Manual
for the
Engine SOLO type 2350 D

Serial - no. ...........................................
Manufactured ....................................

Aircraft type .............................................................................................................
Registration no. ..........................................................................................................
Owner .........................................................................................................................

Log of revisions

<table>
<thead>
<tr>
<th>no.</th>
<th>edition date</th>
<th>revised page no.</th>
<th>date of entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>22. October 2014</td>
<td>All pages</td>
<td>22. October 2014</td>
</tr>
</tbody>
</table>

Table of contents

<table>
<thead>
<tr>
<th>Issue</th>
<th>Replaced issue</th>
<th>Page – no.</th>
</tr>
</thead>
</table>
1. Description of construction

- In-line-two-cylinder-two-stroke engine
- Air-cooling
- mixture control via two diaphragm carburetors
- CDI ignition
- Propeller mounted on belt drive
- No engine starter
- Crank-case-pressure operated fuel pump

2. Technical data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine displacement</td>
<td>430 ccm, bore 70 mm, stroke 56 mm</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>12 : 1</td>
</tr>
<tr>
<td>Ignition</td>
<td>Magneto SOLO, ignition coil Ducati</td>
</tr>
<tr>
<td>Spark plugs</td>
<td>BOSCH W 5 AC or Champion L82 C, Gap 0,5 mm. Thread M 14X1,25 mm. In combination with spark-plug-cap (23 00 701, R=5kOhm)</td>
</tr>
<tr>
<td>Carburetor</td>
<td>Solo, metering-device WALBRO</td>
</tr>
<tr>
<td>Fuel pump</td>
<td>Bing or Mikuni</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Counterclockwise, in flight direction</td>
</tr>
<tr>
<td>Fuel</td>
<td>Two-stroke mix (gas/ oil), premium gas or AVGAS 100LL</td>
</tr>
<tr>
<td>Mixture</td>
<td>Fuel-oil-mix 1:40 (2,5%), oil with the specification JASO FC or JASO FD, recommended CASTROL ACT&gt;EVO</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 23,5 kg, complete with muffler, without propeller</td>
</tr>
<tr>
<td>belt drive</td>
<td>Ratio 1 : 1,56</td>
</tr>
<tr>
<td>fuel filter</td>
<td>Karcoma Typ 99.106/8-100</td>
</tr>
</tbody>
</table>
3. Operational data and limitations

Max. power 22 kW at 6500 1/min
Max. RPM 6600 1/min
Recommended RPM 6250 1/min
Low idle RPM not available – no throttle control
cyl. head temp. 275°C max (measured under spark plug)
fuel consump. at cruise Approx 3,7 US gal./hr (14 l/h)

4. Operating manual

In order to have best engine performance available, it is absolutely necessary to follow the following instructions:

- Before starting the engine
  - Daily check done?
  - Check fuel level in tank
  - Airbleed fuel lines.
    To do this operate electric fuel pump and use a pin and push through the small hole in the carburetor cover until fuel is injected. Listen if fuel is injected.

- Start engine according to the instructions in the flight manual of the aircraft.
  - Fuel Valve OPEN
  - ignition switch ON
  - Decompression OPEN, until engine revs are stable.

- Stop engine according to the instructions in the flight manual of the aircraft.
  - Ignition switch OFF
  - Fuel Valve CLOSED
5. Maintenance manual

- **Before each flight** check the following with ignition in “Off” position:
  With decompression valves in open position engine should crank over by hand very easily and without any internal mechanical noise, with valves closed engine turn over should be difficult. Visual inspection of the outside condition of engine, exhaust system, belt drive and mounting elements.

- **Every 12 months or 25 operating hours**, whatever comes first, check the following points in addition to the daily checks:
  - fuel lines
  - All wiring, exhaust system and spark plugs
  - Clean the engine
  - Disassemble, wash and check the decompression – valves
  - Check belt tension. Apply a test load of 120N right angled in the middle of the belt drive. Measure the displacement of the belt. It should be 4mm. If necessary open the clamping screws of the propeller axle and tighten the belt by rotating the propeller axle. Secure the screws with Loctite 243.

- **Special examination after 200 operating hours**. This check has to be done by the manufacturer.

- **Special examination after shock - loading**. This check has to be carried out by the manufacturer or an approved facility.

- **Conservation and storage**:
  If an engine is not used for 2 months or more the engine must be treated as follows:
  - Empty fuel system
  - Inject approx. 5 ccm of 2-stroke oil into each inlet manifold. Turn the engine over by hand 10 times. Make sure, ignition is in “Off” position and decompression valves are open.
  - Cover intake and exhaust openings.

- **Torques**
  Spark plug 20 Nm 14,5 ft. lbs.
  Decompression valves 20 Nm 14,5 ft. lbs.
  Hub (on crankshaft) M12 x 1 (left hand) 50 Nm 36 ft. lbs.
  Cylinder head nut (SW9) M6 12 Nm 8,5 ft. lbs.
  Cylinder head nut (SW12) M8 20 Nm 14,5 ft. lbs.
  Hex. Head bolts and allen M4 3 Nm 2 ft. lbs.
  head bolts or nuts or same M6 10 Nm 7 ft. lbs.
  M8 23 Nm 16,5 ft. lbs.
  Slotted screws and nuts M3 0,9 Nm 0,6 ft. lbs.
  Slotted screws M4 2 Nm 1,5 ft. lbs.
  M5 4 Nm 3 ft. lbs.
  Cylinderbase screws (Tension Screws) M8 13 Nm 9,5 ft. lbs.
➢ Fuel/ Air Mixture control
The fuel supply to the engine is controlled by a jet each and was optimized by the manufacturer. Changes or corrections of jets should be approved by the manufacturer.

➢ Main fuel jets
- Front HD 114 1. Cylinder in cooling air
- Rear HD 116 2. Cylinder in cooling air

➢ Changing or cleaning of the main fuel jets.
While changing or cleaning the jets pay attention to the correct order of the installation of the seals and the diaphragm.
6. Engine trouble shooting

- **Engine will not start:**
  - Wrong timing of ignition: Spark plug cables can be mixed up
  - No fuel: Check the fuel lines to the carburetors and the fuel pump.
  - No spark: Short-cut of wiring to ground – check wires
  - No spark on one of the spark plugs: Connection to ground is poor - check wires

- **Engine flooded:**
  - Ignition “OFF”
  - Open decompression valves and turn engine over several times.
  - Clean spark plugs

- **Engine overheated:**
  - Not enough fuel.
  - Engine very dirty.
  - Defective spark plugs.

- **Engine does not reach max. RPM:**
  - Not enough fuel: Check the fuel lines, fuel pump and fuel filter.
  - Defective spark plugs: Replace spark plugs
  - Decompression valves are leaking: Clean valves
  - Pulse hose to fuel pump is blocked: Check or replace
  - Defective carburetor unit: Change diaphragm and control module.

7. Installation instructions

Mount the propeller to the hub of the engine. Tighten all nuts according to the torque list in the manual of the propeller.

Mount engine on the 4 mounting points according to the manual of the aircraft.

Connect the fuel lines in according to the manual of the aircraft.

Connect all wires according to the manual of the aircraft.
8. Wiring diagram

9. Power curve

max. starting power 22 kW, 6500 1/min