

Optional accessory drive flange for ROTAX® Aircraft Engines

ATA System: 72-20-00 Crankshaft

1) Planning information

“PAC” Service Instruction Documents provide detailed information on ROTAX® Aircraft Engine Parts and Accessories. Depending on the engine type used with, the referenced parts and accessories may be provided with or without EASA certification or ASTM compliance. Certification / Compliance of referenced Parts and Accessories must in such cases 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

Refer to the latest issue of the relevant Illustrated Parts Catalog (IPC) of your specific engine type.

NOTICE

The optional accessory drive flange is not part of the Engine Type Design. Such a PAC part has been then tested and released by BRP-Rotax, but it might not be certified for the relevant engine type.

In such a case the correct function in conjunction with the entire system 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

In the course of continuous development and standardization, an optional accessory drive flange (magneto side interface) has been introduced as an optional accessory part.

1.4) Subject

Optional accessory drive flange for ROTAX® Aircraft Engines.

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 - - - 0.27 kg (0.6 lbs).

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)
- in general Installation Manual (IM)
- in general Maintenance Manual Line (MML)
- in general Maintenance Manual Heavy (MMH)

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

2) Material Information

2.1) Material- cost and availability

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/ engine	Description	Application
1, 2	953978	1	Drive flange	Crankshaft, ignition housing side
2	430225	1	O-ring 15.9x2.3	for plug screw M20x1.5
1	250055	1	O-ring 18x2.5	for plug screw M22x1.5 and cone locking screw M22x1.5
1	940535	1	Hex. screw M14x1.5	for 912 i Series only
2	940526	1	Plug screw M20x1.5	for 915 i and 916 i Series only
-	940520	1	Plug screw M22x1.5	for 912 i Series only
1	940530	1	Cone locking screw M22x1.5	for 912 i Series only

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

Fig. no.	Part no.	Qty/ engine	Description	Application
-	240880	1	Locking pin	For locking the crankshaft
-	877419	1	Protection mushroom	Optional accessory drive (generator) flange for 915 i and 916 i Series
-	876557	1	Protection mushroom	Optional accessory drive (generator) flange for 912 i Series
-	n.a.	1	Puller tool assy.	Removal of optional accessory drive (generator) flange. (to be manufactured by customer) See Chapter 4: Appendix, Z 13545
Puller tool assy. consists of:				
	841602	1	Hex. screw M16x1.5x40	Puller tool
	n.a.	3	Hex. screw UNF 3/8-24x3/4"	Puller tool
-	897651		LOCTITE 243	
-	899788		LOCTITE 648	
-	-		LOCTITE 7063	
	-		Abrasive pad for surface finishing, 3M Scotch-Brite Multi Flex - very fine or ultra-fine*	

* or equivalent

NOTICE

If using these special tools, lubricants- /adhesives- /sealing compounds observe the manufacturers specifications.

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® - Authorized Distributors or their independent Service Centers
- Persons with approved qualifications for the corresponding engine types. Only authorized persons (iRMT, Level minimum Line Maintenance) are entitled to carry out this work.

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

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

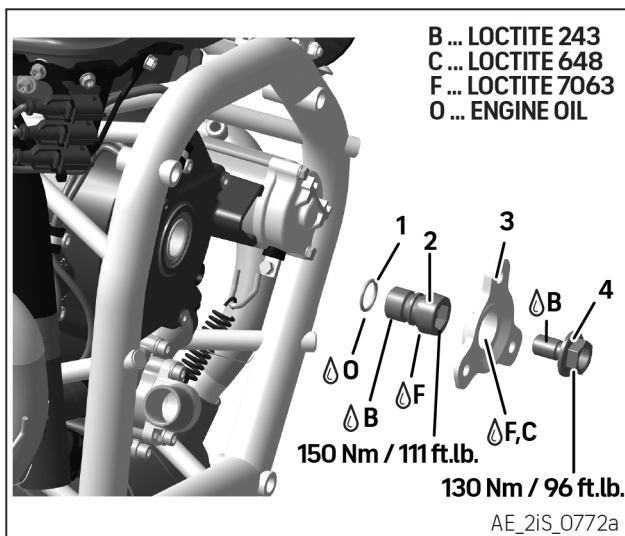
Advisory Circular The Advisory Circular (AC) contains maintenance methods, techniques and practices.

3.1) Spare parts - related information



See current Illustrated Parts Catalog (IPC) for the respective engine type.

3.1.1) Spare parts - 912 i (Series)



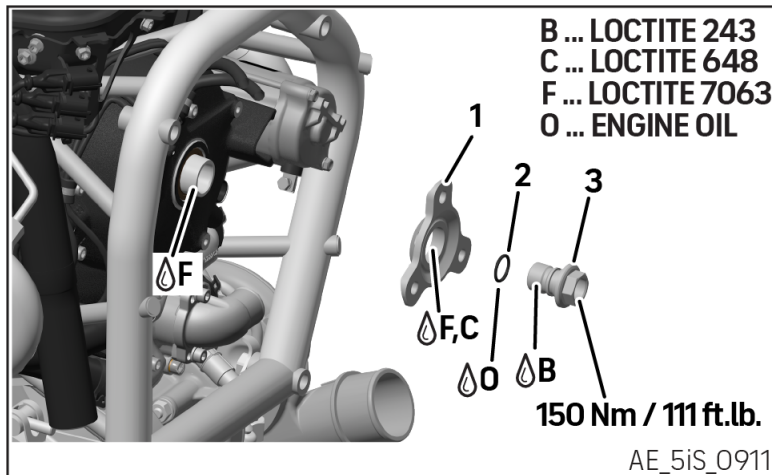
Pos.	Description	Part no.
1	O-ring 18x2.5	250055
2	Cone locking screw M22x1.5	940530
3	Drive flange	953978
4	Collar Hex. screw M14x1.5	940535

Fig. 1

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3.1.2) Spare parts - 915 i / 916 i (Series)



Pos.	Description	Part no.
1	Drive flange	953978
2	O-ring 15.9x2.3	430225
3	Plug screw M20x1.5	940526

Fig. 2

3.2) Operation - related information



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

System limitations

Operating limits:

System limit	Min.	Max.
Possible power take-off torque	-	100 Nm (74 ft. lb.)

3.3) Installation - related information

General

See Fig. 3.



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

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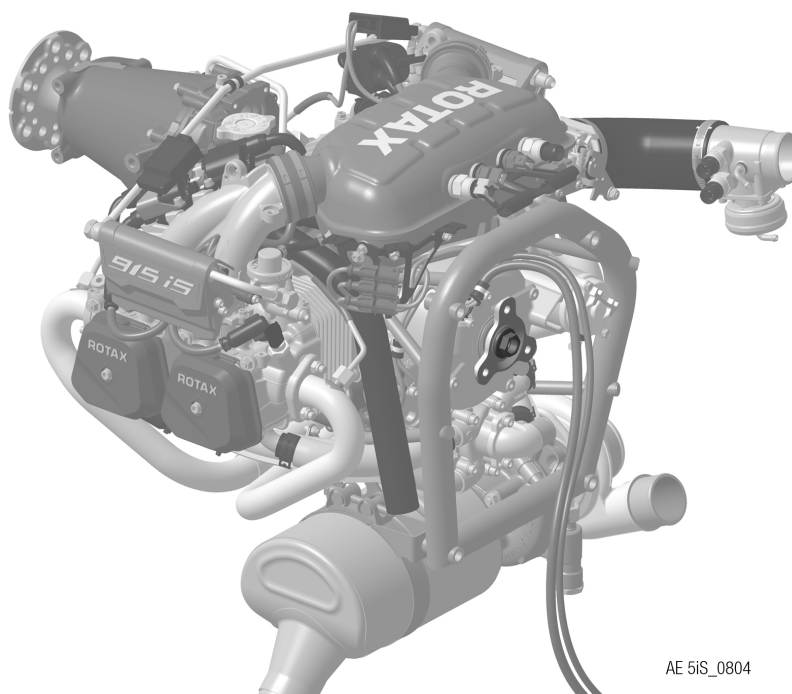
NOTICE

Never attach a generator or other accessory directly to the crankshaft and never attach the generator support directly to the engine (like ignition housing etc.).

NOTICE

Never use the threads of the ignition housing or on the engine for installation and support strut attachment of an external alternator.

Interface overview, TYPICAL - 915 i Series shown



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Fig. 3

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Accessory drive

Optional accessory drive (generator) flange:
Modification of the flange is not permitted.



WARNING

Non-compliance can result in serious injuries or death!
Certification of the generator sizing and arrangement to the latest requirement such as FAR or EASA has to be conducted by the aircraft manufacturer.

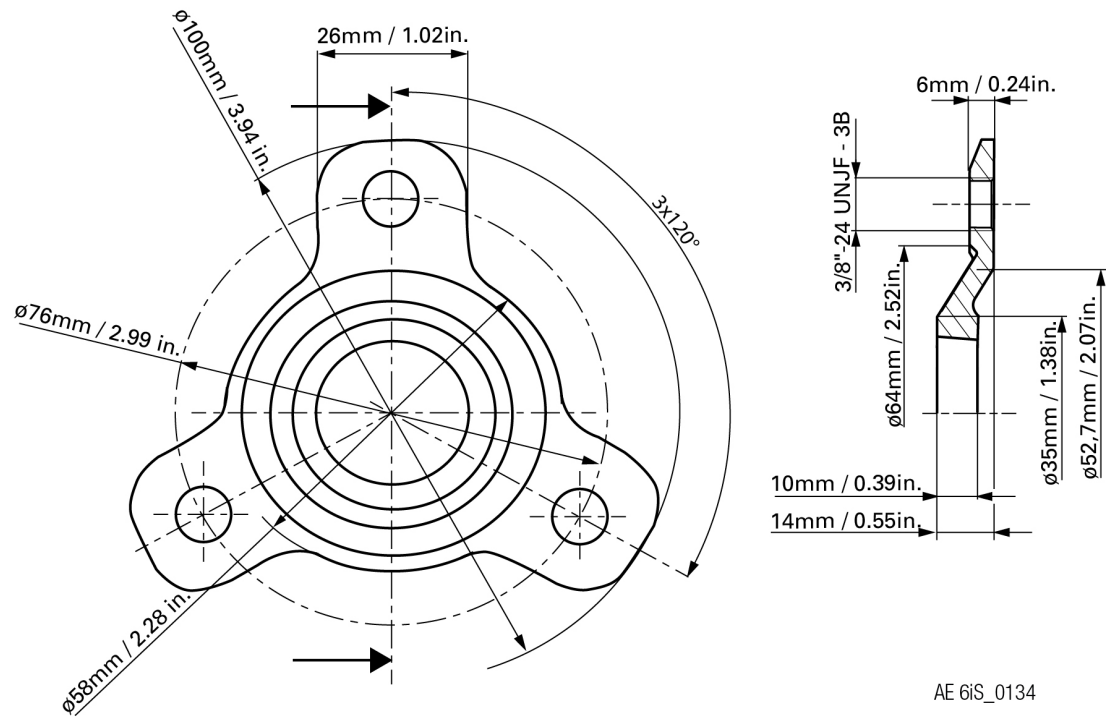


Fig. 4

Technical data:

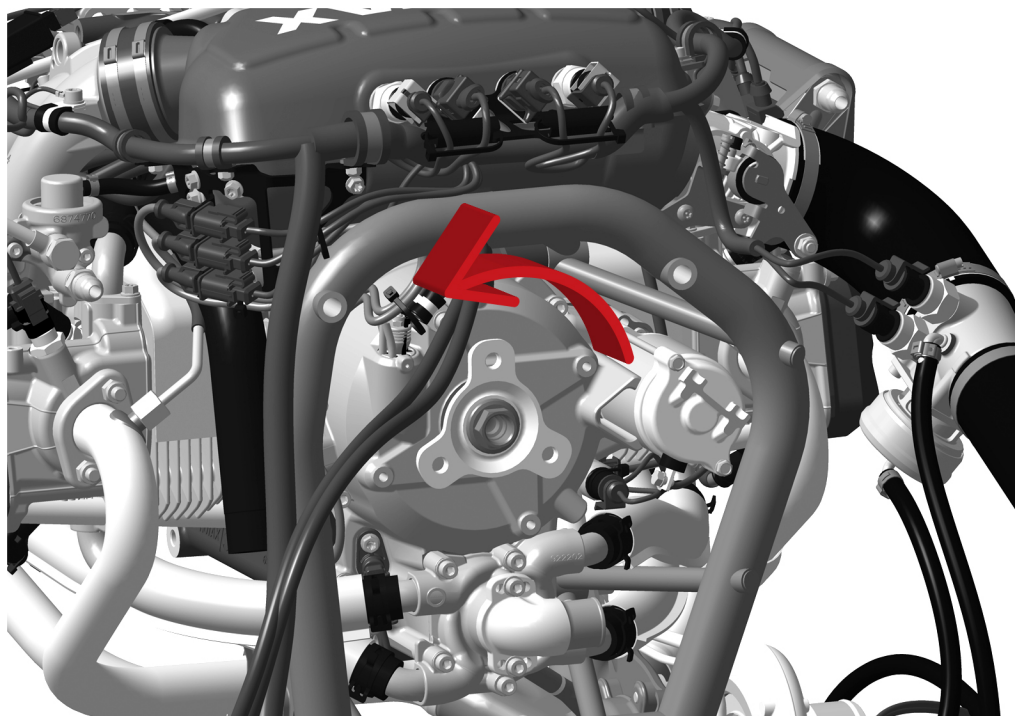
Circle diameter:	76 mm (2.99 in.)	Tightening torque:	max. 30 Nm (22.13 ft. lb.)
Thread size:	3x3/8" - 24 UNF - 3B threads	Outer diameter:	100 mm (3.94 in.)
Thread length:	6 mm (0.24 in.)	Inner diameter:	58 mm (2.28 in.)

Direction of rotation: left, counter clockwise, viewed from towards face to flange.

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TYPICAL, 916 i Series shown



AE 6iS_0135

Fig. 5

3.4) Maintenance (Line) - related information

Points of inspection	Interval Operating hours	Chapter Reference
	100 h	
Visual inspection of the optional accessory drive (generator) flange for secure fit, damage and signs of wear.	X	See relevant Maintenance Manual Line (MML) for the respective engine type and its periodical maintenance information. See also airframe and/or external generator manufacturers documents.

3.5) Maintenance (Heavy) - related information



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

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3.5.1) Optional accessory drive (generator) flange - removal (912 i)

Preparation - Disconnect the battery (negative pole)
 See Fig. 6 up to Fig. 8.

Step	Procedure
1	Lock the crankshaft into place. See current Maintenance Manual Line (MML) for the respective engine type.
2	Remove hex. screw M14 x 1.5. NOTE: The hex. screw is secured with LOCTITE 243.

1. Hex. screw M14 x 1.5

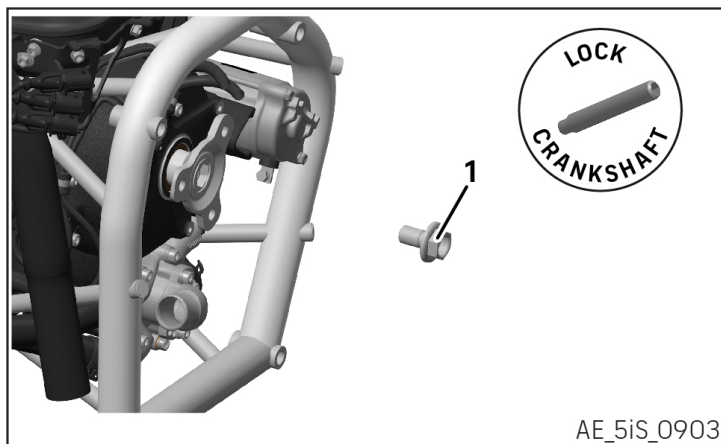


Fig. 6

Step	Procedure
3	Place the protection mushroom part no. 876557 on the crankshaft and use puller assy. Z13545 to pull the accessory drive (generator) flange from the crankshaft. NOTE: For easier removal, the flange can be heated to about 100 °C to 120 °C (212 °F to 248 °F) using a hot air gun.

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- 1. Puller assy. Z13545
- 2. Protection mushroom
- 3. Hex. screw UNF 3/8" - 24x34"
- 4. Hex. screw M16x1.5x40

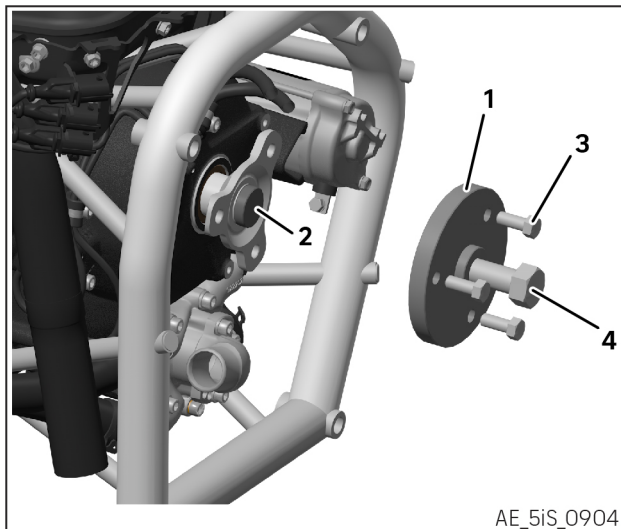


Fig. 7

Step	Procedure
4	Remove cone locking screw M22x1.5. NOTE: The cone locking screw is secured with LOCTITE 243.
5	Clean the threads of the crankshaft and cone locking screw.

- 1. Cone locking screw M22 x 1.5
- 2. Crankshaft

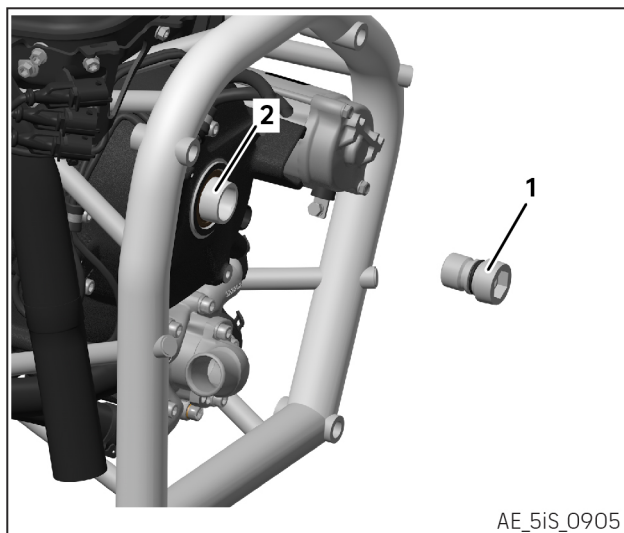


Fig. 8

TYPICAL

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Step	Procedure
6	Lubricate new O-ring (18 x 2.5) with engine oil and place over the plug screw M22x1.5. Lubricate plug screw M22x1.5 with LOCTITE 243 and tighten it to the crankshaft stub. Tightening torque 150 Nm (111 ft. lb.).

1. Plug screw M22 x 1.5
2. O-ring 18 x 2.5

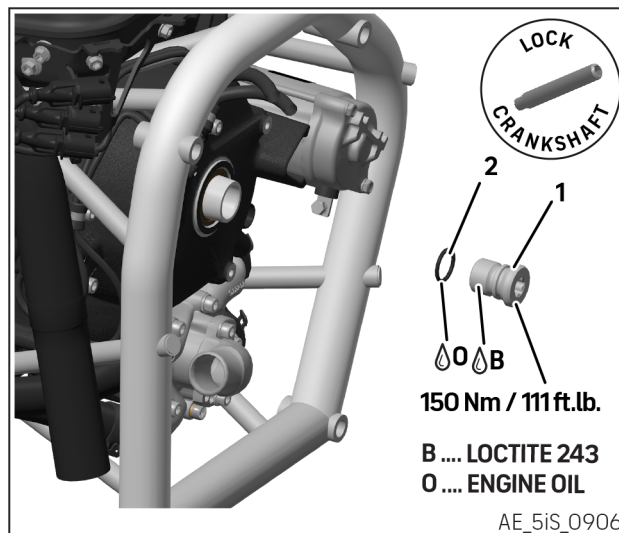


Fig. 9

TYPICAL

3.5.2) Optional accessory drive (generator) flange - removal (915 i / 916 i Series)

Preparation

- Disconnect the battery (negative pole)
- Lock the crankshaft into place. See current Maintenance Manual Line (MML) for the respective engine type.

See Fig. 10 up to Fig. 12.

Step	Procedure
1	Remove plug screw M20 x 1.5. NOTE: The plug screw is secured with LOCTITE 243.

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1. Plug screw M20 x 1.5

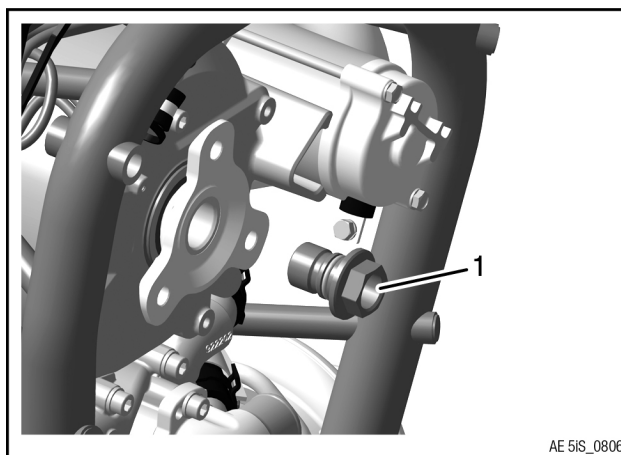


Fig. 10

Step	Procedure
2	Place the protection mushroom part no. 877419 on the crankshaft and use puller assy. Z13545 to pull the accessory drive (generator) flange from the crankshaft. NOTE: For easier removal, the flange can be heated to about 100 °C to 120 °C (212 °F to 248 °F) using a hot air gun.

1. Puller assy. Z13545
2. Protection mushroom
3. Hex. screw UNF 3/8" - 24x34"
4. Hex. screw M16x1.5x40

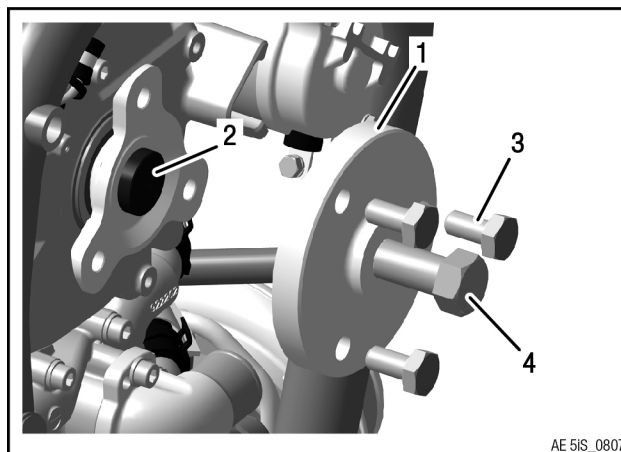


Fig. 11

Step	Procedure
3	Clean the crankshaft and plug screw threads and crankshaft taper.
4	Lubricate new O-ring (15.9 x 2.3) with engine oil and place over the plug screw M20x1.5. Lubricate the plug screw with LOCTITE 243 and tighten it to the crankshaft stub. Tightening torque 150 Nm (111 ft. lb.).

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- 1. Plug screw M20 x 1.5
- 2. O-ring 15.9 x 2.3
- 3. Crankshaft taper

- B. LOCTITE 243
- O. Engine oil

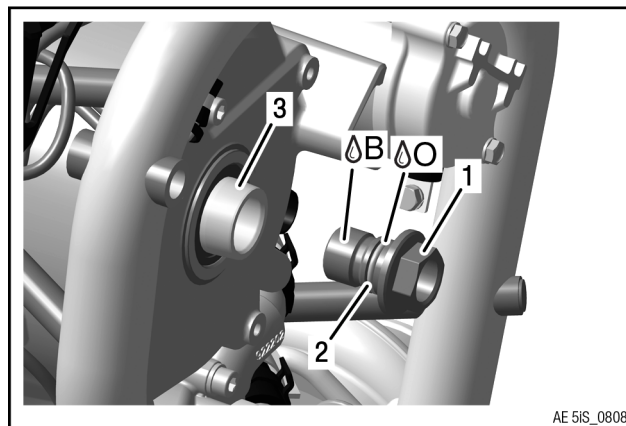


Fig. 12

NOTICE Ensure that the plug screw with O-ring is installed and properly torqued. An oil leak at this position can lead to engine damage.

3.5.3) Optional accessory drive (generator) flange - inspection

Preparation



Clean all parts carefully.
See current Maintenance Manual Line (MML) for the respective engine type, Chapter 05-00-00.



Perform general visual inspection.
See current Maintenance Manual Line (MML) for the respective engine type, Chapter 12-20-00.

See Fig. 13 and Fig. 14.

Step	Procedure
1	Check the accessory drive (generator) flange taper surface.
2	Check the crankshaft taper surface (915 i and 916 i Series only) or taper surface of the cone locking screw (912 i Series only).

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912 i Series (TYPICAL)

- 1. Taper surface (cone locking screw)

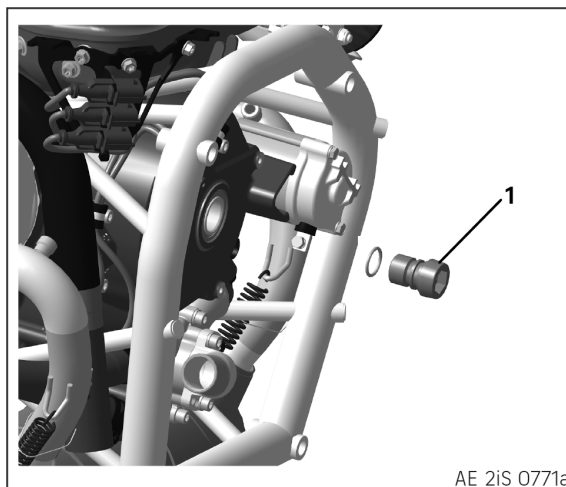


Fig. 13

915 i and 916 i Series (TYPICAL)

- 1. Taper surface (flange)
- 2. Taper surface (crankshaft)

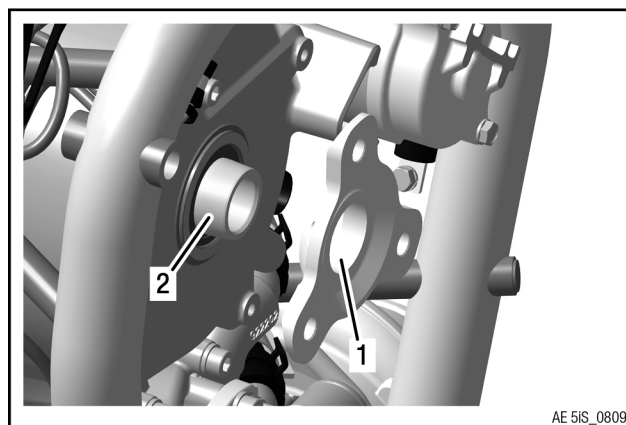


Fig. 14

3.5.4) Optional accessory drive (generator) flange - installation (912 i Series)

Preparation

- Disconnect the battery (negative pole)
- See [Fig. 15](#) and [Fig. 16](#).

Step	Procedure
1	Lock the crankshaft into place. See current Maintenance Manual Line (MML) for the respective engine type.
2	Remove plug screw M22 x 1.5.

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1. Plug screw M22 x 1.5

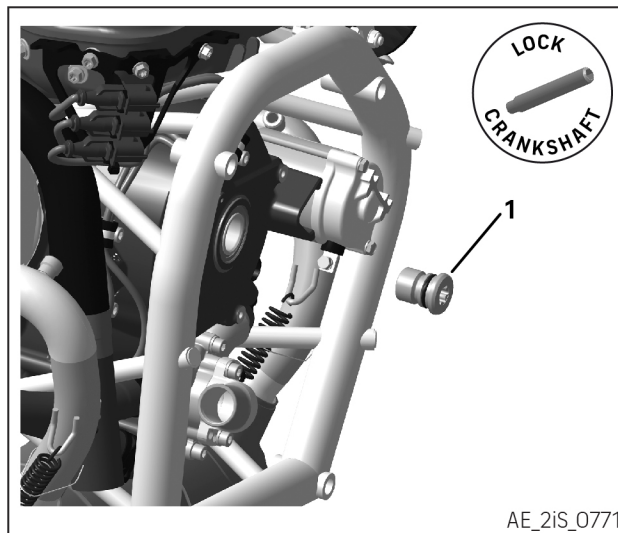


Fig. 15

Step	Procedure
3	Clean the taper surface of the cone locking screw with LOCTITE 7063.
4	Lubricate new O-ring (18 x 2.5) with engine oil and install it onto the cone locking screw M22 x 1.5. Apply LOCTITE 243 to the outer thread of the cone locking screw and tighten it. Tightening torque 150 Nm (111 ft. lb.).
5	Degrease taper surface in the drive flange with LOCTITE 7063 and coat the surface thinly with LOCTITE 648.
6	Place the drive flange on the cone locking screw.
7	Clean threads of the hex. screw M14 x 1.5. Tighten the hex. screw M14 x 1.5 with LOCTITE 243 to the crankshaft stub. Tightening torque 130 Nm (96 ft. lb.).

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1. O-ring 18 x 2.5
2. Cone locking screw M22 x 1.5
3. Drive flange
4. Hex. screw M14 x 1.5

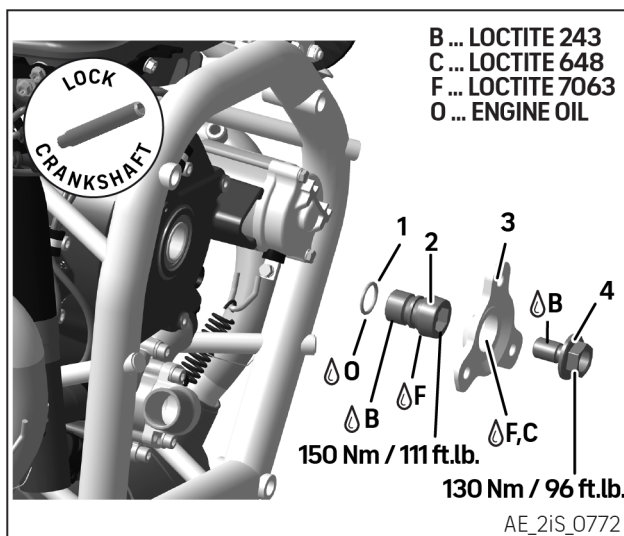


Fig. 16

3.5.5) Optional accessory drive (generator) flange - installation (915 i / 916 i Series)

Preparation

- Disconnect the battery (negative pole)
- See Fig. 17 and Fig. 18.

Step	Procedure
1	Lock the crankshaft into place. See current Maintenance Manual Line (MML) for the respective engine type.
2	Remove plug screw M20 x 1.5.
3	Clean taper surface of the crankshaft using a very fine abrasive pad and degrease with LOCTITE 7063.

1. Plug screw M20 x 1.5
2. Crankshaft taper surface

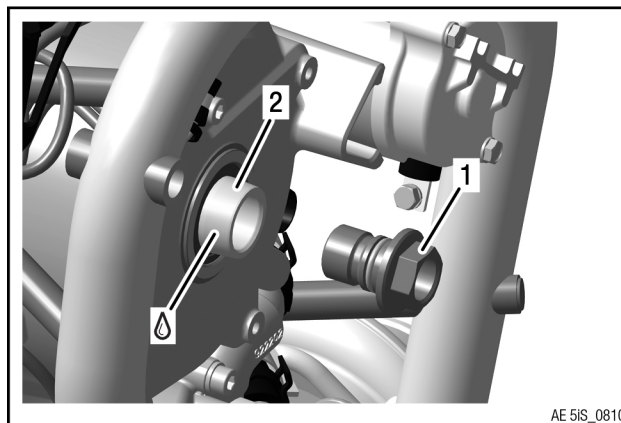


Fig. 17

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Step	Procedure
4	Degrease taper surface in the flange with LOCTITE 7063 and coat the surface thinly with LOCTITE 648.
5	Place the flange on the crankshaft taper.
6	Clean threads of the plug screw. Lubricate new O-ring (15.9 x 2.3) with engine oil and place over the plug screw. Fasten the plug screw with LOCTITE 243 to the crankshaft stub. Tightening torque 150 Nm (111 ft. lb.).

- 1. Crankshaft taper
- 2. Taper surface (flange)
- 3. O-ring 15.9 x 2.3
- 4. Plug screw M20 x 1.5

- B. LOCTITE 243
- C. LOCTITE 648
- F. LOCTITE 7063
- O. ENGINE OIL

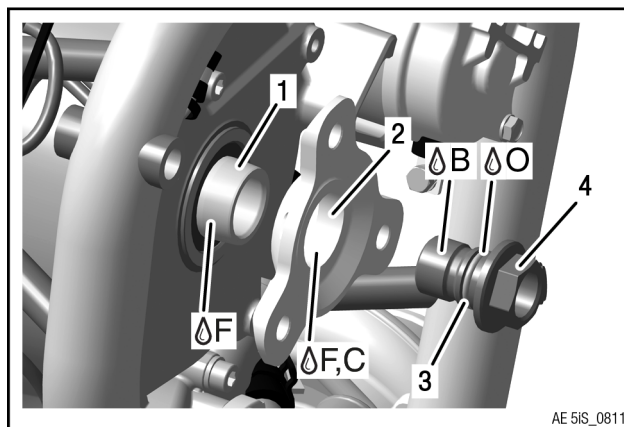


Fig. 18

NOTICE

Ensure that the plug screw with O-ring is installed and properly torqued. An oil leak at this position can lead to engine damage.

3.6) Finishing work

- Unlock the crankshaft, see current Maintenance Manual Line (MML), Chapter 12-20-00
- Restore aircraft to original operating configuration
- Connect negative terminal of aircraft battery

3.7) Test run

In case of uninstalled engines test run can be skipped as this is covered by the mandatory test run after installation.



Conduct test run and perform leakage check.
See current Maintenance Manual Line (MML) for the respective engine type, Chapter 12-20-00.

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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

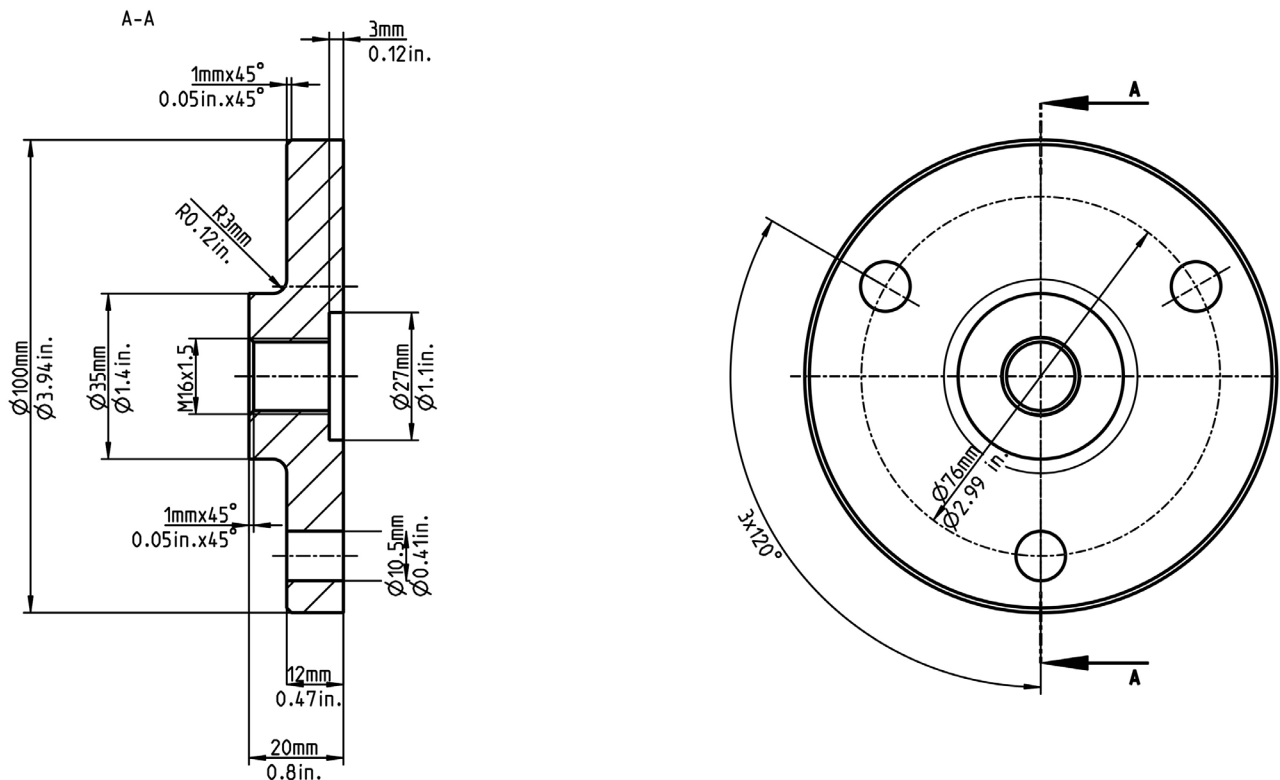
Inquiries regarding this Service Instruction - PAC should be sent to the ROTAX® Authorized Distributor of your area.

A list of all ROTAX® Authorized Distributors or their independent Service Centers is provided on www.dealerlocator.flyrotax.com.

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4) Appendix

The following drawings should convey additional information:



Puller ROTAX drawing no. Z13545

Fig. 19

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