

SERVICE INSTRUCTION

OIL LEAKAGES IN THE AREA OF THE CYLINDER BARREL FOR ROTAX[®] MOTOR TYPE 912 i, 912 AND 914 (SERIES)

SI-912 i-006 R1

SI-912-019 R3

SI-914-021 R3

|| This SI revises SI-912 i-006 Initial issue, SI-912-019 R2 and SI-914-021 R2 dated 20. February 2013.

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.

1) Planning information

1.1) Engines affected

All versions of the engine type:

- 912 A from S/N 4 410 690
- 912 F from S/N 4 412 915
- 912 S from S/N 4 923 309
- || - 912 i Series all
- 912 UL from S/N 4 407 860
- 912 ULS from S/N 5 646 560
- 912 ULSFR from S/N 4 430 311 and from S/N 6 374 028
- 914 F from S/N 4 420 607
- 914 UL from S/N 4 419 316

All crankcase housings from S/N 06.0010 supplied as spare part or shortblock.

In addition, all engines on which a crankcase from S/N 06.0010 has been installed at engine repair / general overhaul are also affected.

From crankcase S/N 07.5001, the O-ring part no. 431570, has already been fitted in serial production.

1.2) Concurrent ASB/SB/SI and SL

none

1.3) Reason

Due to standardization and optimization of the engine manufacturing an optimized thread sleeve has been introduced. In case of maintenance work, depending on the serial number of the crankcase, a new gasket part no. 431411 or O-Ring part no. 431570 is necessary.

Due to deviations during assembly process, some isolated cases of slight oil leakage in the area of the cylinder barrel have been noted. For repair purposes a special gasket or O-Ring was created which seals this area.

1.4) Subject

Oil leakages in the area of the cylinder barrel for ROTAX[®] engine type 912 i, 912 and 914 (Series).

1.5) Compliance

- In case of oil leaks in the area of the cylinder barrel in accordance with section 3.

▲ **WARNING:** Non-compliance with these instructions could result in engine damages, personal injuries or death.

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1.6) Approval

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

1.7) Labor time

Estimated labor time:

engine installed in the aircraft - - - labor 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 current issue of:

- Maintenance Manual (MM)

◆ NOTE: The status of Manuals can be determined by checking the table of amendments of the Manual. The 1st column of this table is the revision status. Compare this number to that 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 defective parts cannot be used and must be returned to a ROTAX[®] Authorized Distributor or Service Center.

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) Material requirement per engine

◆ NOTE: repair by ROTAX[®] Authorized Distributors or their Service Center only.

- parts requirement for repair by ROTAX[®] Authorized Distributors or their Service Center.

Fig. no.	New p/n	Qty/engine	Description	Old p/n	Application
2	431411*	8	gasket	-	cylinder barrel
2	431570**	8	O-ring 10.82X1.78	-	cylinder barrel
	-	4	O-ring 87X2	250510	cylinder barrel
	-	8	O-ring 16X5	850930	oil return tube
	-	4	O-ring 105X2.5	250285	valve cover
	-	4	O-ring 6.4X1.8	430205	valve cover
	-	4	O-ring 34X2	230910	intake manifold
	-	4	isolating flange	850090	intake manifold (engine type 912 i Series)
	-	4	O-ring 19x2	950180	Flange
	-	8	Lock nut M8-SW 12	842950	Exhaust flange

* only for crankcase part no. 888368 (crankcase from S/N 06.0010 to S/N 07.5000)

** only for new crankcase part no. 892654 (crankcase from S/N 07.5001)

2.4) Material requirement per spare part

none

2.5) rework of parts

none

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

Fig. no.	New p/n	Qty/engine	Description	Old p/n	Application
	-	1	cylinder aligning tool	877262	cylinder head
	-	as required	cleaning agents	**	crankcase / cylinder
	-	1	collar nut M8	942301	auxiliary tool
	-	1	socket driver T30	876180	intake manifold 912 i Series

** e.g. brake cleaner or equivalent

3) Instructions / Accomplishment

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

▲ **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.

3.1) Instructions

■ **CAUTION:** All work has to be performed in accordance with the relevant Maintenance Manual of the respective engine type.

3.1.1) Check for oil leaks

See fig. 6 and 7.

Visually inspect the crankcase especially:

- in the area of the cylinder barrel (1), at O-ring location (2)
- if you notice oil leaks in this area then the following work has to be performed.

◆ **NOTE:** If only a small amount of oil leakage is found, a ferry flight to a maintenance facility is permitted.

3.1.2) Removal of cylinder head

See latest Maintenance Manual (Heavy) of the relevant engine type.

- repeat the procedure on the remaining cylinders 3, 2 and 4.

◆ **NOTE:** While turning crankshaft make sure pistons move freely and do not contact crankcase.

- clean cylinder, cylinder head and crankcase housing surface.

3.1.3) Installation of O-ring part No. 431570 (for crankcase part no. 892654 from S/N 07.5001)

See fig. 1 to 5.

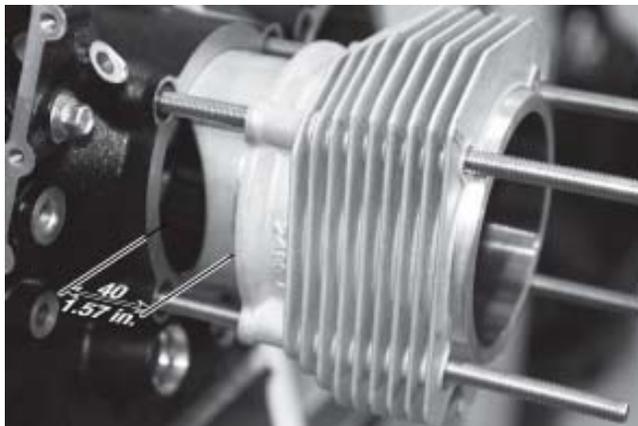
As assembling aid to press in the O-ring part no. 431570 you can use a collar nut with threaded bolt.

◆ **NOTE:** Remove cooling air duct (if required).

1. Move the piston to TDC.

2. Lift the cylinder and pull back about 40 mm (1.57 in.). Do not allow the piston rings to come out.

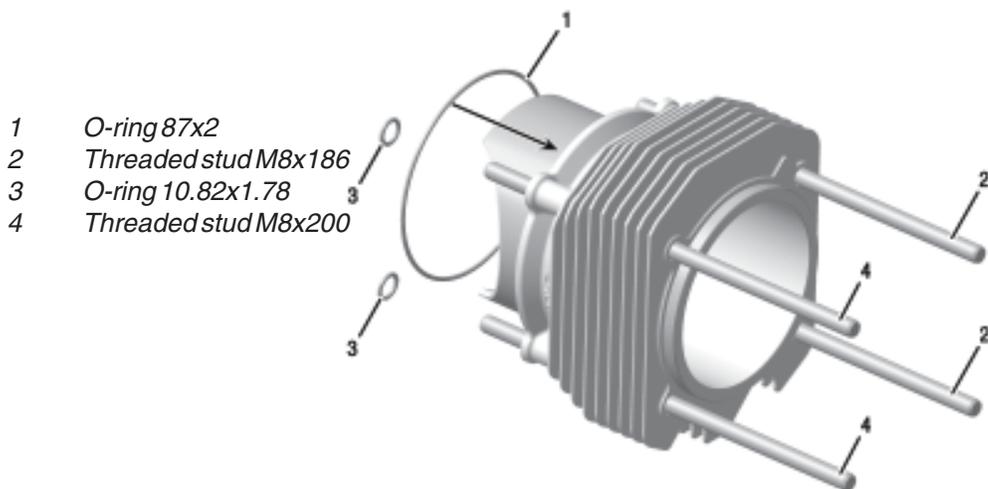
3. Remove O-ring 87x2 (1).
4. Remove the 4 threaded studs (2, 4). Do not mix them up. Refer to Fig. 7 for correct placement of studs. The maximum screw-in length has to be considered!



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fig. 1

- **CAUTION:** Piston and piston rings may get damaged. Support piston by hand!
5. Install new cylinder base O-ring 87x2 (1) part no. 250510. Stretch the O-ring over the cylinder and position it.
 6. Install 2 threaded studs M8x186 (2) at the threaded sleeves M8. Tightening torque 3 Nm (27 in.lb).
 7. Lubricate O-ring 10.82x1.78 (3) part no. 431570 and insert into crankcase.



- 1 O-ring 87x2
- 2 Threaded stud M8x186
- 3 O-ring 10.82x1.78
- 4 Threaded stud M8x200

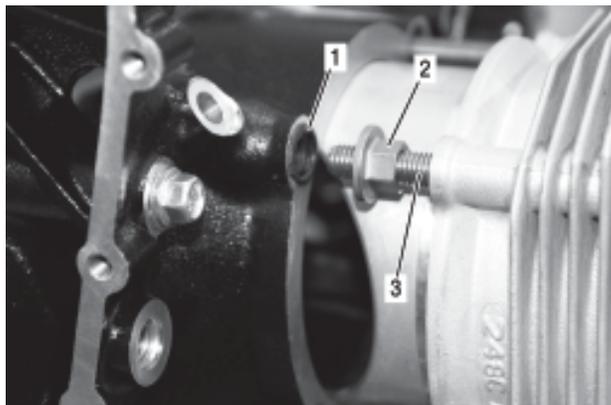
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fig. 2

8. Seating o-ring (3): Insert threaded stud M8x200 (3) into cylinder and screw on the collar nut M8 (2) part no. 942301 approx. 15 mm (0.59 in.). Make sure cap of capnut points in the direction of crankcase.

◆ **NOTE:** Lubricate face of cap nut with engine oil!

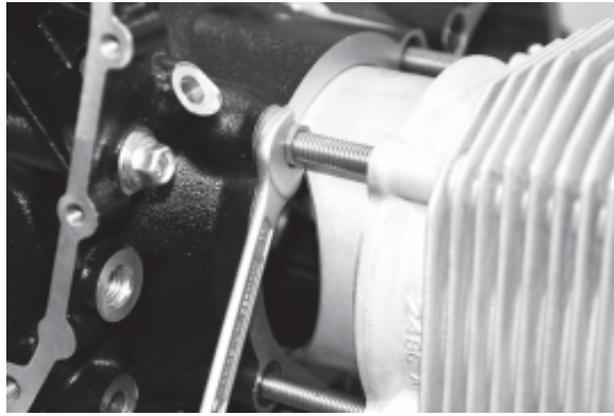
- 1 O-ring 10.82x1.78
- 2 Collar nut M8
- 3 Threaded stud M8x200



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fig. 3

9. Screw in threaded stud M8x200 by hand about 10 mm (0.4 in.) into the crankcase.
10. Tighten collar nut M8 (SW 11). Tightening torque 3 Nm (27 in.lb).



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fig. 4

11. Loosen cap nut M8 and remove it.
- ◆ NOTE: Check if O-ring is in correct position (fully seated)!

1 O-Ring 10.82x1.78



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fig. 5

12. Tighten threaded stud M8x200. Tightening torque 3 Nm (27 in.lb).

3.1.4) Installation of gasket part no. 431411 (for crankcase part no. 888368 from S/N 06.0010 up to S/N07.5000)

See fig. 1 and 2.

- ◆ NOTE: Remove cooling air duct (if required).
1. Move the piston to TDC.
 2. Lift the cylinder and pull back about 40 mm (1.57 in.). Do not allow the piston rings to come out.
 3. Remove O-ring 87x2 (1).
 4. Remove the 4 threaded studs (2, 4). Do not mix them up. The maximum screw-in length has to be considered! Refer to Fig.7 for correct placement of studs.
- CAUTION: Piston and piston rings may get damaged. Support piston by hand!
5. Install new cylinder base O-ring 87x2 part no. 250510. Stretch the O-ring over the cylinder and position it.
 6. Install 2 threaded studs M8x186 (2) at the threaded sleeves M8. Tightening torque 3 Nm (27 in.lb).
 7. Lubricate gasket part no. 431411 and insert into crankcase.
 8. Tighten threaded stud M8x200. Tightening torque 3 Nm (27 in.lb).

3.1.5) Installation of cylinder and cylinder head

See latest Maintenance Manual (Heavy) of the relevant engine type.

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

3.2) Test run

When operating the engine make sure that all necessary operating fluids (engine oil, coolant, fuel) are filled up to their specified levels!

Conduct test run including ignition check and leakage test in accordance with the current Maintenance Manual of the respective engine type.

■ CAUTION: If any leakages in the area of the cylinder barrel are evident, the cause has to be found. Do not tighten again the cylinder or tighten with increased tightening torque.

Engine type 912 i: Retighten all 8 hex. collar screws M6x20 of intake manifold after testrun. Tightening torque 10 Nm (90 in.lb).

3.3) Summary

These instructions (section 3) have to be conducted in accordance with section 1.5.

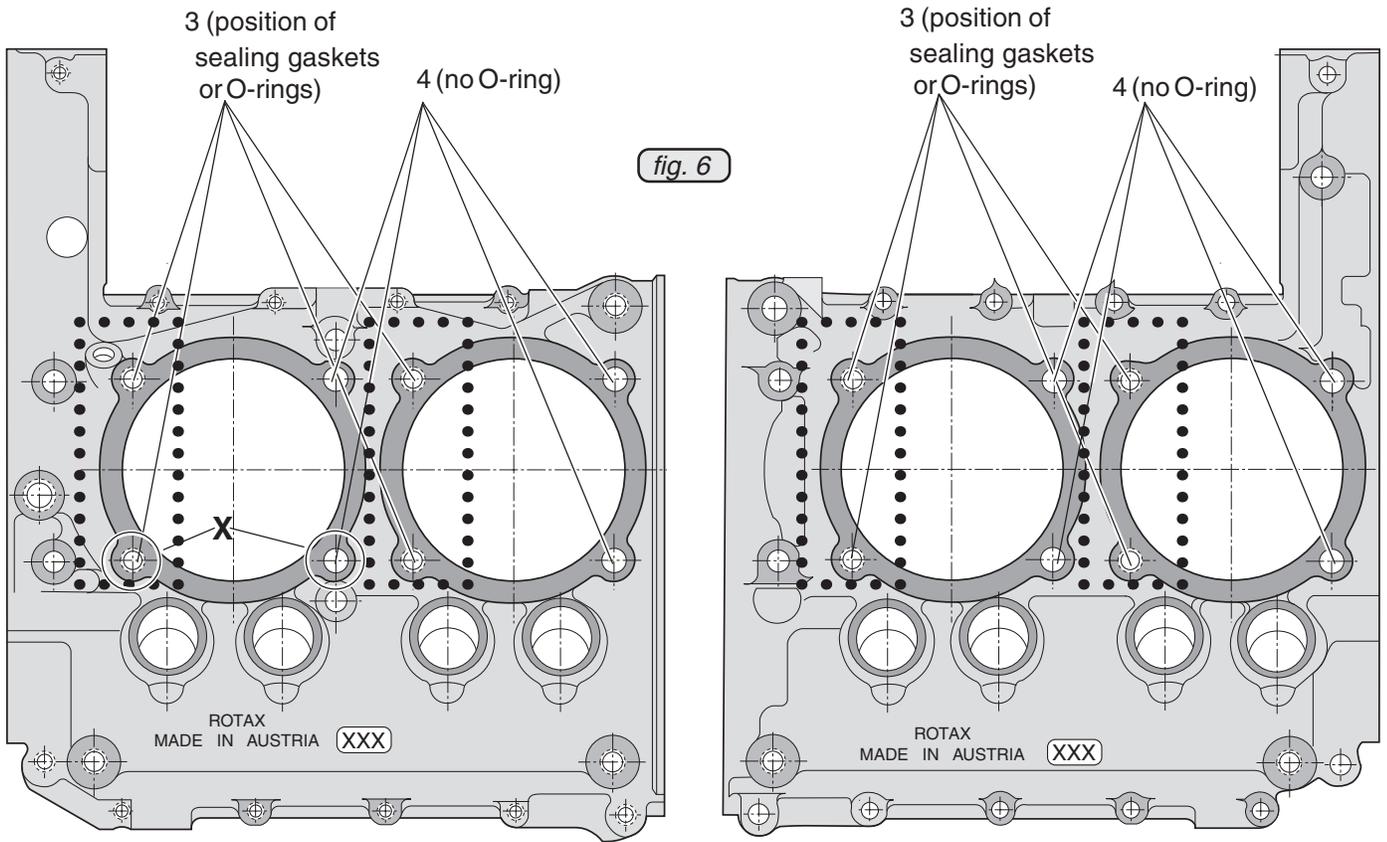
▲ WARNING: Non-compliance with these instructions could result in engine damage, personal injury or death!

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

4) Appendix

the following drawings should convey additional information:

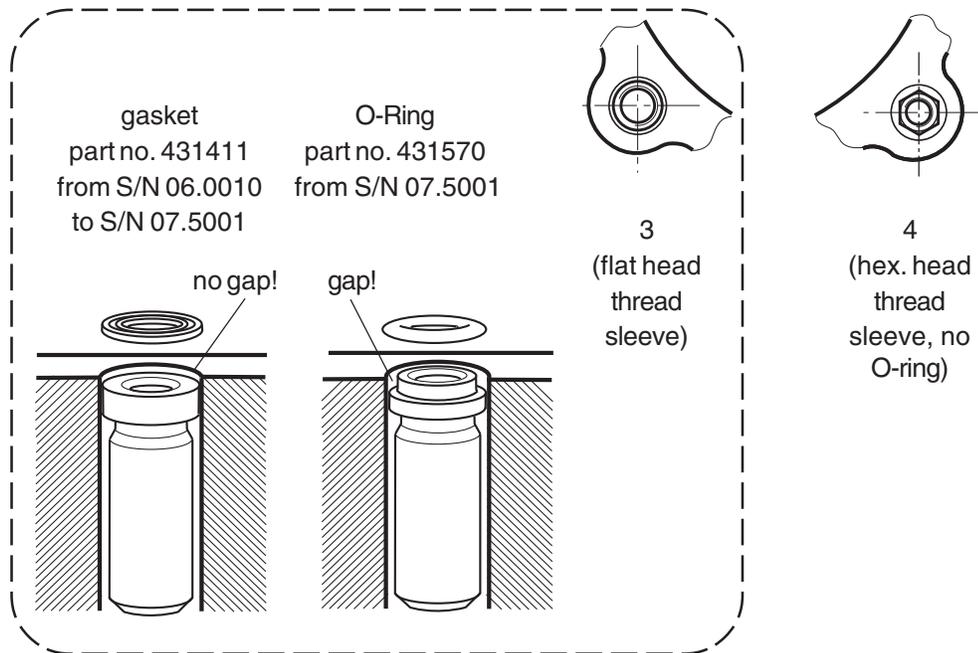
Engine type 912/914 Series



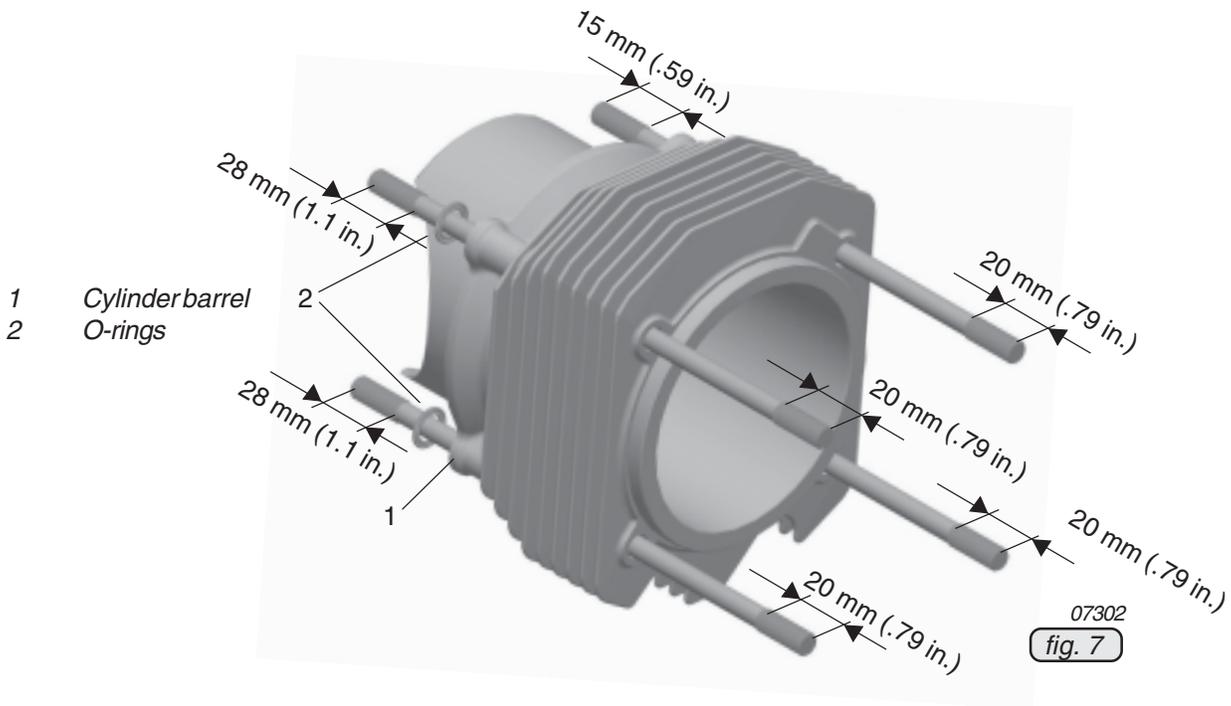
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 •••• position of sealing gaskets or O-rings on the left hand studs

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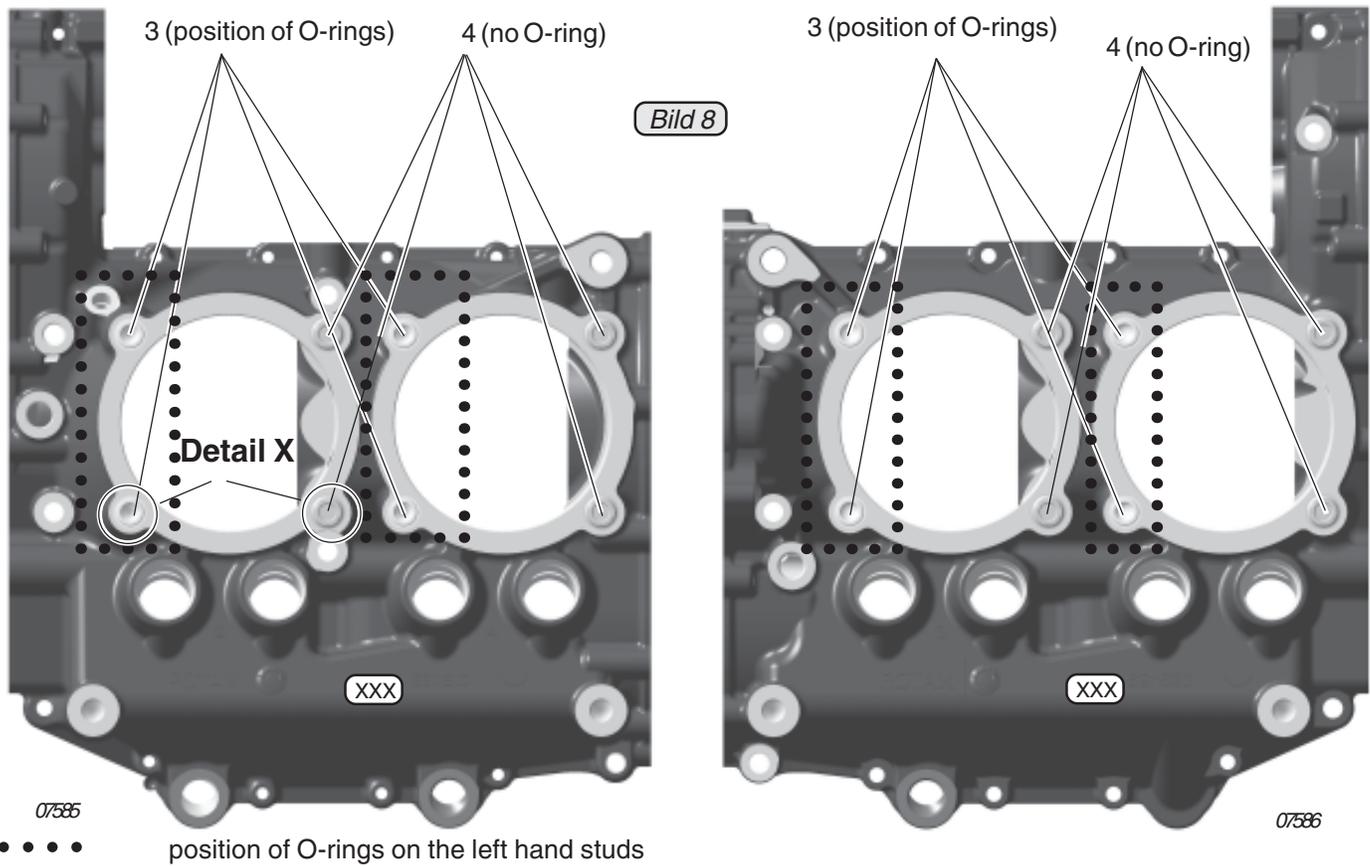
Detail X



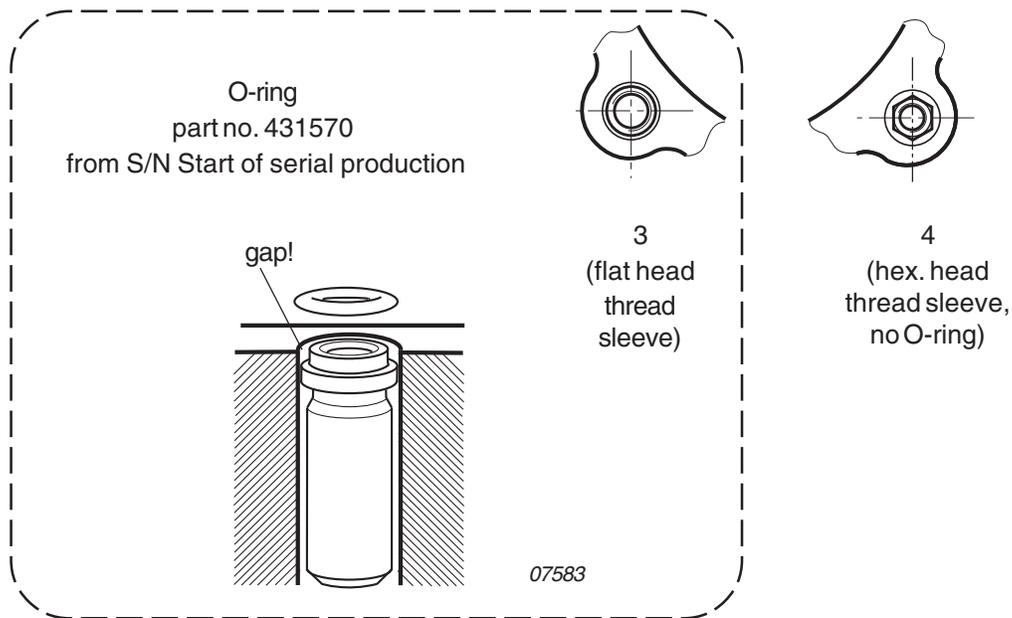
Engine type 912/914 Series



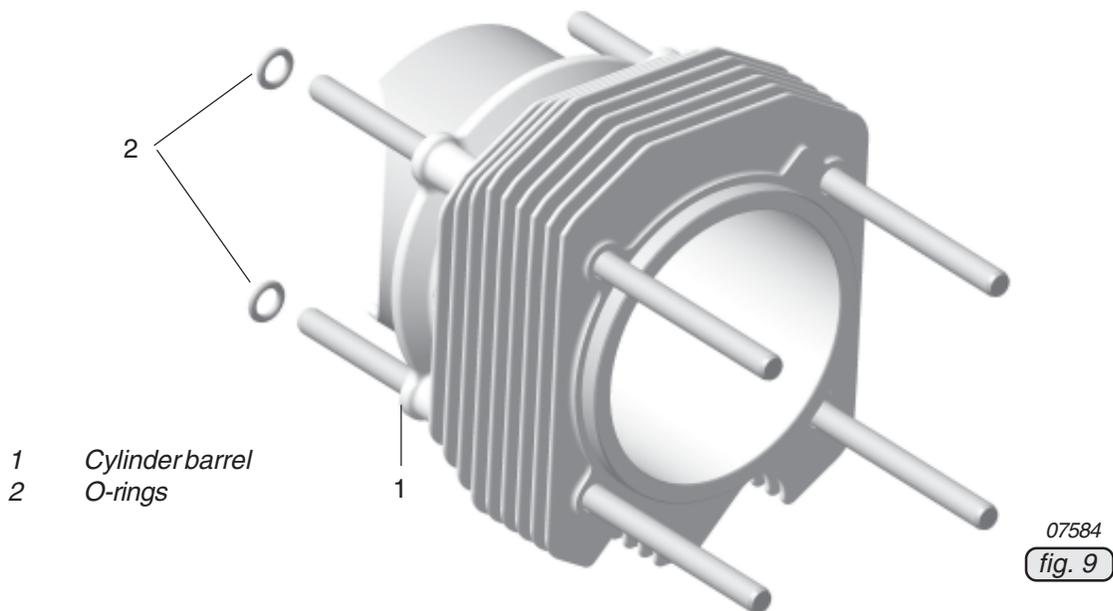
Engine type 912 i Series



Detail X



Engine type 912 i Series



◆ NOTE: The illustrations in this document show the typical construction. They may not represent full detail or the exact shape of the parts. However, they illustrate parts which have the same or similar function. Exploded views are **no technical** drawings and are for reference only. For specific detail, refer to the current documents of the respective engine type.