DG Flugzeugbau GmbH
76646 Bruchsal

Service Info
No. 63-07

Subject : Starter motor for Rotax 505 engine

Effectivity : DG-400 and DG-800A

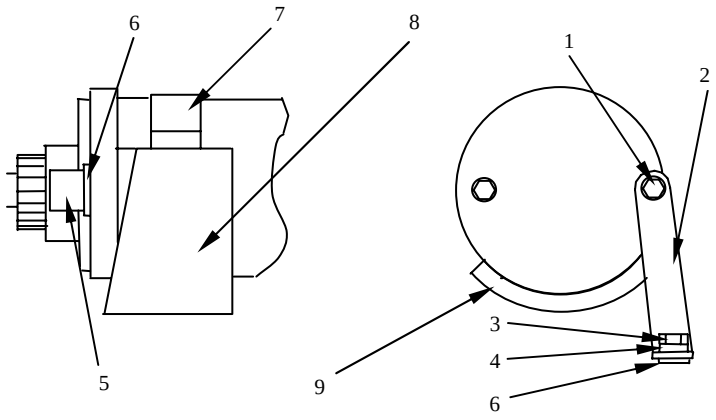
Accomplishment : If the built in starter motor is defective

Reason : The starter motors used up to now are no more available. A new starter motor was tested. This starter motor has different dimensions than the old one. So the mounting equipment must be changed

Instructions : All steps of the working instruction 1 for TN 826/22 must be carried out except for step 13 and 14.

Secure all screwed connections with Loctite 243

1. Modify the flange of the new starter motor according to drawing 4M81.
2. Exchanging the starter motor:
   In DG-800 A or DG-400 with previous starter "Bosch American 992807"
   Exchange parts 4M5/1 and /2 against parts 4M5/3 and /4. Then carry out step 13 of working instruction 1 for TN 826/22.
   In older DG-400 with previous starter "Bosch Typ DG":
   Carry out step 13 of working instruction 1 for TN 826/22.
3. Use bolts (5) and washers (6) to install the starter motor to 4M5/3 and /4. Before installing the starter motor glue the rubber pad 35 x 60 x 7 mm onto the starter motor with Pattex.
4. Starter support:
   Dismount bolt (3) and lock washer (4). Mount the starter support (2) with screw (1), bolt (3), lock washer (4) and 1 washer (6).



Sketch 1

(1) body screw; **(2)** starter support 4M70;
(3) bolt M8x16 DIN 933-8.8; **(4)** lock washer 8 DIN 127
(5) bolt M8x20 DIN 912-8.8; **(6)** washer 8,4 DIN 125 stzn;
(7) bolt 4M31/1; **(8)** 4M5/3 and 4M5/4;
(9) rubber pad

Tools: open end wrench 8mm, allen wrench 6mm and 10mm

Material :

1x starter motor "SJCE ES0200S"	1x 4M5/3 if necessary
1x starter support 4M70	1x 4M5/4 if necessary
1x M8x 20 DIN 912-8.8 zn	Pattex; Loctite 243
3x washer 8,4 DN125	
1x rubber pad 35x 60 x 7 mm	

Weight and balance : influence negligible

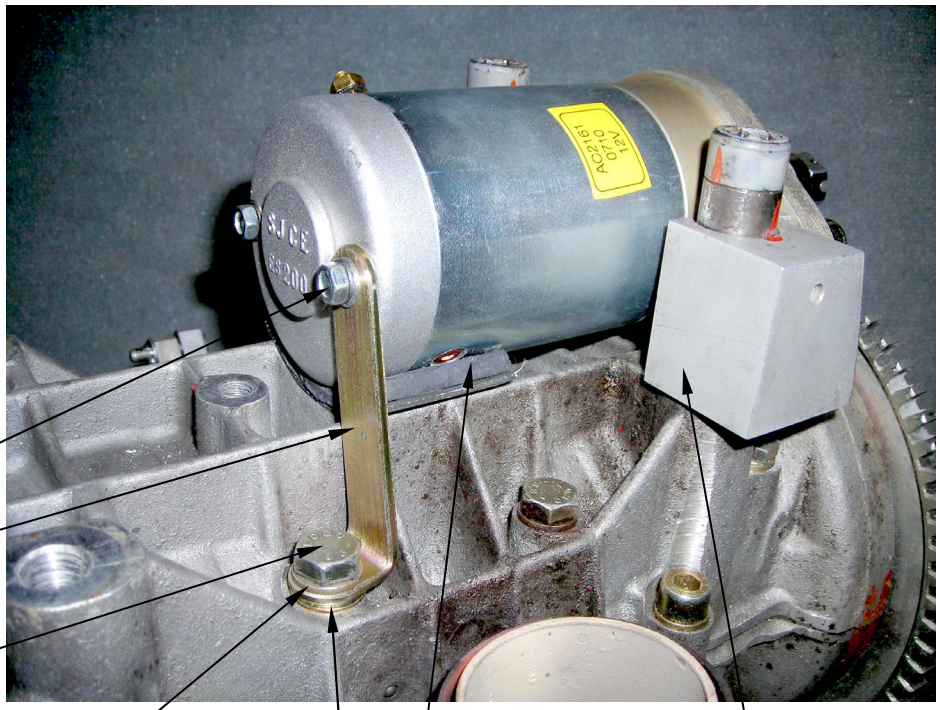
Remarks : Instructions may be executed by the owner.

Bruchsal, date:
March 28. 2007

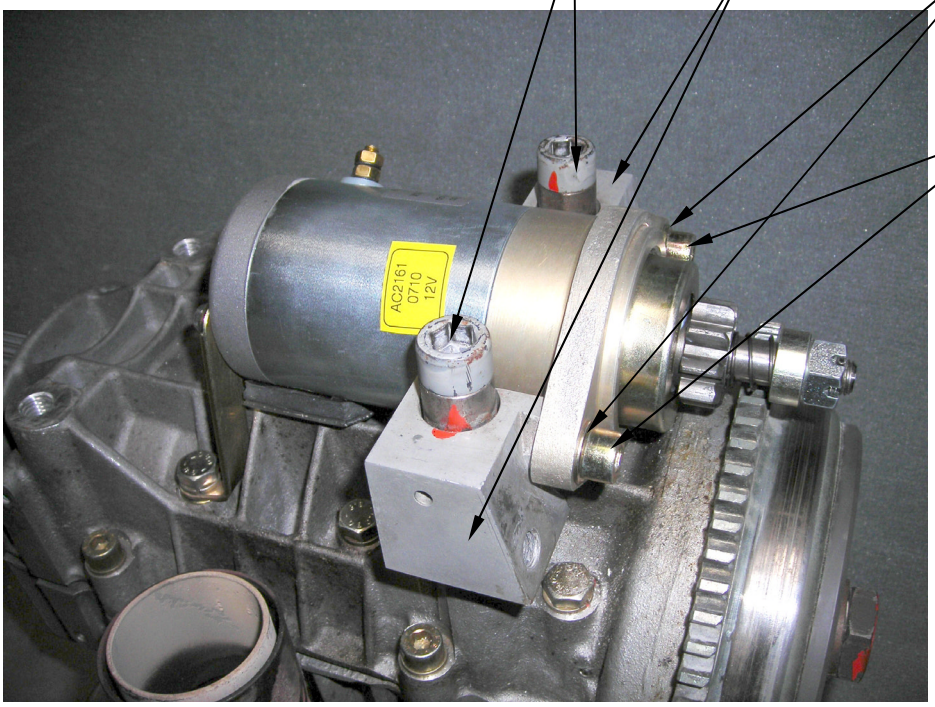
Author:
Peter Bruchmüller

This service info has been approved by EASA date 23. April 2008 with technical note DG-G-04.
Approval No. EASA.A.C.09568.

Picture 1 parts see sketch 1



Picture 2 parts see sketch 1



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Working Instruction no. 1
for TN 826/22
Instruction 2

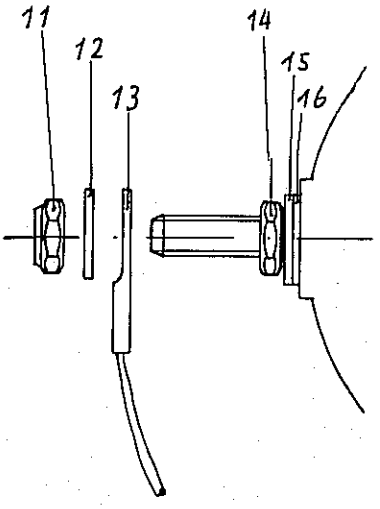
Concerning: all DG-400 up to ser.no. 4-249.

Numbering of parts see drawing 1 for this working instruction and the sketches in this instruction.

1. Extend the engine, then switch off main switch.

2. Disconnect the positive wire from the starter motor.

   a) Bosch Starter type DG



11. self locking nut DIN 985 - 8 zn
12. washer 6.4 DIN 125 St zn
13. positive wire
14. nut M 6 DIN 936 - 8 zn
15. spring washer 6.4 DIN 6798I
16. washer material brass

   When screwing off the nut (11) hold the nut (14) with a 10 mm fork end spanner.

   b) Bosch American-E-Starter

   With this type of starter motor the nut 14 is not existing. The nut 11 is a nut STD 1411 (1/4 inch thread), spanner must be 11 mm (7/16 inch).

3. Dismount the carburettor cover, therfore remove the 2 screws (10). Secure the carburettor intake from dirt etc.

4. Dismount securing bolt (1).

5. Dismount slotted nut (2) and spring washer 4 M 27 and the ring (3).

6. Dismount the spring at the exhaust manifold.

7. Dismount the lower mounting bolts (4) of the rear propeller-mounting plate 4 M 3.

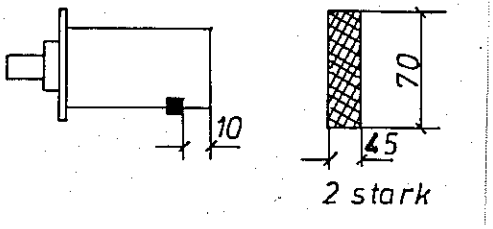
8. Take off rear propeller mounting plate 4 M 3 with the exhaust muffler.
   It is not necessary to dismount the muffler from the plate 4 M 3. You need only to bend forward the front propeller mounting plate 4 M 2.

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9. Dismount the front and the rear mounting bolts of the starter motor (5) and (6).
Take off the starter motor.
During reassembly the modification item 14 must be executed.

10. Dismount rear mounting blocks 4 M 5, therefor remove the bolts 4 M 31/1.
During reassembly the modification item 13 must be executed.

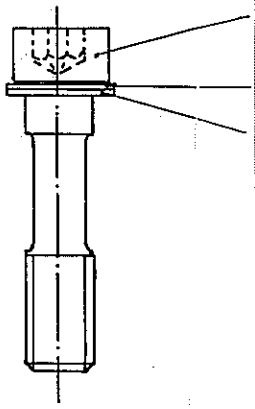
11. Degrease the lower side of the starter motor and glue on the rubberplate 70 x 45 x 3 mm (2.75 x 1.77 x 0.8 inch).



12. Prior to reassembly clean all parts with acetone and remove remants of loctite from all threads.
During reassembly secure all screwed connections with Loctite 72 b except for securing bolt (1), slotted nut (2) and bolts (7).
All bolts secured with Loctite should be marked with red securing paint.

13. Mount the blocks 4 M 5 into the engine. Therefore recut the the threads in the engine and check the contact surface between engine and 4 M 5 for evenness.
Before reassembling inspect the bolt 4 M 31/1 for cracks.

Modification: Place a washer 4 M 31/2 underneath the the springwasher.



bolt M 12 4M 31/2

springwasher 12 DIN 7980

washer 4 M 31/1
(diameter inside 12.2 mm, .48 inch
diameter outside 18 mm, .71 inch
thickness 2 mm, .08 inch).

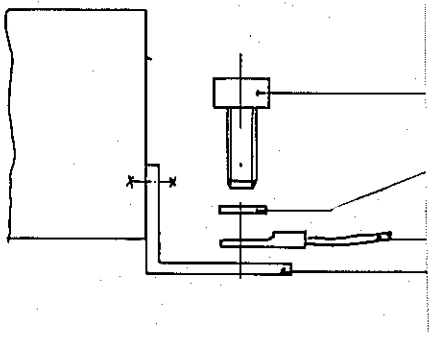
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14. Mounting of the starter motor: Bosch type DG

Note: With starter motor Bosch American E-Starter execute the "working instruction no. 2 for TN 826/22" instead of this section.

Modification: Replace the two mounting bolts (6) M 8 x 25 DIN 912-8.8 by M 8 x 22 DIN 912-8.8

Mount starter motor with bolts (5) and (6) and a washer 8.4 DIN 125 St under each bolt head.
With bolt (5) the earth wire has also to be fixed.



M 8 x 16 DIN 912-8.8

8.4 DIN 125 St zn

earth wire

mounting bracket 4 M 43

15. Mount the rear propeller mounting plate 4 M 3 with the exhaust muffler. Place the muffler into the exhaust manifold. Position the plate 4 M 3 correctly and fix it with the bolts (4) to the blocks 4 M 5.
Place a washer 10.5 DIN 125 underneath the bolt heads.
Fix the spring from muffler to manifold. Mount the part 4 M 1/2 (3), springwasher 4 M 27 and slotted nut (2).
Further work see section 4.1 maintenance manual "Mounting and tensioning of the drive belt".

16. Mount the carburettor cover again to parts 4 M 4 and 4 M 5 with the bolts (10) and washers 5.3 DIN 125.

17. Exchange the mounting bolts at the front engine mount 4 M 6.
Don't execute this work on both sides at the same time!

a) Dismount nut and washer from bolt (7).
Push bolt as far inside the rubber mounting block (9) as to make it flush with block (8).

b) Screw out bolt (9) of plate 4 M 6.
Clean the threads.

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c) Replace bolt (9) M 12 x 30 DIN 912-8.8 by a bolt M 12 x 30 **DIN 7984-8.8** (low head). Screw the new bolt with washers 13 DIN 125 into the front mounting plate 4 M 6.

d) Push back the bolt (7) into place, attach washer 10.5 DIN 125 to the bolt and screw a **new** selflocking nut M 10 SSN 003 onto the bolt.

Now execute the same modification on the other side.

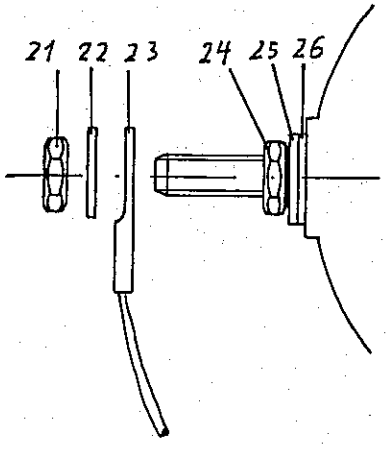
18. Connect positive wire to the starter motor.

a) Bosch starter type DG

See sketch under item 2.
Fix nut (14) on the bolt protuding out of the starter. Put on positive wire, washer (12) and screw on nut (11).

b) Bosch American E-Starter

Modification:



21. Nut STD 1411
22. Springwasher 6.4 DIN 6798 I
23. Positive wire
24. Nut STD 1411
25. Springwasher 6.4 DIN 6798 I
26. Brass washer

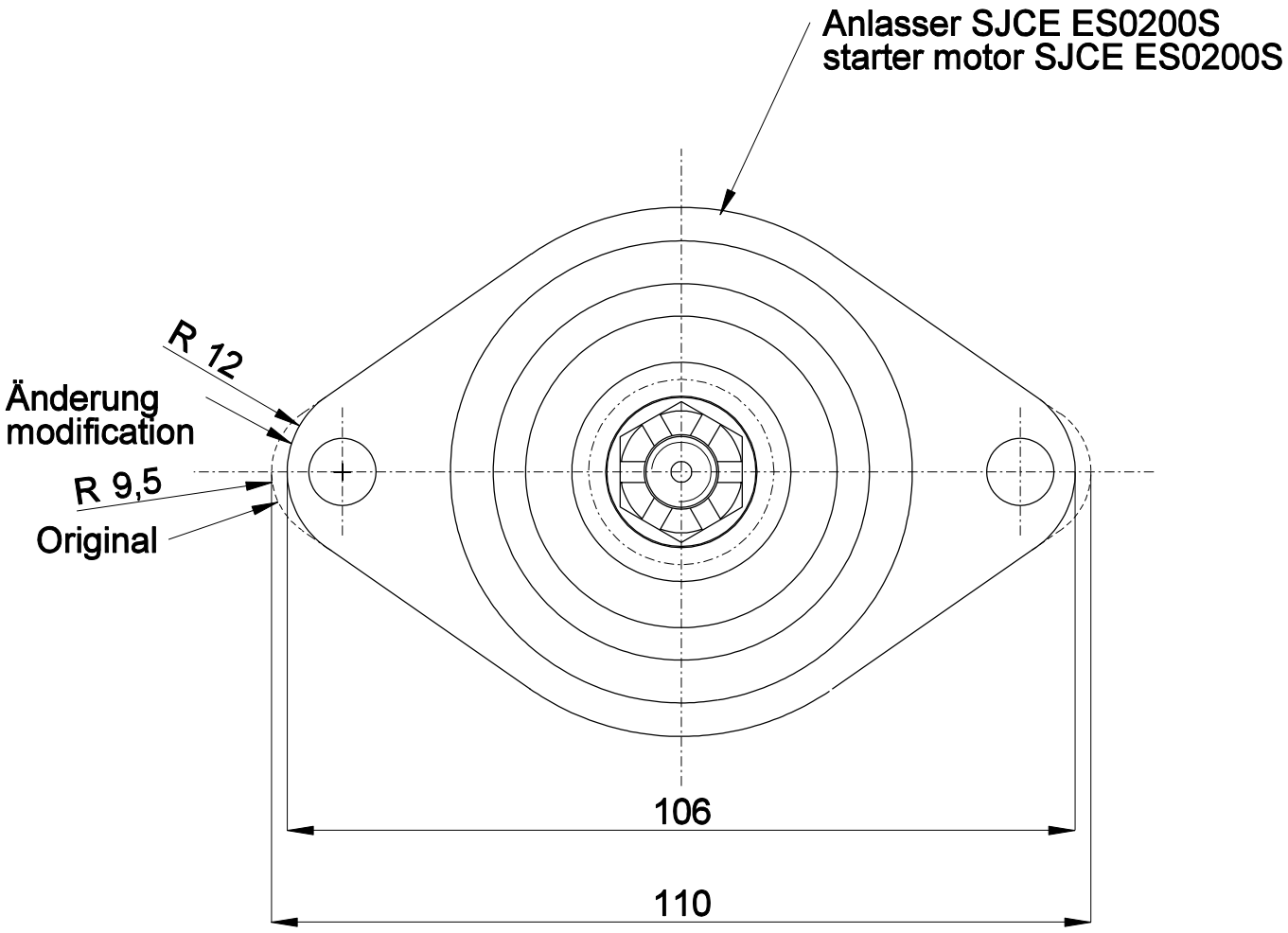
Fix nut (24) on to the bolt protruding out of the starter. Put on positive wire (23) and springwasher (22) and screw on nut (21). Use an open end spanner 11 mm (7/16 inch).

Tightening torques

M 12----------50 Nm (37 ft lb)
M 10----------40 Nm (30 ft lb)
M 8----------24 Nm (18 ft lb)
M 6----------10 Nm (7.5 ft lb)

Securing

Secure all screwed connections with Loctite 72 b except for those secured by selflocking nuts. All bolts secured with Loctite are to be marked with red securing paint.



modification of the starter motor for installation in DG-400 and DG-800A

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	28.03.07	Hinner
Gepr.		
Norm.		

Maßstab 1:1 :

Maße ohne Toleranz-ang. nach:

Änderung Anlasserflansch für Einbau in DG-400 und DG-800A

DG Flugzeugbau GmbH
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Otto-Lilienthal-Weg 2

DG

4M81