fig. 6

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3.5.2) Oil sump Assy. - installation

Preparation



See Chapter 78-20-00 of the latest Maintenance Manual Heavy (MMH) for the respective engine type.

See Fig. 3.

Step	Procedure
1	Place O-ring 15.9x2.3 into the oil sump Assy.
2	Install the oil sump Assy. on turbocharger with support bracket and 2 hex. screws M6x55. Tightening torque 10 Nm (89 in. lb)
3	Tighten collar nut of the turbo suction oil line to 20 Nm (15 ft. lb).

See Fig. 2.

Step	Procedure
4	Install plug screw Assy. M22x1.5 with O-ring 18x2.5-N into the oil sump Assy. Tightening torque 20 Nm (15 ft.lb).
5	Secure the hex. screws and plug screw with lock-wire.

3.5.3) Turbo suction oil line and pressure line - installation

Suction oil line and pressure oil line must be mounted free of stress. Assemble all parts hand-tight only and tighten / torque together as an assembly.

See Fig. 6.

Step	Procedure
1	Hand-tighten the suction oil line collar nut to the oil sump.
2	Hand-tighten suction oil line to suction oil pump with banjo bolt M10x1x19 and new sealing rings A10x14.
3	Hand-tighten suction oil line to turbocharger bracket with cable clamp, Allen screw M5x12 and M5 lock nut.

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See Fig. 4.

Step	Procedure
4	<p>Hand-tighten the pressure oil line to the turbo oil inlet with spring, ball, banjo bolt M8x1x17 and 2 new sealing rings A8x13.</p> <p>NOTE: This is a special banjo bolt that serves as part of a check valve to stop the flow of oil when the engine is off. The head of the banjo bolt is stamped "OIL" or marked with blue paint.</p>
5	<p>Hand-tighten pressure oil line to oil pump with banjo bolt M10x1x30 and 3 new sealing rings A10x14.</p> <p>NOTE: It is recommended to replace the banjo bolt M10x1x30 with the longer M10x1x34.</p> <p>NOTE: On configuration 3 and 4 engines, the double banjo bolt M10x1x30 or M10x1x34 will pass through the governor pressure oil line. On configuration 2 engines, the double banjo bolt M10x1x30 or M10x1x34 will pass through distance sleeve 10.5/15/10.</p>

See Fig. 5.

Step	Procedure
6	<p>Attach pressure and suction lines together using cable clamp 8/M5, cable clamp 5/M5, Allen screw M5x12 and M5 lock nut.</p> <p>NOTE: Two clamp pairs must be installed between the oil pump and the oil sump.</p>
7	<p>With all clamps tightened, torque banjo bolts to following specifications.</p> <ul style="list-style-type: none"> - Banjo bolt M8x1x17: 10 Nm (89 in. lb) - Banjo bolt M10x1x30 or M10x1x34: 15 Nm (133 in. lb) - Suction line collar nut: 20 Nm (15 ft. lb)

3.6) Finishing work



After removal and replacement of turbo oil lines, the turbocharger lubrication system must be purged to ensure proper oil supply and return.
See Chapter 79-00-00 of the latest Installation Manual (IM) for the respective engine type.

3.7) Test run

Conduct 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 respective engine type.

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3.8) Summary

These instructions (section 3) have to be followed in accordance with the deadlines specified in section 1.5.

NOTE: Work on EASA certified parts might affect the EASA Form 1 and does require appropriate documentation by authorized persons. Repairs must be entered into the engine logbook and also do apply for the EASA Form 1.

| 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 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>.

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4) Appendix

The following drawings/schematics/tables should convey additional information:

NOTE: All values in millimeters (metric system).

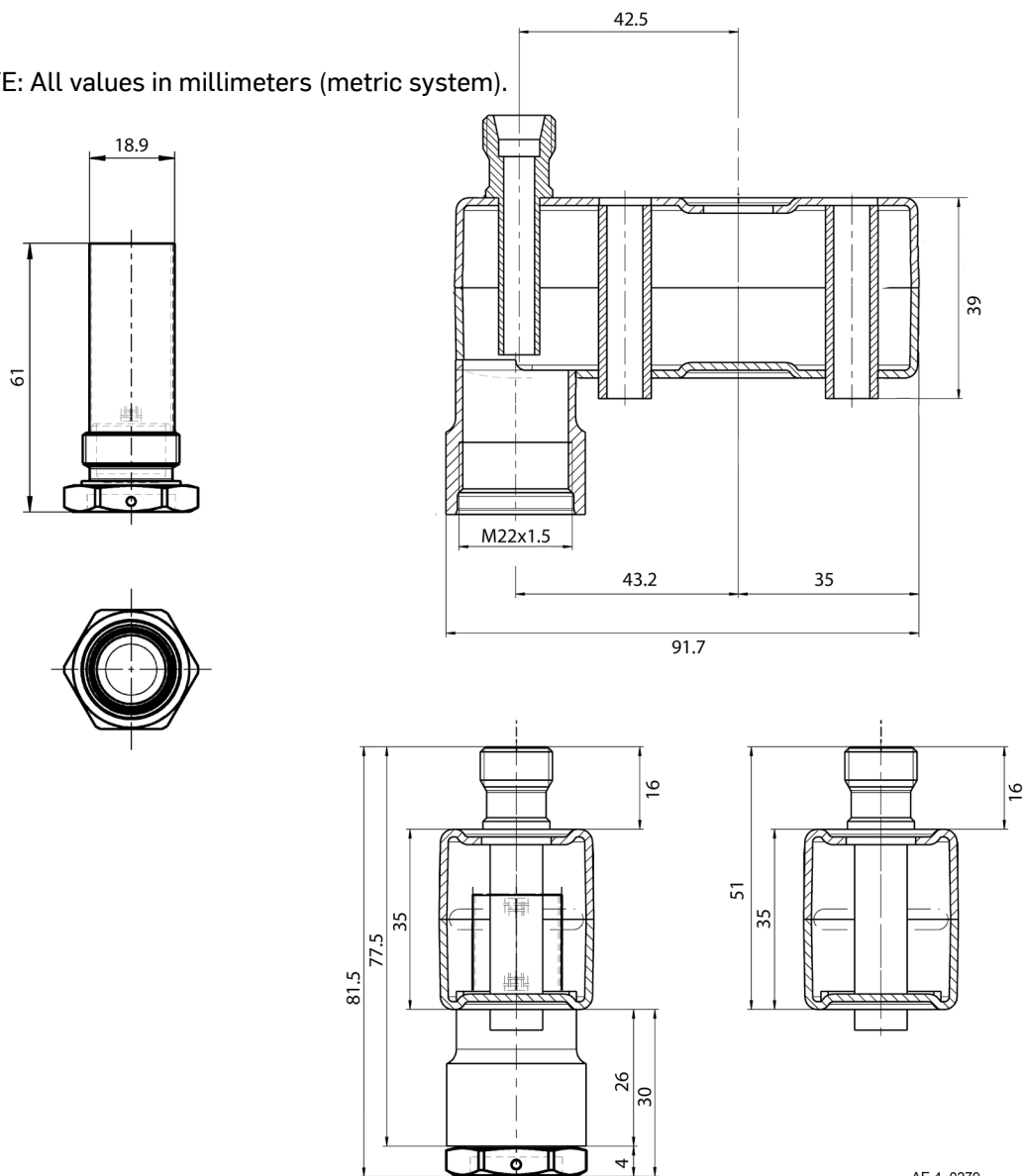


Fig. 7
Oil sump assy. - overview

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.

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