

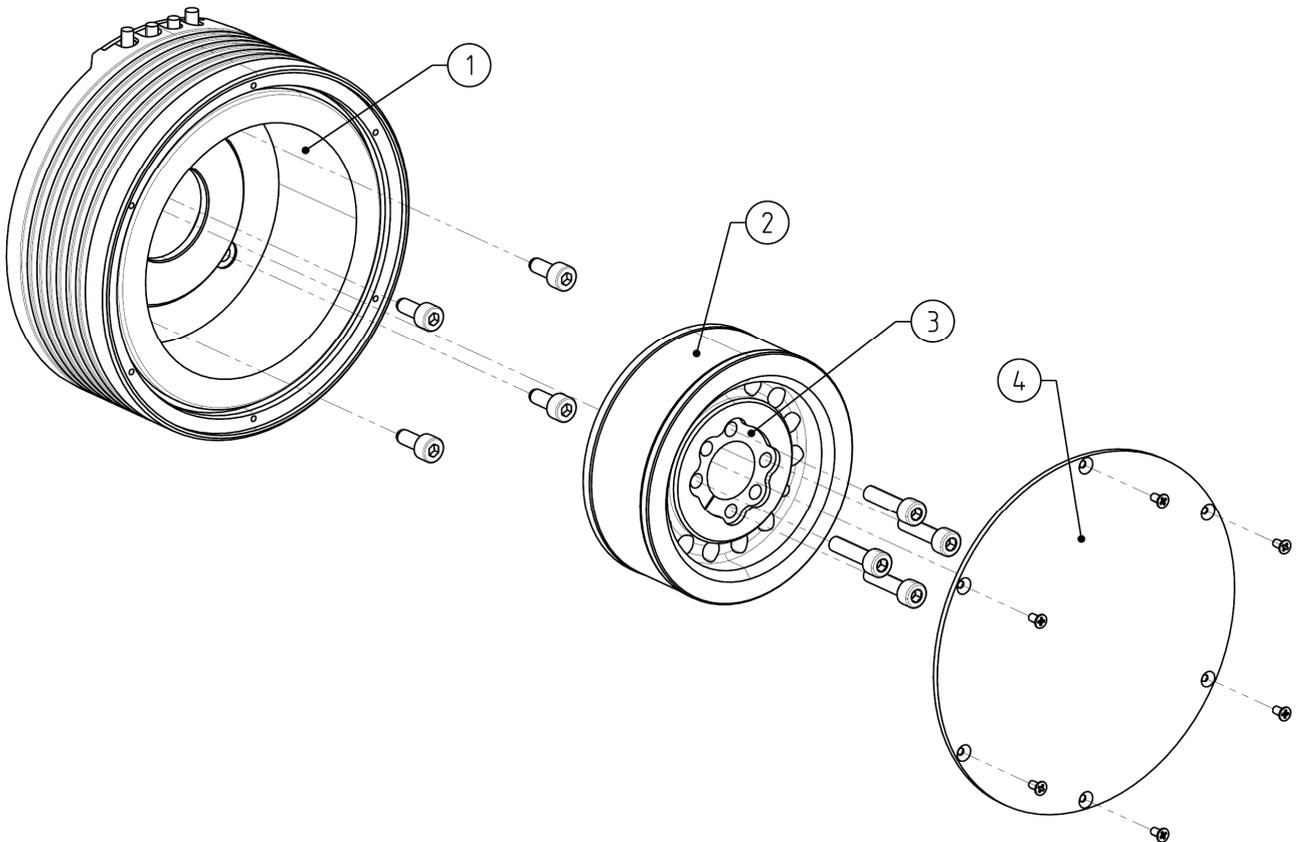
Subject: Dis- and re-assembling of the starter motor; adjusting the reference position

Applicability: EASA.A.0220, Variant ASW 27-18E, TM 13 ("ASG 29Es")

Reason: To disassemble the SOLO-engine or for maintenance reasons it can be necessary to dis- and re-assemble the starter. After re-assembling the starter an adjustment of the reference position (propeller vertical) has to be done.

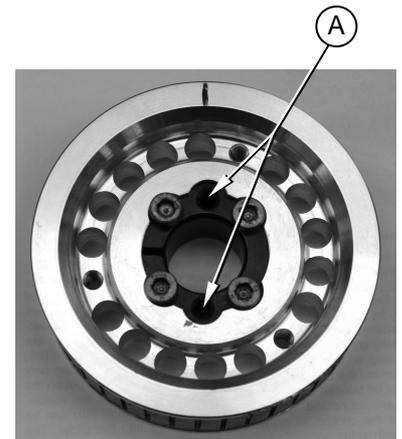
Action: **Principle structure of the starter motor**

The starter motor is composed of the stator (1), which is screwed on the SOLO-engine's crankcase with 4 head screws (M5x12). On the back side of the stator are a centring seat and grooves for shaft- and O-seal. Is the stator assembled on the crankcase, the shaft shoulder of the crankshaft protrudes into it. On this shaft shoulder the starter motor's rotor (2) is mounted with a clamping set (3). The clamping set is tightened with 4 head screws (M5x20 12.9). The starter motor has no own bearings, it is supported by the crankshaft. The cover (4) is the completion of the starter motor's housing and screwed on the stator (1) with 6 countersunk screws (M2,5x5).



Disassembling of the starter motor

1. Unscrew cover (4).
2. Mark the radial position from rotor (2) to clamping set (3) to crankshaft.
3. Unscrew head screws of the clamping set (3).
4. Screw two of this head screws into the ejection threads (A) of the clamping set and tighten them until the clamping set become loosened (rotor rotatable against crankshaft).
5. Take off the rotor (2) together with the



clamping set (3) from the crankshaft (leave the clamping set in the rotor).

6. Unscrew the head screws of the stator (1) and take it off straightly from the crankcase / -shaft.
7. Protect engine against penetrating dirt.

Assembling of the starter motor

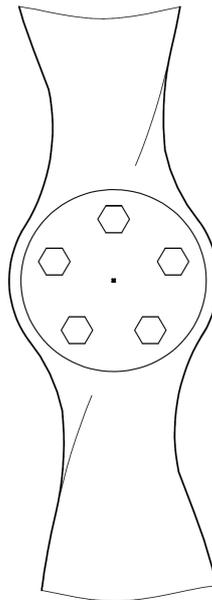
1. Check the condition and correct seating of the shaft and O-seal in the stator (1).
2. Insert the stator (1) centred over the crankshaft in the centring seat (be careful with the shaft seal) and screw it on the crank case with the 4 head screws (secured with Loctite 243), tightening torque 8Nm (5,9 ft-lbf).
3. Before mounting the rotor (2) check the clamping set (3) for damages and contaminants; if necessary lightly oil, but never grease!
4. Insert the rotor (2) together with the clamping set (3) onto the crank shaft shoulder all the way to the stop.
5. Align the rotor (2) to the clamping set (3) to the crankshaft, if a radial marking from disassembling exists, else see section "Adjusting the reference position".
6. At first insert the head screws of the clamping set by hand (secured with Loctite 243). Then tighten with increasing torque crosswise during at least 4 cycles until the tightening torque of 8Nm (5,9 ft-lbf) is reached. At the beginning of the tightening keep the rotor pressed against the crank shaft shoulder and take care, that the rotor did not turn out of the adjusted position.

CAUTION: By improper installation of the rotor (e.g. tilting because of wrong screw tightening) it can move during starter operation causing a wrong propeller reference position. Furthermore damages from the rotor scraping at the stator can occur.

7. Insert cover (4) and screw on.

Adjusting the reference position

1. Engine extended, main switch off, engine switch "OFF" 
2. Align the propeller vertical as follows (front view):



3. Disassemble cover (4) of the starter.
4. Loosen the rotor of the starter (2) as described in items 3. and 4. of the section "Disassembling of the starter motor".
5. Toggle engine switch to "ON" , main switch on.

6. Turn the rotor (2) at least one rotation in direction of propeller rotation (counter-clockwise looked in flight direction). If necessary hold meanwhile the propeller aligned vertical.
7. Press 6 times the white button at the power-plant instrument until "Pos: XXX" shows up in the display. This is the read out of the current rotor position as a number between 0 and 125.
8. Rotate the rotor further in direction of propeller rotation until "Pos: □" is shown. If found helpful, mark this position from rotor (2) to clamping set (3) to crankshaft.
9. Tighten the rotor as described in item 6. of the section "Assembling of the starter motor".
10. Insert the starter's cover (4) and screw it on.
11. Check the correct propeller alignment during the engine stop procedure in a test ground run or test flight.

Material: Loctite 243 (medium strength)

Notes: All actions are to be accomplished according to EU-VO 2042/2003, Part M.
All actions are to be inspected by certifying staff according to EU-VO. 2042/2003 Part M / Part 66.

In countries outside the scope of EC 2042/2003 the corresponding national rules shall apply.

Poppenhausen, 03.09.2015

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